## PROGNOSTIC FACTORS IN HEAD & NECK CANCER PATIENTS TREATED WITH RADIOTHERAPY: A RETROSPECTIVE ANALYSIS



#### THESIS

Submitted to

All India Institute of Medical Sciences, Jodhpur

In partial fulfillment of the requirement for the degree of

Doctorate of Medicine (DM)

**Radiotherapy & Oncology** 

**July 2020** 

AIIMS, Jodhpur

Dr. Atul Kumar Gupta





All India Institute of Medical Sciences, Jodhpur

## DECLARATION

I hereby declare that the thesis titled "PROGNOSTIC FACTORS IN HEAD & NECK CANCER PATIENTS TREATED WITH RADIOTHERAPY: A RETROSPECTIVE ANALYSIS" embodies the original work carried out by the undersigned at All India Institute of Medical Sciences, Jodhpur.

Dr. Atul Kumar Gupta

**Department of Radiation Oncology All India Institute of Medical Sciences** 

Jodhpur (Rajasthan)





All India Institute of Medical Sciences, Jodhpur

## CERTIFICATE

This is to certify that the thesis titled "PROGNOSTIC FACTORS IN HEAD & NECK CANCER PATIENTS TREATED WITH RADIOTHERAPY: A RETROSPECTIVE ANALYSIS" is a record of the bonafide research work of Dr. Atul Kumar Gupta carried out under our guidance and supervision in the Department of Radiation Oncology, Department of Surgical Oncology and Department of Pathology, All India Institute of Medical Sciences, Jodhpur, Rajasthan. Dr. Atul Kumar Gupta has learned and performed all the clinical and analytical procedures involved in the study under guidance and supervision.

#### GUIDE

WWW Dr. Puneet Pareek

Additional Professor & Head of Department Department of Radiation Oncology All India Institute of Medical Sciences, Jodhpur

**CO-GUIDES** 

2 ristroi Jeewan Ram Vishnoi

Associate Professor Department of Surgical Oncology AIIMS Jodhpur

**Prof. Poonam Elhence** Head of Department Department of Pathology AIIMS, Jodhpur





All India Institute of Medical Sciences, Jodhpur

### CERTIFICATE

This is to certify that the thesis titled "PROGNOSTIC FACTORS IN HEAD & NECK CANCER PATIENTS TREATED WITH RADIOTHERAPY: A RETROSPECTIVE ANALYSIS" is a record of the bonafide research work of Dr. Atul Kumar Gupta, carried out under our guidance and supervision in the Department of Radiation Oncology, Department of Surgical Oncology and Department of Pathology, All India Institute of Medical Sciences, Jodhpur, Rajasthan. Dr. Atul Kumar Gupta has learned and performed all the clinical and analytical procedures involved in the study under the guidance and supervision of his guide and co-guides.

Forwarded & recommended by

GUIDE

Inveelberen **Dr Puneet Pareek** 

Additional Professor & Head of Department

Department of Radiation Oncology

All India Institute of Medical Sciences, Jodhpur



# **DEDICATED** TO **SERVE HUMANITY**



#### **ACKNOWLEDGEMENT**

First and foremost, I bow in reverence to The Almighty for allowing me to undertake this task and strength and ability to complete it. I fell elated to stoop low at the feet of my God and express my thanks for blessing me with everything I prayed for.

Words are inadequate to express my gratitude and appreciation to my dearest parents, Mr. Rajesh Kumar and Mrs. Sunita Devi, and my Grandparents Mr. Jagdish Prasad and Mrs. Santosh Devi for their love, care, blessings and constant encouragement. I pray to God to give me enough strength and capability to fulfill their dreams.

I gratefully acknowledge and thank my elder sister Mrs. Priyanka Gupta, younger sister Miss Shweta Gupta, My brother in law Mr. Kuldeep Garg and my niece Pihu for supporting me throughout this course.

No words of gratitude are sufficient to express my sincere regards to my revered teachers and my Guide, Dr. Puneet Pareek, Prof R. K. Vyas, Dr. Akanksha Solanki, Dr. Bharti Devnani, Dr. Sandeep Bairwa, Dr. Parmod Kumar, Dr. Akanksha Garg. Their keen interest, competent guidance and constant help in solving my day-to-day problems was instrumental in nurturing this project to its present shape.

It was a matter of great honor to work under the guidance and blessings of my co-guides Prof. Poonam Elhence, Department of Pathology, Dr. Jeevan Ram Vishnoi, Department of Surgical Oncology, AIIMS Jodhpur.

It was great support from Dr. Harsha, Dr. Sweta, Dr. Shekhar, Dr. Harika, Dr. Ramakant, Dr. Vaibhav, Dr. Avni, Dr. Prateek Senior Residents, Department of Radiation Oncology.

I'm thankful to especially Dr. Amith Mohan, Dr. Sujoy Fernandez, Dr. Sanjay Santhyavu, Dr. Mukul Choubisa, Dr. Samiran Chavan, Dr. Kalyani Nair for their fruitful discussions and genuine feedback that have made this whole experience a pleasurable one.

I am highly blessed to have such a cooperative co-PG, Dr. Rishi P Nair, who helped me in completing my thesis with his valuable input.



It was enlightening to work with Mrs. Sonal Varshney, Mr. Irfad, Miss Monika, and Mr. Mohsin, who were partners as Medical Physicist planning and assuring all patients' quality of treatment.

I am indebted to the wonderful team of Radiation Technologists of our Department Mr. Pankaj, Mr. Jitendra, Ms. Sakshi, Mr. Upendra, Mr. Sujeet, Mr. Deepak, Mr. Nayan, Ms. Anjali, Mr. Harsh

I thank for the care and compassion for our study patients provided by the Nursing Staff of our Department and ward for the coordination and so many big and small works, Mr. Gajendra Ji, Mr. Laxmikant, Mr. Najir, Mr. Raj from the Administrative Staff of our Department.

Our office staff Mr. Mangi Lal, Mr. Rajesh, Mr. Dileep, Mrs. Aarti, Mrs. Rinku and Mrs. Sangeeta all took care of patients and made them and me feel at home.

I am thankful and pray for forgiveness to all who have helped the patients and the study and by mistake I have forgotten to mention their names.

My gratitude should extend to my dearest friends Dr. Ankit Singh, Dr. Megha Bhargava, Ms. Richa Arora, Mr. Rahul Sharma and Mr. Jaikumar Gupta for their immense support and the willingness to cheer me up in my bad times.

Last but not least, I thank all the patients who participated in this study for sharing their experiences and feelings, even when they were going through so much in their own lives.

DR ATUL KUMAR GUPTA



## **LIST OF ABBREVIATIONS**

HNC	HEAD AND NECK CANCER
HPV	HUMAN PAPPILOMA VIRUS
HNSCC	HEAD AND NECK SQUAMOUS CELL CANCER
QOL	QUALITY OF LIFE
RT	RADIATION THERAPY
EXTREME	ERBITUX IN FIRST-LINE TREATMENT OF RECURRENT OR METASTATIC HEAD AND NECK CANCER
EGFR	EPIDERMAL GROWTH FACTOR RECEPTOR
NACT	NEO ADJUVANT CHEMOTHERAPY
EORTC	EUROPEAN ORGANIZATION FOR RESEARCH AND TREATMENTOF CANCER
NCCN	NATIONAL COMPREHENSIVE CANCER NETWORK
5FU	5 FLUORO-URACIL
GY	GRAY
IV	INTRAVENOUS
RCT	RANDOMISED CONTROLLED TRIAL
ТР	TAXANE AND PLATINUM
OAR	ORGAN AT RISK



BMI	BODY MASS INDEX
BSA	BODY SURFACE AREA
BSC	BEST SUPPORTIVE CARE
PFS	PROGRESSION FREE SURVIVAL
OS	OVERALL SURVIVAL
DFS	DISEASE FREE SURVIVAL
GLOBOCAN	GLOBAL CANCER OBSERVATORY
ESMO	EUROPEAN SOCIETY FOR MEDICAL ONCOLOGY.
WHO	WORLD HEALTH ORGANISATION
PF	PLATINUM AND 5 FLUORO-URACIL
TPF	TAXANE, PLATINUM AND 5 FLUORO-URACIL
RTOG	RADIATION THERAPY ONCOLOGY GROUP
LA	LOCALLY ADVANCED
LRC	LOCOREGIONAL CONTROL
LVSI	LYMPHOVASCULAR SPACE INVASION
PNI	PERINEURAL INVASION
ENE	EXTRANODAL EXTENSION



## **INDEX**

S. NO.	CONTENTS	PAGE NO.
1.	LIST OF TABLES	i-iii
2.	LIST OF PLOTS	iv-ix
3.	LIST OF FIGURES	X
4.	LIST OF ANNEXURES	xi
5.	INTRODUCTION	1-4
6.	AIM AND OBJECTIVES	5
7.	REVIEW OF LITERATURE	6-15
8.	MATERIALS & METHODS	16-22
9.	RESULTS	23-90
10.	DISCUSSION	91-98
11.	<b>CONCLUSION &amp; LIMITATION OF STUDY</b>	99-100
12.	REFERENCES	101-109
13.	ANNEXURES	110-120



## LIST OF TABLES

TABLE NUMBER	TABLE DESCRIPTION	PAGE NUMBER
TABLE 1	AGE-WISE DISTRIBUTION OF HEAD AND NECK CANCER	23
TABLE 2	CENTRAL TENDENCY OF PRESENTING AGE	24
TABLE 3	GENDER-WISE DISTRIBUTION OF HEAD AND NECK CANCER	24
TABLE 4	DISTRICT-WISE DISTRIBUTION OF HEAD AND NECK CANCER	25
TABLE 5	RELIGION-WISE DISTRIBUTION OF HEAD AND NECK CANCER	26
TABLE 6	HEIGHT-WISE DISTRIBUTION OF HEAD AND NECK CANCER	27
TABLE 7	CENTRAL TENDENCY OF HEIGHT-WISE DISTRIBUTION	27
TABLE 8	WEIGHT-WISE DISTRIBUTION OF HEAD AND NECK CANCER	28
TABLE 9	CENTRAL TENDENCY OF WEIGHT-WISE DISTRIBUTION	28
TABLE 10	BSA-WISE DISTRIBUTION OF HEAD AND NECK CANCER	29
TABLE 11	CENTRAL TENDENCY OF BSA-WISE DISTRIBUTION	29
TABLE 12	BMI-WISE DISTRIBUTION OF HEAD AND NECK CANCER	30
TABLE 13	CENTRAL TENDENCY OF BMI-WISE DISTRIBUTION	30
TABLE 14	SITE-WISE DISTRIBUTION OF HEAD AND NECK CANCER	31
TABLE 15	DURATION OF INITIAL SYMPTOMS IN HEAD AND NECK CANCER	32
TABLE 16	CENTRAL TENDENCY OF DURATION OF INITIAL SYMPTOMS	32
TABLE 17	LARGEST DIMENSION OF PRIMARY SITE-WISE DISTRIBUTION	34

TABLE 18	CENTRAL TENDENCY OF LARGEST DIMENSION OF PRIMARY SITE	34
TABLE 19	CENTRAL TENDENCY OF LN SAD IN IMAGING AT PRESENTATION	36
TABLE 20	NUMBER OF CYCLES OF NACT	40
TABLE 21	FREQUENCY OF SURGICAL INTERVENTION IN VARIOUS SUBSITES	41-42
TABLE 22	FREQUENCY OF NUMBER OF DISSECTED LYMPH NODES	42
TABLE 23	CENTRAL TENDENCY OF NUMBER OF DISSECTED LYMPH NODES	43
TABLE 24	CENTRAL TENDENCY OF LYMPH NODE POSITIVITY	44
TABLE 25	FREQUENCY TABLE OF MARGIN STATUS IN OPERATED SUBSITES	46
TABLE 26	CENTRAL TENDENCY OF DEPTH OF INVASION IN OPERATED SUBSITES	48
TABLE 27	SUBSITE-WISE OVERALL SURVIVAL DATA ANALYSIS	55
TABLE 28	SUBSITE AND STAGE-WISE OVERALL SURVIVAL DATA ANALYSIS	56
TABLE 29	LYMPH NODE DISSECTION ADEQUACY AND OVERALL SURVIVAL ANALYSIS	58
TABLE 30	LYMPH NODE POSITIVITY AND OVERALL SURVIVAL ANALYSIS	59
TABLE 31	PREOP HISTOLOGY AND OVERALL SURVIVAL ANALYSIS	60
TABLE 32	POST OP MARGIN STATUS AND OVERALL SURVIVAL ANALYSIS	61
TABLE 33	LVSI STATUS AND OVERALL SURVIVAL ANALYSIS	62
TABLE 34	PNI STATUS AND OVERALL SURVIVAL ANALYSIS	63
TABLE 35	ENE STATUS AND OVERALL SURVIVAL ANALYSIS	64
TABLE 36	OVERALL SURVIVAL ANALYSIS OF DIFFERENT SUBSITES WHO RECEIVED EITHER RT ALONE OR CTRT	65-66

r		
TABLE 37	OVERALL SURVIVAL ANALYSIS OF DIFFERENT SUBSITES WHO RECEIVED +/- NACT	69-70
TABLE 38	LVSI STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	71
TABLE 39	PREOP HISTOLOGY AND PROGRESSION-FREE SURVIVAL ANALYSIS	72
TABLE 40	ENE STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	73
TABLE 41	PNI STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	74
TABLE 42	CONCURRENT CHEMOTHERAPY STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	75
TABLE 43	STAGE WISE PROGRESSION FREE SURVIVAL ANALYSIS	77-78
TABLE 44	SUBSITE-WISE PROGRESSION FREE SURVIVAL ANALYSIS	79
TABLE 45	PREOP HISTOLOGY AND DISEASE-FREE SURVIVAL ANALYSIS	80
TABLE 46	SUBSITE-WISE DFS ANALYSIS	81-82
TABLE 47	STAGE-WISE DISEASE-FREE SURVIVAL ANALYSIS	83-84
TABLE 48	LYMPH NODE POSITIVITY AND DFS ANALYSIS	85
TABLE 49	LYMPH NODE DISSECTION ADEQUACY AND DFS ANALYSIS	86
TABLE 50	POST OP MARGIN STATUS AND DFS ANALYSIS	86
TABLE 51	LVSI STATUS AND DFS ANALYSIS	87
TABLE 52	PNI STATUS AND DFS ANALYSIS	88
TABLE 53	ENE STATUS AND DFS ANALYSIS	89
TABLE 54	CONCURRENT CHEMOTHERAPY STATUS AND DFS ANALYSIS	90

## **LIST OF PLATES**

PLOT NUMBER	PLOT DESCRIPTION	PAGE NUMBER
PLOT 1	AGE-WISE DISTRIBUTION OF HEAD AND NECK CANCER	23
PLOT 2	GENDER-WISE DISTRIBUTION OF HEAD AND NECK CANCER	24
PLOT 3	DISTRICT-WISE DISTRIBUTION OF HEAD AND NECK CANCER	25
PLOT 4	RELIGION-WISE DISTRIBUTION OF HEAD AND NECK CANCER	26
PLOT 5	HEIGHT-WISE DISTRIBUTION OF HEAD AND NECK CANCER	27
PLOT 6	WEIGHT-WISE DISTRIBUTION OF HEAD AND NECK CANCER	28
PLOT 7	BSA-WISE DISTRIBUTION OF HEAD AND NECK CANCER	29
PLOT 8	BMI-WISE DISTRIBUTION OF HEAD AND NECK CANCER	30
PLOT 9	SITE-WISE DISTRIBUTION OF HEAD AND NECK CANCER	31
PLOT 10	INITIAL PRESENTING SYMPTOMS OF HEAD AND NECK CANCER	32
PLOT 11	DURATION OF INITIAL SYMPTOMS OF HEAD AND NECK CANCER	32
PLOT 12	ADDICTIONS IN HEAD AND NECK CANCER	33
PLOT 13	CO-MORBIDITIES IN HEAD AND NECK CANCER	34
PLOT 14	LARGEST DIMENSION ON IMAGING-WISE DISTRIBUTION	35
PLOT 15	INVOLVEMENT OF LEVEL OF LYMPH NODES IN IMAGING	35
PLOT 16	FREQUENCY OF SAD OF LYMPH NODE IN IMAGING	36
PLOT 17	T-STAGE WISE DISTRIBUTION	37

PLOT 18	N-STAGE WISE DISTRIBUTION	37
PLOT 19	AJCC PROGNOSTIC GROUP-WISE DISTRIBUTION	38
PLOT 20	PRE-TREATMENT HISTOLOGY-WISE DISTRIBUTION	38
PLOT 21	NACT IN OPERABLE SUBSITES-WISE DISTRIBUTION	39
PLOT 22	NACT IN INOPERABLE SUBSITES-WISE DISTRIBUTION	39
PLOT 23	VARIOUS REGIMENS OF NACT	40
PLOT 24	PRESENCE OR ABSENCE OF SURGICAL INTERVENTION IN VARIOUS SUBSITES	41
PLOT 25	NUMBER OF LYMPH NODES DISSECTED	43
PLOT 26	NUMBER OF PATHOLOGICAL POSITIVE LYMPH NODES	44
PLOT 27	MARGIN STATUS IN SURGICALLY OPERATED SUBSITES	45
PLOT 28	MARGIN STATUS IN CORRELATION WITH NACT GIVEN OR NOT	46
PLOT 29	LVSI STATUS IN SURGICALLY OPERATED SUBSITES	47
PLOT 30	PNI STATUS IN SURGICALLY OPERATED SUBSITES	47
PLOT 31	ENE STATUS IN SURGICALLY OPERATED SUBSITES	47
PLOT 32	DEPTH OF INVASION STATUS IN OPERATED SUBSITES	48
PLOT 33	CONCURRENT CHEMOTHERAPY IN OPERATED SUBSITES	49
PLOT 34	CONCURRENT CHEMOTHERAPY IN INOPERABLE SUBSITES	49
PLOT 35	FREQUENCY OF CONCURRENT CHEMOTHERAPY ADMINISTRATION	50
PLOT 36	NUMBER OF CYCLES OF CONCURRENT CHEMOTHERAPY	50

PLOT 37	FINAL OUTCOME OF THE PATIENTS	51
PLOT 38	REVERSE KAPLAN MEIER FOR MEDIAN FOLLOW-UP TIME	51
PLOT 39	STATUS OF RELAPSE IN PATIENTS	52
PLOT 40	COX REGRESSION ANALYSIS OF VARIOUS VARIABLES WITH OS	53
PLOT 41	SUBSITE-WISE KAPLAN MEIER SURVIVAL ANALYSIS	54
PLOT 42	SURVIVAL DATA OF VARIOUS SUBSITES	54
PLOT 43	STAGE-WISE KAPLAN MEIER SURVIVAL ANALYSIS	55
PLOT 44	RADAR CHART SHOWING SURVIVAL ANALYSIS OF VARIOUS SITES ALONG WITH DISEASE STAGE	57
PLOT 45	LYMPH-NODE DISSECTION ADEQUACY AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	57
PLOT 46	LYMPH NODE DISSECTION ADEQUACY AND OVERALL SURVIVAL ANALYSIS	58
PLOT 47	LYMPH-NODE POSITIVITY AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	58
PLOT 48	LYMPH NODE POSITIVITY AND OVERALL SURVIVAL ANALYSIS	59
PLOT 49	PREOP HISTOLOGY AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	59
PLOT 50	PREOP HISTOLOGY AND OVERALL SURVIVAL ANALYSIS	60
PLOT 51	POST OP MARGIN STATUS AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	60
PLOT 52	POST OP MARGIN STATUS AND OVERALL SURVIVAL ANALYSIS	61
PLOT 53	LVSI STATUS AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	61
PLOT 54	LVSI STATUS AND OVERALL SURVIVAL ANALYSIS	62
PLOT 55	PNI STATUS AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	62

PLOT 56	PNI STATUS AND OVERALL SURVIVAL ANALYSIS	63
PLOT 57	ENE STATUS AND KAPLAN MEIER OVERALL SURVIVAL ANALYSIS	63
PLOT 58	ENE STATUS AND OVERALL SURVIVAL ANALYSIS	64
PLOT 59	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF PHARYNGEAL TUMORS TREATED WITH EITHER RADICAL RT ALONE OR CTRT	64
PLOT 60	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF STAGEWISE PHARYNGEAL TUMORS TREATED WITH EITHER RADICAL RT ALONE OR CTRT	65
PLOT 61	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF ORAL CAVITY TUMORS TREATED WITH EITHER RADICAL RT ALONE OR CTRT	67
PLOT 62	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF PATIENTS WITH RESECTABLE HNC WITH OR WITHOUT NACT	67
PLOT 63	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF PHARYNGEAL TUMORS TREATED WITH EITHER RADICAL RT ALONE OR CTRT +/- NACT	68
PLOT 64	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF PHARYNGEAL TUMORS TREATED WITH RADICAL RT ALONE	68
PLOT 65	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF PHARYNGEAL TUMORS TREATED WITH RADICAL CTRT ALONE	69
PLOT 66	KAPLAN MEIER OVERALL SURVIVAL ANALYSIS OF PHARYNGEAL TUMORS TREATED WITH NACT F/B RADICAL CTRT	69
PLOT 67	LVSI STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	71
PLOT 68	LVSI STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS WITH KAPLAN MEIER	71
PLOT 69	PREOP HISTOLOGY AND PROGRESSION-FREE SURVIVAL ANALYSIS	72
PLOT 70	PREOP HISTOLOGY AND KAPLAN MEIER PROGRESSION FREE SURVIVAL ANALYSIS	73
PLOT 71	ENE STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	73
PLOT 72	ENE STATUS AND KAPLAN MEIER PROGRESSION-FREE SURVIVAL ANALYSIS	74
		1

PLOT 73	PNI STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	74
PLOT 74	PNI STATUS AND KAPLAN MEIER PROGRESSION FREE SURVIVAL ANALYSIS	75
PLOT 75	CONCURRENT CHEMOTHERAPY STATUS AND PROGRESSION-FREE SURVIVAL ANALYSIS	75
PLOT 76	CONCURRENT CHEMOTHERAPY STATUS AND KAPLAN MEIER PROGRESSION FREE SURVIVAL ANALYSIS	76
PLOT 77	RADAR CHART SHOWING STAGE-WISE PFS ANALYSIS	76
PLOT 78	STAGE-WISE KAPLAN MEIER PROGRESSION-FREE SURVIVAL ANALYSIS	77
PLOT 79	RADAR CHART SHOWING SUBSITE-WISE PFS ANALYSIS	78
PLOT 80	SUBSITE-WISE KAPLAN MEIER PROGRESSION-FREE SURVIVAL ANALYSIS	79
PLOT 81	PREOP HISTOLOGY AND DISEASE-FREE SURVIVAL ANALYSIS	80
PLOT 82	PREOP HISTOLOGY AND KAPLAN MEIER DISEASE-FREE SURVIVAL ANALYSIS	80
PLOT 83	SUBSITE-WISE DFS ANALYSIS	81
PLOT 84	SUBSITE WISE KAPLAN MEIER DISEASE-FREE SURVIVAL ANALYSIS	82
PLOT 85	RADAR CHART SHOWING STAGE-WISE DISEASE-FREE SURVIVAL ANALYSIS	84
PLOT 86	STAGE-WISE KAPLAN MEIER DISEASE-FREE SURVIVAL ANALYSIS	84
PLOT 87	LYMPH NODE POSITIVITY AND DFS ANALYSIS	85
PLOT 88	LYMPH NODE DISSECTION ADEQUACY AND DFS ANALYSIS	85
PLOT 89	POST OP MARGIN STATUS AND DFS ANALYSIS	86
PLOT 90	POST OP MARGIN STATUS AND DFS ANALYSIS USING KAPLAN MEIER	86
PLOT 91	LVSI STATUS AND DFS ANALYSIS	87

PLOT 92	LVSI STATUS AND DFS ANALYSIS USING KAPLAN MEIER	88
PLOT 93	PNI STATUS AND DFS ANALYSIS	88
PLOT 94	PNI STATUS AND DFS ANALYSIS USING KAPLAN MEIER	89
PLOT 95	ENE STATUS AND DFS ANALYSIS	89
PLOT 96	ENE STATUS AND DFS ANALYSIS USING KAPLAN MEIER	90
PLOT 97	CONCURRENT CHEMOTHERAPY STATUS AND DFS ANALYSIS	90

FIGURE NUMBER	FIGURE DESCRIPTION	PAGE NUMBER
Figure 1	VERSA HD machine	19
Figure 2	Immobilization of the patient on LINAC	19
Figure 3	Methodology of the study	18
Figure 4	Figure showing PTV of a patient with HNC	20
Figure 5	Dose distribution to PTV and various OARs	20
Figure 6	Graphical Representation of dose fall off	21
Figure 7	Color Coding of the graphical representation	21

## LIST OF FIGURES

## LIST OF ANNEXURES

ANNEXURE NUMBER	ANNEXURE DESCRIPTION	PAGE NUMBER
ANNEXURE-1	ETHICAL COMMITTEE APPROVAL	110
ANNEXURE-2	DATA COLLECTION PERFORMA	111-114
ANNEXURE-3	AJCC STAGING OF ORAL CAVITY TUMORS (8 <sup>TH</sup> EDITION)	115
ANNEXURE-4	AJCC STAGING OF NASOPHARYNGEAL TUMORS (8 <sup>TH</sup> EDITION)	116
ANNEXURE- 5	AJCC STAGING OF OROPHARYNGEAL TUMORS (8 <sup>TH</sup> EDITION)	117-118
ANNEXURE- 6	AJCC STAGING OF LARYNGEAL TUMORS (8 <sup>TH</sup> EDITION)	119-120

## **INTRODUCTION**

#### **BACKGROUND**-

Head and neck cancers (HNCs) are malignant tumors of the upper aerodigestive tract including the oral cavity, nasopharynx, oropharynx, hypopharynx, and larynx. Squamous cell carcinoma (SCC) constitutes >90% of HNCs.

#### **1. PROBLEM STATEMENT-**

Head and neck cancers are common in multiple regions worldwide. The primary risk factors associated with head and neck cancer include tobacco use, alcohol consumption, human papillomavirus (HPV) infection (mainly for oropharyngeal cancer), and Epstein-Barr virus (EBV) infection (for nasopharyngeal cancer). Chronic exposure of the upper aerodigestive tract to these carcinogenic factors can result in dysplastic or premalignant lesions in the oropharyngeal mucosa and ultimately result in the development of cancer. The relative prevalence of these risk factors contributes to the variations in the observed distribution of head and neck cancer in different areas of the world.

Worldwide, head and neck cancer account for approximately 900,000 cases and over 400,000 deaths annually. In the United States, head and neck cancer accounts for 3 percent of malignancies, with approximately 66,000 cases annually and 15,000 deaths(1).In India, it constitutes 25-30% of all cancers as opposed to 3-4% in the Western World(2). This gross variation in the incidence is predominantly attributed to the rampant use of tobacco and areca nuts in India. While epidemiological data suggest a steady decline of tobacco-related cancers in the West with a concomitant rise in human papilloma virus (HPV) related oropharyngeal malignancies this trend has not been observed in India; HPV-related head and neck cancers being a relative rarity.

#### 2. RISK FACTORS IMPLICATED IN HNC CARCINOGENESIS-

The risk factors most frequently associated with head and neck cancer include alcohol consumption, smoking, tobacco chewing, HPV infection (especially for oropharyngeal carcinoma) and EBV infection (especially for nasopharyngeal carcinoma in Asia).

#### 2.1 TOBACCO CONSUMPTION-

Tobacco has widespread social acceptance in the Indian community. According to the Global Adult Tobacco Survey, the consumption rate of tobacco among adults in India is 34.6%. It is

higher in males (47.9%) compared to females (20.7%). It is more prevalent in rural areas (38.4%) where two-thirds of the nation's population resides. Of tobacco users, 60% consumed smokeless tobacco, 25% used the smoked tobacco form alone and 15% consumed both the forms. The relative risk (RR) of oral cancer is much higher in smokeless tobacco users compared to the never users (RR 5.5 with 95% confidence interval (CI) 3.3-9.0 for those currently using smokeless tobacco against RR 1 in never users)(3).

#### **2.2 ALCOHOL CONSUMPTION-**

Alcohol drinking is considered to be an established risk factor for HNC, and this association may be stronger among cancers of the oropharynx and hypopharynx than the oral cavity or larynx. In addition, higher alcohol consumption over a shorter period was more harmful than less alcohol consumption over a longer period (4).

#### 2.3 ASSOCIATION WITH HPV INFECTION-

It has been demonstrated that human papillomavirus (HPV) infection is involved in up to 25% of HNCs, particularly in the oropharyngeal carcinoma subtype where it can account for up to 30 to 60% of such cases(5).

#### 2.4 ASSOCIATION WITH EBV INFECTION-

The Epstein-Barr virus (EBV), a human B lympho-trophic herpes virus, is strongly associated with undifferentiated carcinoma of the nasopharynx and African-type Burkitt's lymphoma(6).

#### **3. CLINICAL PRESENTATION OF PATIENTS WITH HNC-**

Patients with HNCs present with a variety of symptoms, depending on the site where they originate. Laryngeal cancers commonly present with hoarseness, whereas pharyngeal cancers often present late with dysphagia or sore throat. Many often present with a painless neck node. Patients with head and neck cancer can present with non-specific symptoms or symptoms commonly associated with benign conditions, however, such as sore throat or ear pain(7). Mostly symptoms in patients with HNCs are attributable to local disease itself or due to its regional spread.

**3.1 Oral cavity tumors** – Patients may present with mouth pain or nonhealing mouth ulcers, loosening of teeth, ill-fitting dentures, dysphagia, odynophagia, weight loss, bleeding, or referred otalgia. Up to 66 percent of patients with primary tongue lesions have cervical lymph

node involvement, depending on T stage and depth of invasion, while the incidence is substantially lower in patients with hard palate cancers.

• Lip cancer usually presents as an exophytic or ulcerative lesion of the lower lip, occasionally associated with bleeding or pain. Some patients complain of numbress of the skin of the chin due to the involvement of the mental nerve.

**3.2 Nasopharyngeal carcinoma** – The most frequent presenting complaint is a neck mass due to regional lymph node metastasis, which occurs in nearly 90 percent of patients. Symptoms due to the primary tumor may include hearing loss (associated with serous otitis media), tinnitus, nasal obstruction and pain, and its associated growth into adjacent anatomical structures, which can lead to muscle involvement and impaired function of cranial nerves II to VI. Adults with unilateral effusion should have an examination of the nasopharynx.

**3.3 Oropharyngeal tumors** – Presenting complaints can include dysphagia, pain (odynophagia, otalgia), obstructive sleep apnea or snoring, bleeding, or a neck mass.

**3.4 Hypopharyngeal tumors** – Patients with these tumors often remain asymptomatic for a longer period and are therefore more likely to be seen in the later stages of the disease. Dysphagia, odynophagia, otalgia, weight loss, hemoptysis, dyspnea, and neck mass are common presenting symptoms.

**3.5 Laryngeal cancer** – The symptoms associated with cancer of the larynx depend upon location. Persistent hoarseness may be the initial complaint in glottic cancers; later symptoms may include dysphagia, referred otalgia, chronic cough, hemoptysis, and stridor. Supraglottic cancers are often discovered later and may present with airway obstruction or palpable metastatic lymph nodes. Primary subglottic tumors are rare. Affected patients typically present with stridor or complaints of dyspnea on exertion.

#### 4. MANAGEMENT STRATEGY-

HNCs have a lower incidence of systemic dissemination as compared to other cancers as breast cancer. They mainly grow and erode locally, causing suffering. The site of head, neck and face is the location of airway and digestive tract both and special senses of smell, taste, vision and hearing. Overall, HNCs affect the quality of life of a patient so management should be aimed at improving the quality of life along with reducing treatment complications. For early-stage head and neck cancer (HNC), definitive surgery or definitive radiotherapy (RT) is a standard treatment(8).

For locally advanced Head & Neck cancers, Surgery followed by radiotherapy (RT) /Concurrent chemoradiotherapy (CTRT) or definitive RT/CTRT are potentially curative approaches. While chemotherapy itself is not curative, it can improve cure rates when given as an adjunct to RT(9).

For metastatic HNCs, the prognosis is dismal and management depends on multiple factors as age, financial condition, performance status, expression of multiple biomarkers etc. along with improving quality of life that includes wholesome approach with proper nutritional support, good oral hygiene, spiritual support etc. While metronomic chemotherapy can offer some inexpensive palliation, for patients with metastatic HNCs with PD-L1 expression, first-line systemic therapy is pembrolizumab or pembrolizumab with chemotherapy. Inclusion of chemotherapy is associated with a higher objective response proportion in all biomarker subgroups and may have a greater impact on survival in HPV-associated cancers(10).

In summary, the complexity of HNCs is due to heterogeneity in anatomic and physiological functions of the organs and thereby demanding a multimodality approach. In addition, the patient population (elderly /patients with poor performance status/comorbidity status etc.) requires individually tailored treatment plan. Furthermore, treatment goals which include cure, organ and function preservation, quality of life and palliation- must also be considered. Current research directions in this disease focus on treatment de-intensification to minimize long-term toxicity while maintaining disease control among patients with favorable risks of cure and on the optimization of multi-modality regimens among patients with worse prognostic risks.

The present study attempted to find out the various patient and tumor profiles of head and neck cancer patients treated in the Department of Radiation Oncology and calculate their outcomes retrospectively.

## **AIMS & OBJECTIVES**

#### Aims & Objectives-

#### Aim of study-

To study the survival and prognostic factors of different sites of head and neck cancers.

#### **Objectives-**

#### **Primary Objective-**

To assess the treatment outcomes as Overall Survival, Disease-free survival, Progressionfree survival.

#### Secondary Objective-

To assess the host, disease, and treatment-related prognostic factors. Assessing the demographic profile of the patients suffering from the disease.

1. Describe treatment-related factors such as Radiation Dose, Technique, Dose to

Targets.

2. Inference relationship between tumor characteristics and treatment factors.

## **REVIEW OF LITERATURE**

#### **REVIEW OF LITERATURE**

- Hyuna Sung et al published his data on global cancer statistics in 2020 which provides an update on the global cancer burden using the GLOBOCAN 2020 estimates of cancer incidence and mortality produced by the International Agency for Research on Cancer. Worldwide, an estimated 19.3 million new cancer cases (18.1 million excluding nonmelanoma skin cancer) and almost 10.0 million cancer deaths (9.9 million excluding nonmelanoma skin cancers) occurred in 2020. Female breast cancer surpassed lung cancer as the most commonly diagnosed cancer, with an estimated 2.3 million new cases (11.7%), followed by lung (11.4%), colorectal (10.0 %), prostate (7.3%), and stomach (5.6%) cancers. Lung cancer remained the leading cause of cancer death, with an estimated 1.8 million deaths (18%), followed by colorectal (9.4%), liver (8.3%), stomach (7.7%), and female breast (6.9%) cancers. Overall incidence was from 2-fold to 3-fold higher in transitioned versus transitioning countries for both sexes, whereas mortality varied. (11)
- ★ Mathur et al published in 2020, the systematic collection of data on cancer by various population-based cancer registries (PBCRs) and hospital-based cancer registries (HBCRs) across India under the National Cancer Registry Program-National Centre for Disease Informatics and Research of Indian Council of Medical Research since 1982. This study examined the cancer incidence, patterns, trends, projections, and mortality from 28 PBCRs and also the stage at presentation and type of treatment of patients with cancer from 58 HBCRs (N = 667,666) from the pooled analysis for the composite period 2012-2016. Time trends in cancer incidence rate were generated as annual percent change from 16 PBCRs (those with a minimum of 10 years of continuous good data available) using Join point regression. The projected number of patients with cancer in India is 1,392,179 for the year 2020, and the common 5 leading sites are breast, lung, mouth, cervix uteri, and tongue. Trends in cancer incidence rate showed an increase in all sites of cancer in both sexes. The majority of the patients with cancer were diagnosed at the locally advanced stage for breast (57.0%), cervix uteri (60.0%), head and neck (66.6%), and stomach (50.8%) cancer, whereas in lung cancer, distant metastasis was predominant among males (44.0%) and females (47.6%). (78)

#### Epidemiology of Head & Neck cancer-

- Mark Gormley et al published in 2022, concluded that tobacco smoking and tobacco used in combination with alcohol consumption are the major risk factors associated with pathogenesis of head and neck carcinogenesis. Betel chewing has been established as a risk factor in Southeast Asian countries and in people from Southeast Asian minority ethnic groups. Oropharyngeal cancers have been found to be associated with Human Papilloma virus (HPV) infection. Head and neck cancers represent a socioeconomical pattern, with those from the poorest socioeconomic background having the greatest burden, but this socioeconomic risk is not entirely explained by smoking and alcohol behavior. Moreover, HNCs are considered to male predominant entity (although the trends are diverging) and its incidence increases with increase in age, although oropharyngeal cancer incidence peaks around ten years younger, at around 60-65 years. (12)
- Richa Chauhan et al published in 2022, concluded that there is high prevalence of tobacco use in Head and neck cancer patients whether in form of chewing or smoking or smokeless. This is strongly correlated with high incidence of occurrence of head and neck cancer in male as compared to females. Some lifestyle modifications and good oral hygiene should be recommended for prevention of head and neck cancers. (13)
- Halmos et al published in 2018, concluded that among head and neck cancer subsites, oral cavity is the most common site to be involved followed by larynx followed by pharynx. He also concluded that multimodality and intense management is applied more for younger population that could help in improving survival of the these patients. (15)
- V Aggarwal et al published in 2015 to find out the prevalence of Head and neck and oral cavity cancer in Western Rajasthan population. He found out that almost 34% cases out of all cancer patients were having head and neck involved out of which almost 57% were having oral cavity involved. (17)
- Leoncini et al published in 2014, to find out the association of height with incidence of head and neck cancer and concluded a positive association between the both. He found the inverse association between height and incidence of head and neck cancer (adjusted OR per 10 cm height = 0.91, 95% CI 0.86-0.95 for men; adjusted OR = 0.86, 95% CI 0.79-0.93 for women). In Men, various other factors as smoking,

educational status, geographical area also influence incidence of head and neck cancers. There was no difference between different subsites detected. (18)

- Lu Wang et al published in 2020, to find out the causal association between obesity and incidence of head and neck cancer. Increased body mass index (BMI) was associated with pathogenesis of multiple malignancies as endometrial cancer, breast cancer, colorectal cancer and cervical cancer etc. But increased BMI has no causal association with occurrence of head and neck cancers. (20)
- Edgar P. Simard et al published in 2014, concluded that there is variation in incidence of head and neck cancers in different countries. It is strongly associated with tobacco consumption; especially oral cavity cancers. Oropharyngeal cancer is associated with human papilloma virus infection and is more prevalent in developed world. (22)
- H Maier et al published in 1995 concluded that tobacco consumption is having positive correlation with occurrence of head and neck cancer in dose-effect manner. Alcohol consumption is also associated with occurrence of head and neck cancer and is solely dependent on daily alcohol consumption, not on the quality of beverage. Alcohol and tobacco consumption altogether do have synergistic effect on occurrence of head and neck cancer. (26)
- Vinidh Paleri et al published in 2010 found that comorbidity, presence of additional illness unrelated to tumor, do affect the prognosis of the patient with head and neck cancers. Comorbidities are associated with increased treatment cost as well as worse prognosis. So collecting co-morbidity data and their management is also a crucial step in management of head and neck cancers.(27)
- Pandey KC et al published in 2015, concluded that In Indian subcontinent, due to more tobacco consumption and unawareness, most of the patients with non-metastatic head and neck cancer usually present in locally advanced stage while few present in early stage. Due to late and advanced stage presentation, most patients need multimodality treatment with Chemotherapy, Surgery +/- radiation therapy and also carries a dismal prognosis. So awareness regarding cancer and tobacco cessation program will be a milestone in improving therapeutic look. (28)
- Vernham et al published his data in 1994 and concluded that among head and neck cancer patients, majority were having primary site as larynx followed by oral cavity followed by pharynx and others. Most of the patients presented in locally advanced stage. No association between disease stage and symptoms duration could be

established. Earlier diagnosis will not make a significant impact on the overall prognosis in head and neck cancer. (29)

Teofil Lung et al published his data in 2007 after analyzing head and neck cancer patients for almost a decade and concluded that most of the de novo cases were carcinomas (93%) followed by sarcoma (4%). Almost half of the patients presented with positive lymph node at initial presentation. (31)

#### MANAGEMENT OF HEAD AND NECK CANCER-

#### **ROLE OF INDUCTION CHEMOTHERAPY-**

- Haddad et al published in 2006, concluded that in locally advanced head and neck cancer patients, induction chemotherapy with 3 drug regimen (Cisplatin + Docetaxel + 5-FU) resulted in better pathological complete response rate (89%) as compared to 2 drug regimen (Cisplatin+5-FU) which was reported as 25-50% in previous studies. (36)
- Posner et al published in 2000, emphasized on the role of induction chemotherapy in locally advanced head and neck cancer patients. He concluded that Induction chemotherapy with 2 drug regimen (Cisplatin + 5-FU) resulted in more organ preservation without compromising survival and improved survival in unresectable disease. (37)
- Rapidis et al conducted a phase 2 trial in 2006 on role of induction chemotherapy followed by definitive concurrent chemoradiation in advanced head and neck SCCs. He concluded that patients who were treated with induction chemotherapy followed by definitive concurrent chemoradiotherapy were having better disease control and also improved overall survival. (38)
- Ferrari et al published in 2020, emphasized on judicious use on induction chemotherapy in advanced head and neck cancer patients. He demonstrated noninferiority of induction chemotherapy followed by concurrent CTRT vs Definitive CTRT, except its use in preventing metastatic spread. He concluded that induction chemotherapy can be a strong option for selected high risk population if used judiciously. (39)

Lorch et al published long term follow-up result of TAX 324 trial in 2011 and concluded that patients with locally advanced head and neck cancers who were treated with Induction chemotherapy (TPF) followed by Definitive CTRT were having better outcome and survival that those treated with dual agent induction chemotherapy. So wherever possible, three drug regimen (TPF) should be used as induction chemotherapy in eligible patients. (40)

#### LYMPH NODE DISSECTION IN HEAD & NECK CANCER-

- Vasu Divi et al published in 2016, found the association of adequate vs inadequate lymph node dissection with survival. Adequate lymph node dissection was defined as >=18 LN dissection and vice versa. He concluded that adequate lymph node dissection in clinically node negative or positive patients was associated with significant improvement in overall survival .(41)
- Mark Hamoir et al published in 2014, put an emphasis on the role of lymph node dissection in head and neck cancer patients. Lymph node metastasis is considered to be an important prognostic factor in patients with head and neck cancers. Inadequate lymph node dissection can result in locoregional failure and furthermore hamper the survival. (42)

#### **Prognostic Factors-**

#### 1. Body Mass Index-

- Pastorino et al published in 2022, investigated the role of baseline BMI in predicting overall survival and found that high BMI was statistically significantly associated with better improved outcome while underweight patients were associated with poor outcome in ever smokers. In never smokers, overall BMI status was not associated with HNC specific survival. (45)
- Eric L et al published in 2021, concluded that increased BMI is a protective factor in head and neck cancer patients and results in better outcome while mostly locoregional recurrences do occur in underweight or normal weight patients due to lack of nutrition reserve.(44)

Gama et al published in 2017, resulted that being underweight at the time of diagnosis is considered to be an independent worse prognostic factor for patients with Head & Neck Squamous cell carcinoma. In early adulthood, it was not found to be as a factor affecting outcome. (43)

#### 2. DEPTH OF INVASION(DOI)-

 Pentenero et al published in 2005, done review of literature and found that DOI can be considered as a reliable predictor of outcome and cervical nodal metastasis. (46)

#### 3. SITEWISE SURVIVAL ANALYSIS-

- Eugenie et al published in 2019, conducted a prospective cohort study for finding the impact of various factors as site, stage, HPV status on overall survival and concluded that p16+ oropharyngeal cancer was having better prognosis followed by oral cavity, larynx, p16- oropharyngeal cancer, hypopharynx. Site, stage, smoking, and p16 status are significant prognostic factors. These data provide important prognostic information for HNSCC. (50)
- Yeole et al published in 2000, conducted 5-year survival analysis from head and neck cancer patients in Mumbai and concluded that lip, mouth, larynx and pharynx are subsites with better prognosis than other sites of head and neck cancers. Other factors as age, religion, marital status, stage of the disease are also independent predictors of prognosis. (48)
- Pruegsanusak et al published in 2012, conducted a study in Thailand to find out the survival analysis and prognostic factors of different subsites of head and neck cancer patients. He concluded that stage and treatment type were strong predictors of prognosis. Furthermore larynx and oral cavity were proved to be subsites with favorable prognosis. (47)

#### 4. STAGEWISE SURVIVAL ANALYSIS-

National Cancer institute physician's data query system published in 2003 the 5year overall survival results for different subsites of head and neck cancers and concluded that in all subsites, advanced stage patients are having dismal prognosis as compared to early-stage disease. Furthermore, subsites like hypopharynx, larynx stage IV disease was having worse prognosis as compared to stage IV disease of other subsites. (51)

Ambakumar Nandakumar et al published in 2016, conducted a multi-institutional study to analyze the survival outcomes in head and neck cancer patients. He concluded that early-stage ca tongue patients were having three-year cumulative survival percentage ranging from 62.6% to 91.6% depending on treatment modality they received while for locally advanced ca tongue patients, three-year cumulative survival percentage ranges from 13% to 68.9%. Likewise for other subsites also as oral cavity, hypopharynx, oropharynx and larynx, there was statistically significant difference in patients with early-stage vs locally advanced stage. (49)

#### 6. EFFECT OF SURGICAL MARGIN STATUS ON OUTCOME-

- Harry Michael et al published in 2016, studied the different aspects of surgical margin status and their clinical implications and concluded that margin positivity (R1 resection) was associated with increased risk of locoregional recurrence. He also put an emphasis on the utility of frozen section analysis. How-ever he did not emphasize on the difference between various treatment modalities used for managing margin positive cases. (55)
- Reina Haque et al published in 2006, studied the effect of margin positivity on overall survival in head and neck cancer patients and concluded that margin positivity was associated with poor outcome as compared to margin negativity (54% vs 29% with p value of 0.005). (57)
- Hany Eldeeb et al published in 2012, conducted a single institution study to find the effect of margin status on overall survival as well as recurrence rate and concluded that margin distance between 1-5mm was associated with recurrence rate of 59%, 5-10mm was associated with RR of 50% while margin positivity was associated with RR of 90%. 5-year overall survival rates were 39%,54% and 10% respectively for the groups. (56)

#### 7. EFFECT OF LYMPHOVASCULAR INVASION(LVSI) ON OUTCOME-

- Cassie Fives et al published in 2016, conducted a retrospective analysis of floor of mouth cancer patients to find the association between LVSI and outcome. He concluded that presence of LVSI was an adverse prognostic factor in floor of mouth cancer patients and these patients require further adjuvant radiotherapy. (60)
- Barbara et al published in 2019, conducted systemic review and meta-analysis to find out the association between LVSI and its prognostic significance in adenoid cystic carcinoma patients and found it to be a predictor of increased incidence of lymph nodal metastasis and consequently poor prognosis. (61)

#### 8. EFFECT OF PERINEURAL INVASION (PNI) ON OUTCOME-

- Hughes et al published in 2021, conducted a retrospective study to find the impact of isolated presence of PNI in resected head and neck cancer patients with otherwise no pathological high-risk factor. He concluded that post operative radiotherapy remains the standard of care in resected head and neck cancer patients with isolated PNI to reduce the risk of locoregional recurrence. (64)
- Richard L Bakst et al published in 2019 concluded that PNI is an important pathologic finding associated with poor clinical outcomes and morbidity. Appropriately targeted radiation therapy can improve local control and reduce the risk of unresectable failures in cases of PNI/PNTS (perineural tumor spread). (63)
- Schmitd et al published in 2018 found the mechanism of perineural spread in head and neck cancer patients and associated proteins involved in the mechanism. PNI presence was associated with poor overall and disease specific survival. Presence of PNI was associated with increased incidence of lymph nodal metastasis. (66)

#### 9. Effect of Extra-nodal Extension (ENE) on outcome-

G. Tirelli et al published in 2021, investigated the role of stratification of extra-nodal extension (ENE) on the basis of extension of tumor outside the lymph-node capsule. He stratified into ENEmi (<2mm) and ENEma(>2mm) and found the association with outcome and found that ENEmi was associated with better outcome in terms of 3-year overall survival, DFS, disease specific survival as compared to ENEma. (70)

- Fumihiko Matsumoto et al published in 2017, investigated the prognostic significance of surgical extra-nodal extension in different subsites of head and neck cancer. He found that Surgical ENE was important prognostic factor in head and neck cancer patients. He found that 3-year DFS in pN0, ENE negative, non-surgical extranodal extension and surgical extra-nodal extension was 90.9%, 79.6%, 63.8% and 48.3%, respectively. Further-more he concluded that surgical ENE was more clinically significant in patients with laryngeal/hypopharyngeal cancer as compared to oral cancer. (69)
- ➤ Minsu Kwon et al published in 2015, found the prognostic significance of ENE and thickness of metastatic lymph-node as a marker for recurrence and survival in head and neck cancer patients. He concluded that ENE-positive patients had a higher risk of recurrence and a lower overall survival rate; however, multivariate analysis failed to identify a significant difference in disease specific survival (DSS) between those with and those without ENE. On the contrary, ENET ≥ 2 mm was significantly associated with a poor DSS, even in multivariate analysis. (68)

#### 10. EFFECT OF CONCURRENT CHEMOTHERAPY ON OUTCOME-

- EORTC 22931 trial published in 1999, randomized the surgically resectable head and neck cancer patients with high risk features into post op either Radiotherapy alone or concurrent radiotherapy and concluded that 5-year overall survival (53% vs 40%) and locoregional control rate(82% vs 69%) favored combined modality treatment with a significant p-value. (76)
- Ryan J Burri et al published in 2009, investigated the role of concurrent chemotherapy in locally advanced head and neck cancer and concluded that addition of concurrent chemotherapy added an absolute difference of 6.5% in overall survival in locally advanced head and neck cancers as compared to radiotherapy alone. Cisplatin was approved to be a good agent as monotherapy agent. (72)
- Brockstein et al published in 2004, concluded that concurrent chemoradiotherapy is superior to radiotherapy alone for unresectable head and neck tumors and equivalent or sometimes superior to surgery plus radiotherapy in resectable tumors also. CTRT was associated with more acute toxicities as compared to RT alone while long term data on toxicities is debatable. (71)

- Iqbal et al published in 2017, analyzed the effect of weekly concurrent cisplatin (40mg/m<sup>2</sup>) in patients who received definitive chemoradiation and concluded that weekly cisplatin is an acceptable alternative to 3 weekly cisplatin (100mg/m<sup>2</sup>) without compromising outcome and acceptable toxicity profile. (73)
- Xiang et al published in 2019, investigated the value of carboplatin as a radiosensitizer in patients with locally advanced head and neck cancer patients. He concluded that definitive chemoradiation with carboplatin was equivalent to cisplatinbased therapy and superior to RT alone or RT with cetuximab. (75)
- RTOG 1016 trial published in 2019, emphasized on the role of concurrent cisplatin vs cetuximab in HPV positive oropharyngeal tumors and found that Radiotherapy with cetuximab was inferior to cisplatin in terms of 5-year Overall survival (77.9% vs 84.6%) and progression free survival (67.3% vs 78.4%). Further concluded cisplatin as standard of care in eligible patients with HPV positive oropharyngeal cancers. (79)
- De-ESCALate, a phase 3 Randomized trial published in 2019, concluded that in patients with low risk HPV positive oropharyngeal cancers, concurrent cetuximab was associated with poor tumor control as compared to cisplatin and was not associated with any benefit in toxicity profile. (80)

# **MATERIALS & METHODS**

#### Materials and Methods-

<u>Study Setting</u>- The study will be conducted in the Department of Radiation Oncology, AIIMS Jodhpur

**<u>Study design</u>**: Single-arm retrospective study

**Study participants:** All patients of biopsy-proven head and neck cancers who received radiation therapy in the Department of Radiation Oncology, AIIMS Jodhpur from the year 2018 to 2020.

**Study Period**: 2 years

#### **Eligibility Criteria-**

#### Inclusion criteria-

1. All head and neck cancer patients treated with radiotherapy in the Department of Radiation Oncology, AIIMS, Jodhpur.

#### **Exclusion Criteria-**

- 1. Patients with thyroid malignancy.
- 2. Patients with incomplete/wrong contact details.
- 3. Patients with grossly incomplete records.
- 4. Patients with a second primary cancer other than in the head and neck.

#### Sample size-

All patients of biopsy-proven head and neck cancers who received radiation therapy in the Department of Radiation Oncology AIIMS Jodhpur from the year 2018 to 2020. The records were accessed from the registration records of CPMS and records in the Department of Radiation Oncology.

#### Study Procedure-

#### **Creation of Database**:

A database was created using software such as Microsoft Excel Spreadsheet and Google Sheets. The study database was used for the entry of data obtained from various sources such as the Computerized Patient Management System (CPMS) of the Institute and records of the Department of Radiation Oncology and Pathology.

#### Entry of Data:

Data was captured as per the study form attached to the Database. Data will be collected using: Manual search and entry from CPMS and Records from Radiation Oncology and Pathology, Automated Entry using software and scripts with/ without AI (Python /Julia and various other modules)

All the records of patients with head and neck cancer who have been treated with a radical/adjuvant intent using radiotherapy in AIIMS, Jodhpur was compiled. After fitting the available records to inclusion and exclusion criteria, screening of all records was made for the complete availability of treatment details and contact details. Various variables were collected related to the patient profile (age, sex, education, occupation, socioeconomic status, religion, geographic residence, symptoms at presentation, duration of symptoms, addiction history, comorbidities, performance status, history of head and neck radiotherapy, etc.), disease status (T stage, N stage, AJCC 8<sup>th</sup> edition prognostic stage group, histology, gross tumor, and nodal volume, level of nodal involvement, presence of extra-nodal extension, presence of necrosis within the gross tumor or nodes etc.), and treatment factors (receipt of surgery, adequacy of surgery, nodal dissection, technique of radiotherapy, dose received by 95% of the planning target volume, receipt of chemotherapy and agent used, cumulative dose of chemotherapy, significant gaps in radiation treatment etc.).

The response to treatment was based on either Clinical Examination (CR, PR, SD, PD) based on WHO criteria or if the imaging of the patients after at least three months of completion of definitive treatment is available, same were considered while assessing the response to treatment. The response assessment was done according to the RECIST criteria. The present status of the patient was enquired from the contact details available through whichever means feasible. Telemedicine was used wherever necessary to examine the patient if the patient was unable to visit the hospital. If the disease relapses or progresses after treatment, the date of biopsy if available or imaging if a biopsy is not available, was regarded as the date of progression. In patients who relapse/progress, the type of relapse, time to relapse/progression and the treatment offered was also recorded. If the patient was not contactable, the last documented visit in CPMS was taken as the last follow-up and will be censored in the further time points.

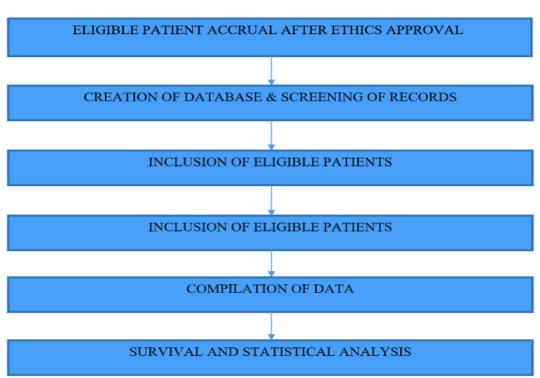
Based on this data, various outcome variables were studied like overall survival (OS), disease-free survival (DFS), and progression-free survival (PFS).

1. **Overall survival-** Defined as the time from diagnosis to death from any cause.

2. **Disease-free survival-** The period after successful treatment during which there are no signs and symptoms of the disease that was treated.

3. **Progression-free survival-** The period during and after the treatment of the

disease for which the patient lives with the disease but doesn't progress.



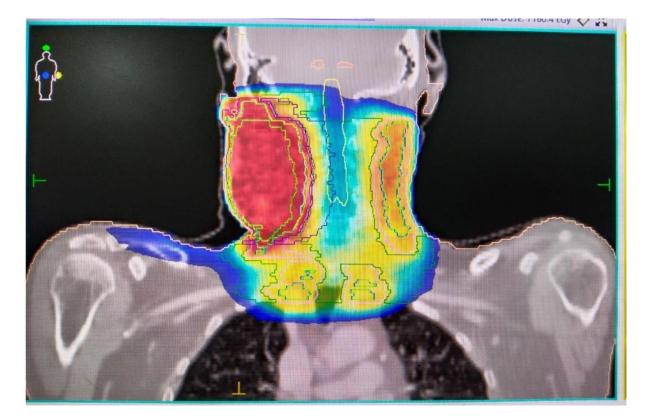
METHODOLOGY

**Details about Radiation Therapy-** The patients with Head and neck cancers of different subsites received Radiation Therapy in the Department of Radiation Oncology, AIIMS Jodhpur by LINAC (VERSA HD/ELEKTA) using 6MV photon and most of the dose

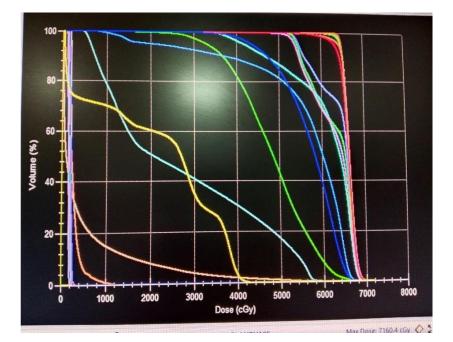
prescriptions were 60Gy/30#/6weeks, 66Gy/33#/6weeks, 70Gy/35#/7weeks via IMRT/VMAT Technique.







Structure	Volume (cm 3)	Min. Dase (cGy)	Max. Dose (cGy)	Mean Dose (cGy)	Cold Ref. (cGy)	Volume < (cm <sup>3</sup> )	Volume	< (%)	Hot Ref. (cGy)	Volume > (cm <sup>3</sup> )	Volume > (%)	% in Volume	le in SS	Heterogeneity Index	C-1-1-1
BRAIN STEM		90.5	1245.5	261.9	THE OWNER		EED CAREER	-				100.00		1	Conformity Index
CTV 54	625.651	1816.3	7160.4	6395.7								100.00		4.77	and the second sec
CTV 66	388.968	1815.3	7160.4	6641.9					1 22 22			100.00		1.24	and the second second
CTVN+	263.912	3295.7	7160.4	6643.3						1992 - 1942 - 1994 - 19 1995 - 1995 - 1994 - 19		100.00	A	1.05	and the second second
CTV NODE	413.515	4830.9	7160.4	6297.3	100							100.00		1.05	and the second sec
CTVP	148.102	6144.0	7129.6	6634.5								100.00		1.04	and the second second
Carbon Fiber	5756.016	0.0	0.0	0.0	19611 30							99.60		1.07	
EYELT	7.250	99.1	328.8	174.2								100.00	and the second second	2.12	
EYERT	7.649	93.7	358.8	165.6								100.00	1.00	2.19	Contraction of the life
Foam Core	4330.659	0.0	0.0	0.0								99.56		2.13	
GTV	5.866	6327.2	6906.0	6623.2								100.00	1.111.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	1.04	
GTV-N	135.991	4436.0	7160.4	6634.9								100.00		1.06	
LENS LT	0.200	134.2	234.4	167.2								100.00		1.54	COLOR SUCCESS
LENS RT	0.222	112.9	202.1	152.3					100 100	E		100.00		1.4	Concernent of the States States
VANOIBLE	85.613	732.3	6926.3	5551.0						100		100.00	1 Contraction	3.15	1 1 1 1 1 1 2 1 3 5 1 3
Vetal	259.273	0.0	0.0	0.0								100.00			
OPTIC CHIASM	1.342	171.9	258.7	211.5								100.00		1.3	1
OPTICNLT	1.048	153.5	260.1	199.9					1 No. 7 1	100 200		100.00		14	
OPTIC NRT	0.947	157.1	285.6	210.2							ME BUSS	100.00		1.4	9
AROTID LT	33.059	439.1	5954.9	2683.8							THE STELL	100.00		8.9	5
PAROTED RT	30.270	3122.5	7020.7	6075.9	THE OF	10.7 11						100.00	ves	1.6	0
TV 54	977.999	3435.0	7160.4	6254.7		1000	Li Pari					100.00	ves	1.2	5
TV 66	\$23.456	4171.6	7160.4	6601.1								100.00	yes	1.0	7
PINAL CORD	42.957	27.6	4426.0	2148.6						Aller Aller		100.00	yes	85.9	8
iody(Unsp.Tiss.)	17772.736	3.2	6729.8	508.0								99.56	no	150.4	7
pare	832.167	1014.0	6941.6	4800.0								100.00	) yes	1.8	4
pare2	355.334	2640.4	6899.7	5681.6			State of the		New Contest			100.00	) yes	1.4	8
A REAL PROPERTY AND A REAL	100 100 100 100 100	THE OWNER	The second second				-	121		The second			,		



· ·····	
	Structure
	body
	BRAIN STEM
	Carbon Fiber
	CTV 54
	CTV 66
	CTV NODE
	CTVP
	EY'E LT
	EYERT
	Foam Core
	GTV
	GTV-N
	LENS LT
	LENS RT
	MANDIBLE
	Metal
	OPTIC CHIASM
	OPTIC N LT
	OPTION HI
	PAROTID LT
	PAROTID RT
	PTV 54
	A LANSAR FOR THE A DECISION OF THE PARTY OF
	spare
	CONAL CORD
	SPINAL CORD

## **Response Evaluation-**

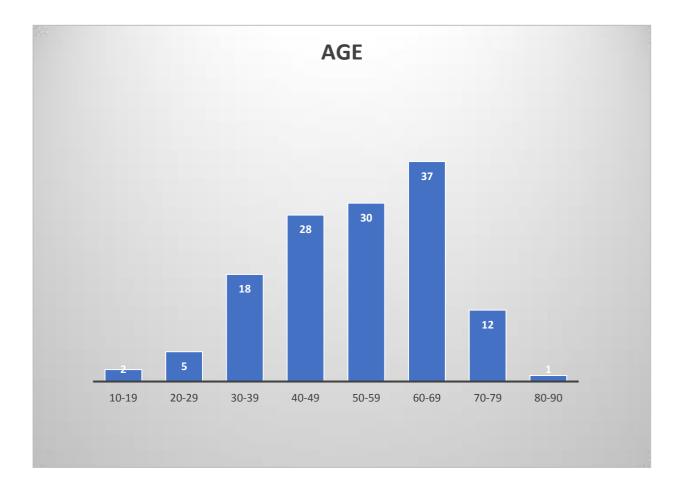
Response evaluation was done on the basis of WHO clinical criteria of Complete Response (CR), Partial Response (PR), Stable Disease (SD) and Progressive Disease (PD). Wherever response assessment scans were available, iRECIST Criteria 1.1. was used.

## Statistical Analysis-

All the qualitative data was expressed as frequencies and quantitative data will be expressed as mean, median with range. Survival outcomes of OS, DFS, PFS were depicted using Kaplan-Meier Curve. The prognostic factors associated with the disease were assessed using univariate and the significantly associated factors in the univariate analysis were tested using multivariate analysis. A p-value of less than equal to 0.05 was taken as statistically significant.

# **RESULTS**

# 1. Age-wise Distribution-

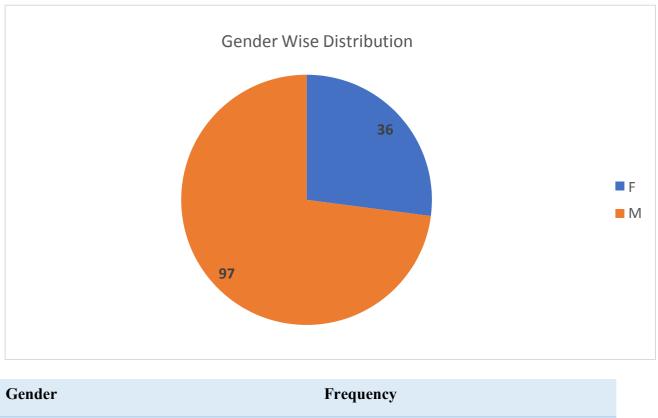


Age Groups	Frequency
10-19	2
20-29	5
30-39	18
40-49	28
50-59	30
60-69	37
70-79	12
80-90	1
Grand Total	133

Variable AGE	
Sample size	133
Lowest value	14.0000
Highest value	83.0000
Arithmetic mean	52.4737
95% CI for the Arithmetic	mean 50.0720 to 54.8753
Median	55.0000
95% CI for the median	50.7184 to 58.0000
Variance	196.0542
Standard deviation	14.0019

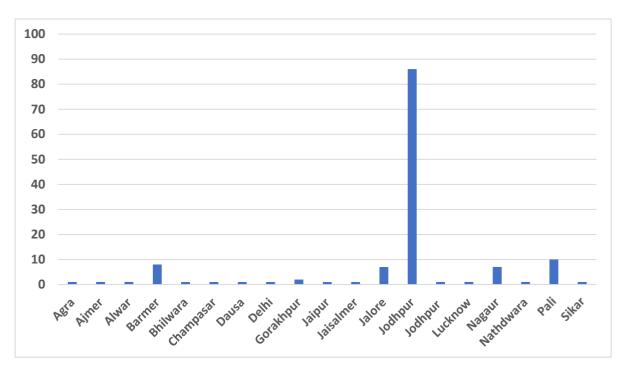
Analysis was done of 133 patients with age ranging from 14 to 83 years, with a mean of 52 years (95% C.I. ranging from 50.07 to 54.87 years), median of 55 years (95% C.I. ranging from 50.71 to 58 years).

# 2. Gender-wise Distribution-



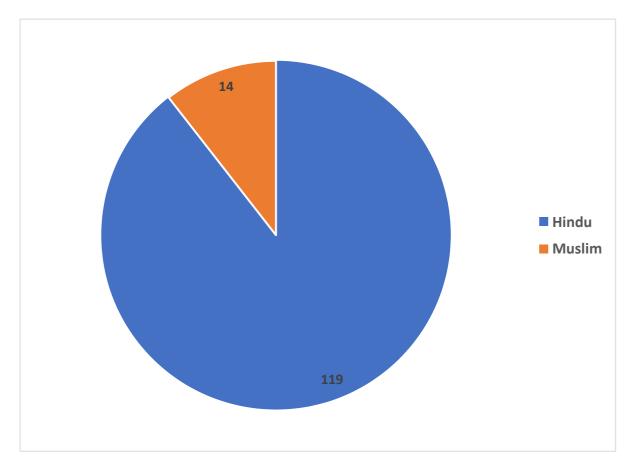
Gender	Frequency		
F	36		
М	97		
Grand Total	133		
> Out of 133 patients, 36 $j(27\%)$ were female and 97 (73%) were male.			

# 3. District Wise Distribution-



District	Frequency
Agra	1
Ajmer	1
Alwar	1
Barmer	8
Bhilwara	1
Champasar	1
Dausa	1
Delhi	1
Gorakhpur	2
Jaipur	1
Jaisalmer	1
Jalore	7
Jodhpur	86
Jodhpur	1
Lucknow	1
Nagaur	7
Nathdwara	1
Pali	10
Sikar	1
Grand Total	133

Out of 133 patients, 120 (90%) were from Western Rajasthan, 6 (7%) from Eastern Rajasthan, 3(2.5j%) from Uttar Pradesh, 1(1%) from New Delhi.

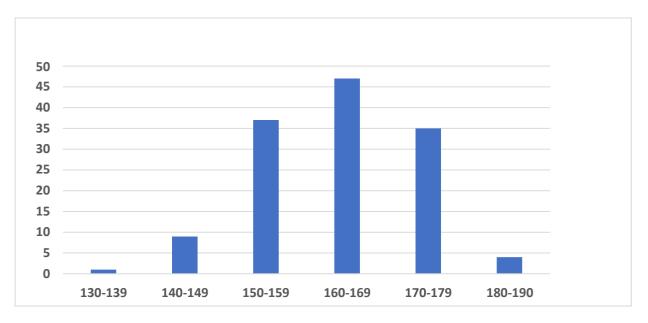


# 4. Religion Wise Distribution-

Religion	Frequency
Hindu	119
Muslim	14
Grand Total	133

➤ Out of 133 patients, 119(90%) were Hindu and 14 (10%) were Muslim.

# 5. Height Wise Distribution-

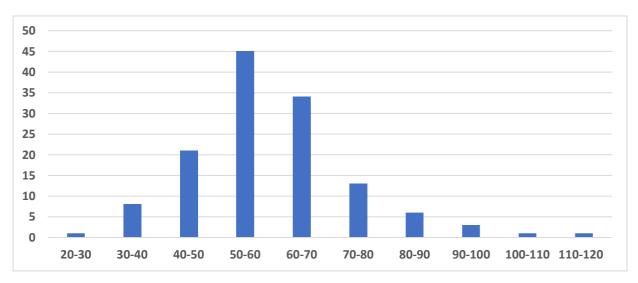


Height Groups (cm)	Frequency
130-139	1
140-149	9
150-159	37
160-169	47
170-179	35
180-190	4
Grand Total	133

Sample size	133
Lowest value	<u>135.0000</u>
Highest value	<u>190.0000</u>
Arithmetic mean	163.5414
95% CI for the Arithmetic mean	161.9707 to 165.1120
Median	164.0000
95% CI for the median	162.0000 to 167.0000
Variance	83.8562
Standard deviation	9.1573

Out of 133 patients, Height ranging from 135 to 190 with a mean of 163cm (95% C.I. ranging from 162 to 165cm) and median of 164cm (95% C.I. ranging from 162 to 167cm).

# 6. Weight Wise Distribution-

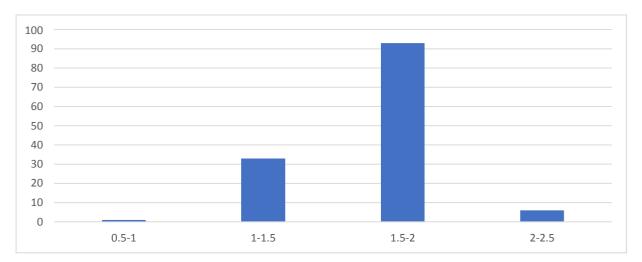


Weight Groups (kg)	Frequency
20-30	1
30-40	8
40-50	21
50-60	45
60-70	34
70-80	13
80-90	6
90-100	3
100-110	1
110-120	1
Grand Total	133

Sample size	133
Lowest value	24.8000
Highest value	<u>115.0000</u>
Arithmetic mean	59.7015
95% CI for the Arithmetic mean	57.1928 to 62.2103
Median	58.6000
95% CI for the median	55.5437 to 60.5563
Variance	213.9298
Standard deviation	14.6263

Out of 133 patients, weight ranging from 24.8 kg to 115kg with a mean of 59.7 kg (95% C.I ranging from 57.19 to 62.21kg) and median of 58.6 kg (95% C.I. ranging from 55.54 to 60.55kg).

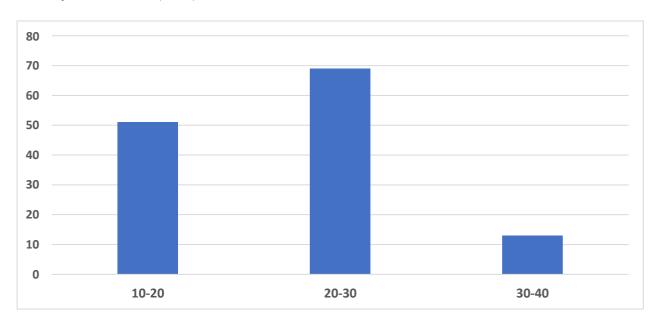
# 7. Body Surface Area (BSA) wise distribution-



BSA wise groups	Frequency
0.5-1	1
1-1.5	33
1.5-2	93
2-2.5	6
Grand Total	133

Sample size	133
Lowest value	0.9600
Highest value	2.4600
Arithmetic mean	1.6357
95% CI for the Arithmetic mean	1.5976 to 1.6738
Median	1.6200
95% CI for the median	1.5972 to 1.6600
Variance	0.04935
Standard deviation	0.2221

Out of 133 patients, BSA ranging from 0.96 m<sup>2</sup> to 2.46 m<sup>2</sup> with a mean of 1.63 m<sup>2</sup> (95% C.I. ranging from 1.59 to 1.67 m<sup>2</sup>) and median of 1.62 m<sup>2</sup> (95% C.I. ranging from 1.59 to 1.66 m<sup>2</sup>).



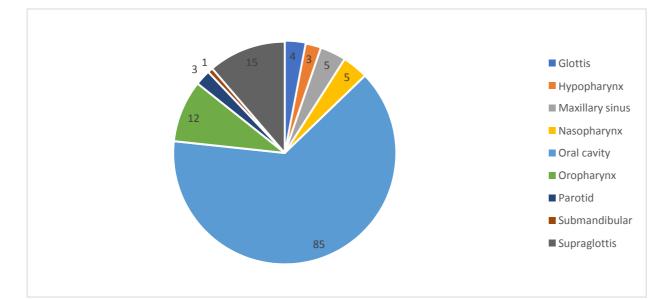
#### 8. Body Mass Index (BMI) wise distribution-

BMI groups	Frequency
10-20	51
20-30	69
30-40	13
Grand Total	133

Sample size	133
Lowest value	<u>13.6200</u>
Highest value	<u>37.7000</u>
Arithmetic mean	22.2982
95% CI for the Arithmetic mean	21.4424 to 23.1540
Median	21.7100
95% CI for the median	20.3544 to 22.3184
Variance	24.8949
Standard deviation	4.9895

Out of 133 patients, BMI ranging from 13.62 to 37.7 kg/m<sup>2</sup> with a mean of 22.29 kg/m<sup>2</sup> (95% C.I. ranging from 21.44 to 23.15 kg/m<sup>2</sup>) and median of 21.71 kg/m<sup>2</sup> (95% C.I. ranging from 20.35 to 22.31 kg/m<sup>2</sup>).

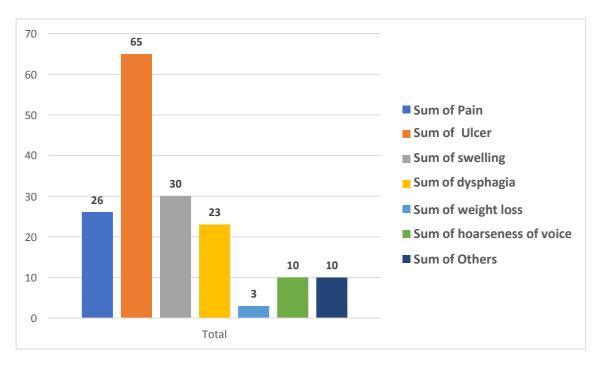
# 9. Site Wise Distribution-



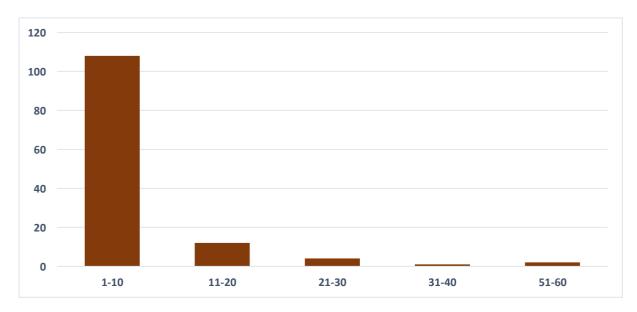
Subsites	Frequency
Glottis	4
Hypopharynx	3
Maxillary sinus	5
Nasopharynx	5
Oral cavity	85
Oropharynx	12
Parotid	3
Submandibular	1
Supra-glottis	15
Grand Total	133

Out of 133 patients, involved sites were 85(63%) were oral cavity, 15(11%) were Supra-glottis ,12 (8%) Oropharynx, 5(3%) Maxillary sinus and Nasopharynx each, 4(3%) Glottis, 3 (2%) Hypopharynx and Parotid gland each, 1(1%) submandibular gland.

#### 10. Initial Presenting symptoms-



Out of 133 patients, data of initial presenting symptoms was available for 127 patients. Out of 127 patients, 65 (51%) patients presented with ulcer, 26(20%) presented with pain, 30(23%) presented with swelling and mass, 23(18%) presented with dysphagia, 3 (2%) presented with weight loss, 10(8%) presented with hoarseness of voice and 10 (8%) presented with other symptoms as nasal discharge, regurgitation of food and dryness of mouth.

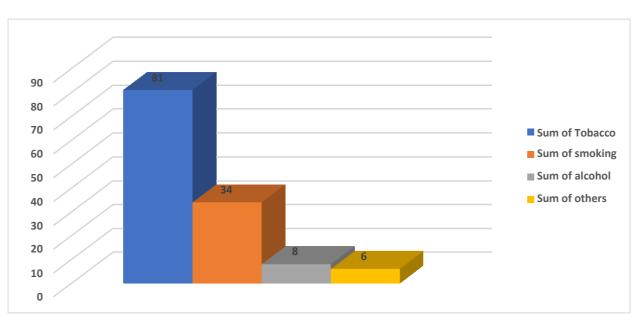


#### 11. Duration of initial symptoms-

Duration of months	Frequency
1-10	108
11-20	12
21-30	4
31-40	1
51-60	2
Grand Total	127

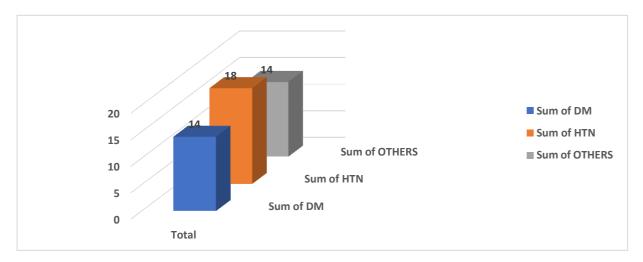
Sample size	127
Lowest value	<u>1.0000</u>
Highest value	<u>60.0000</u>
Arithmetic mean	6.0472
95% CI for the Arithmetic mean	4.5098 to 7.5847
Median	4.0000
95% CI for the median	3.0000 to 4.0000
Variance	76.6485
Standard deviation	8.7549

Out of 133 patients, duration of initial symptoms was available for 127 patients. Out of 127 patients, presented with duration of initial symptoms ranging from 1 to 60 months with a mean of 6.04 months (95% C.I. ranging from 4.50 to 7.58 months) and median of 4 months (95% C.I. ranging from 3 to 4 months).



## 12. Addictions -

Out of 133 patients, addiction history was available for 127 patients out of which 81 (64%) presented with history of oral tobacco addiction, 34(27%) presented with smoking addiction, 8 (6%) presented with alcohol addiction and 6 (5%) presented with other addiction as pan, betel nuts and opium addiction.

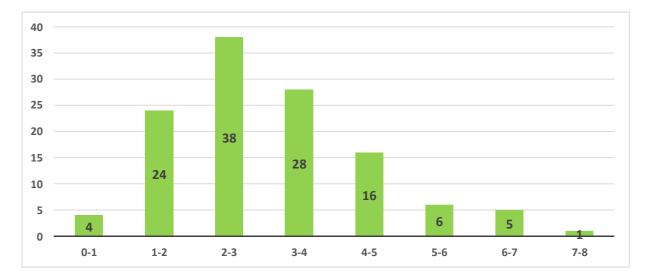


# 13. Co-morbidities-

Out of 133 patients, data of co-morbidities was available for 131 patients out of which 14 (11%) were diabetic, 18(14%) were hypertensive and 14(11%) were having other co-morbidities as Chronic Kidney disease (CKD), hypothyroidism, cardiac disease etc.

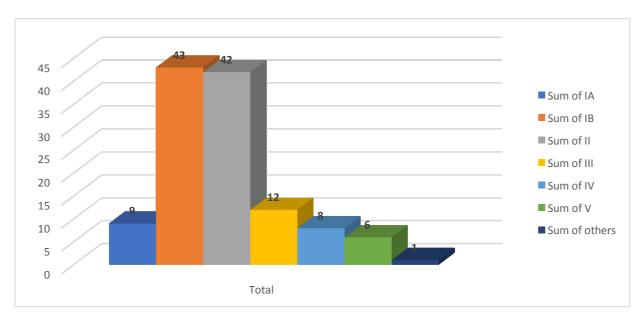
Largest dimension of primary	Frequency
0-1	4
1-2	24
2-3	38
3-4	28
4-5	16
5-6	6
6-7	5
7-8	1
Grand Total	122

#### 14. Largest dimension of primary site at presentation on imaging-

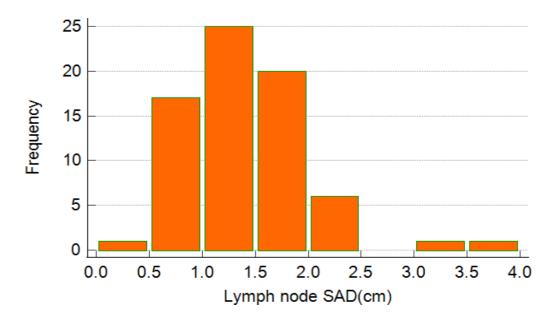


Sample size	122
Lowest value	<u>0.1400</u>
Highest value	<u>7.3000</u>
Arithmetic mean	2.9645
95% CI for the Arithmetic mean	2.7176 to 3.2114
Median	2.8000
95% CI for the median	2.4000 to 3.1000
Variance	1.8979
Standard deviation	1.3776

Out of 133 patients, data of largest dimension of primary site was available for 122 patients. Largest dimension of primary on imaging was ranging from 0.14 to 7.3 cm with a mean value of 2.96cm (95% C.I. ranging from 2.71 to 3.21cm) and median value of 2.8cm (95% C.I. ranging from 2.4 to 3.1 cm).

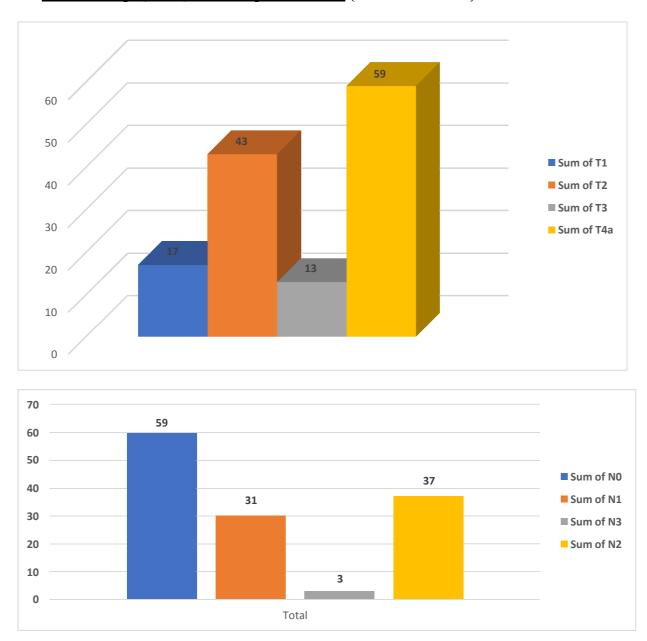


## 15. Status of Lymph nodes at baseline imaging-



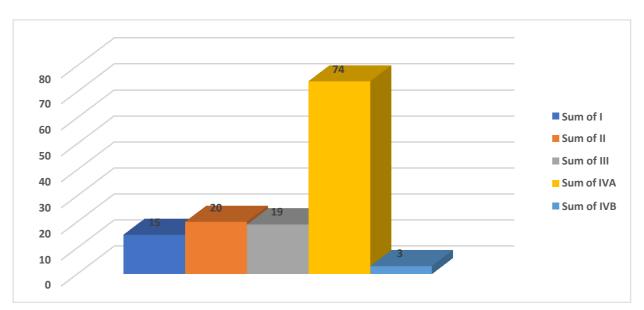
Sample size	71
Lowest value	0.4000
Highest value	<u>3.8000</u>
Arithmetic mean	1.3392
95% CI for the Arithmetic mean	1.2005 to 1.4778
Median	1.2200
95% CI for the median	1.1000 to 1.5000
Variance	0.3433
Standard deviation	0.5859

- Out of 133 patients, data of initial lymph node status on imaging was available for 125 patients out of which 68(54%) presented with lymphadenopathy. Out of 68 patients, 9(13%) presented with level IA enlargement, 43 (63%) presented with level IB enlargement ,42(62%) presented with level II enlargement, 12(18%) presented with level III enlargement, 12(18%) presented with level IV enlargement, 6(9%) presented with level V enlargement, 1 (1%) presented with other as paratracheal/paraoesophageal lymph node enlargement.
- Short axis diameter (SAD) ranging from 0.4 to 3.8cm with a mean value of 1.33cm (95% C.I. ranging from 1.25 to 1.47cm) and median value of 1.22cm (95% C.I. ranging from 1.1. to 1.5 cm).



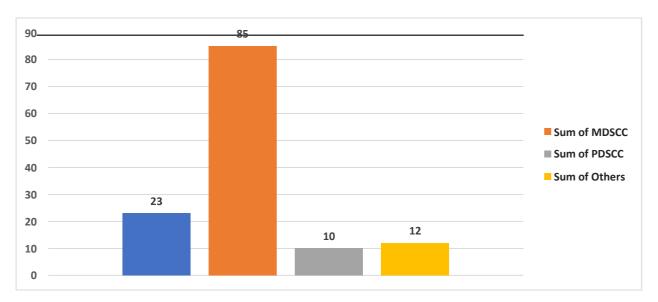
16. <u>Clinical Stage (TNM) at initial presentation-</u> (AJCC 8<sup>th</sup> edition)

- Out of 133 patients, data of initial TNM staging was available for 131 patients. All were non-metastatic (M0), out of which 17 (13%) presented with T1 stage, 43(33%) presented with T2 stage, 13(10%) presented with T3 stage and majority of patients (45%) presented with T4a stage.
- In nodal staging, 59 (45%) presented with N0 stage, 31 (24%) presented with N1 stage, 3 (2%) presented with N2 stage and 37(28%) presented with N3 stage.



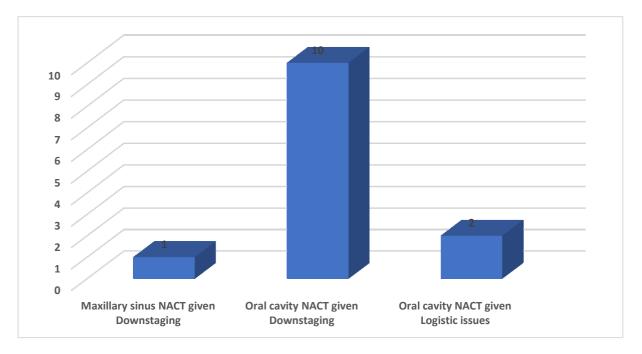
17. Prognostic group at presentation- (AJCC 8<sup>th</sup> edition)-

Out of 133 patients, data regarding initial stage at presentation was available for 131 patients. Out of these patients, 15 (11%) presented with Stage I, 20 (15%) presented with stage II, 19 (14%) presented with stage III, 74 (56%) presented with stage IVA, 3 (2%) presented with stage IVB.

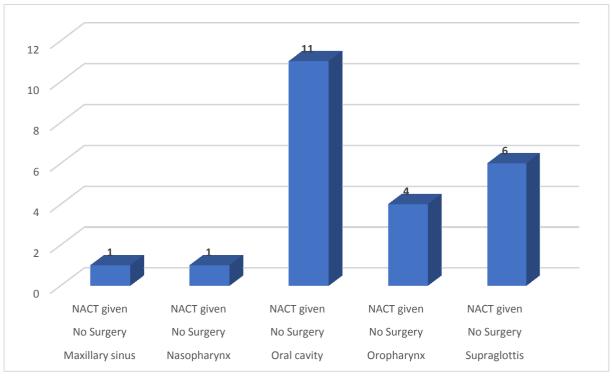


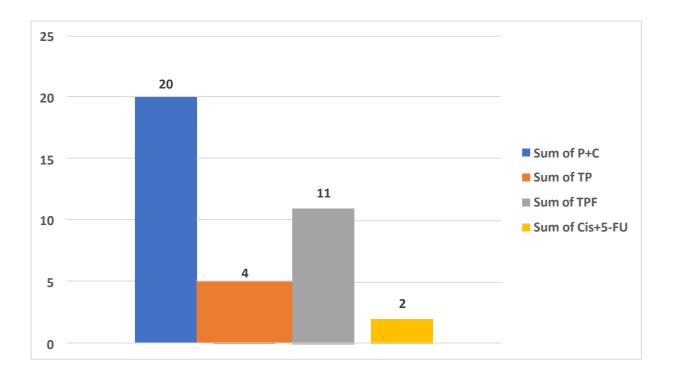
#### 18. Pre-treatment tumor histology at presentation-

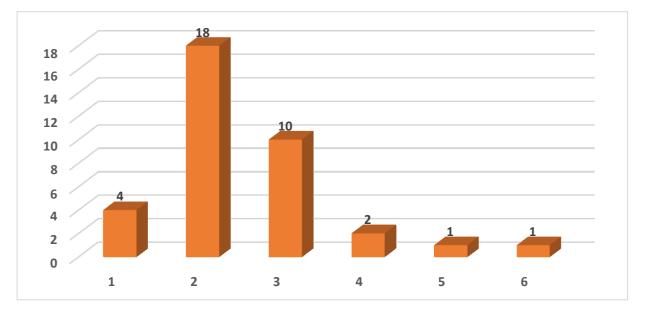
Out of 133 patients, data of pre-treatment histology was available for 130 patients out of which 23(18%) presented with Well Differentiated Squamous cell carcinoma (WDSCC), 85(65%) presented with Moderately differentiated Squamous cell carcinoma (MDSCC), 10(7%) presented with poorly differentiated squamous cell carcinoma(PDSCC) and 12(9%) presented with other tumor histology as 2 with adenoid cystic carcinoma, 1 with porokeratosis, 1 with paraganglioma, 1 with spindle cell variant of SCC, 1 with basaloid variant of SCC, 1 with malignant melanoma, 1 with high grade dysplasia, 2 with myoepithelial carcinoma and 1 with pleomorphic adenoma.



#### 19. History of Neoadjuvant chemo & Regimens-





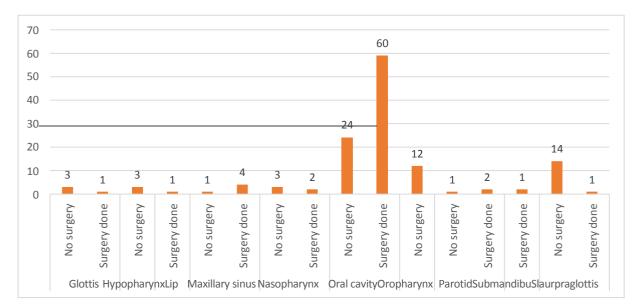


- Out of 133 patients, data of neoadjuvant chemotherapy was available for 129 patients out of which 36(28%) patients received neoadjuvant chemotherapy. Out of which 20 (55%) received neoadjuvant chemotherapy with Paclitaxel + Carboplatin, 11 (31%) received triplet regimen with Cisplatin+Docetaxel+5-FU (TPF), 4(11%) received doublet regimen with Cisplatin + Docetaxel (TP) and 2 (5%) received Cisplatin + 5-FU.
- Out of 36 patients who received neoadjuvant chemotherapy, number of cycles was different. 4 patients (11%) received 1 cycle of NACT, 18 (50%) patients received 2

cycles of NACT, 10(28%) received 3 cycles of NACT, 2 (5%) patients received 4 cycles, 1(3%) patient received 5 cycles and 7 cycles each.

In surgically resectable Oral cavity tumors, 12 patients received neo-adjuvant chemotherapy out of which 10(83%) patients received for downstaging while 2 (17%) received due to logistic issues.

# 20. DETAILS ABOUT SURGICAL INTERVENTION-



#### 20.1 Surgical Intervention Done or Not-

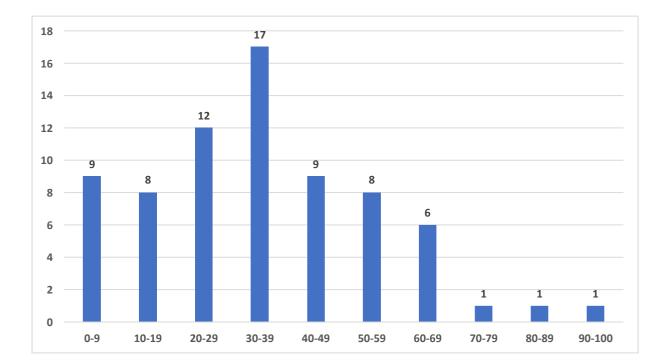
Subsites	Frequency of Surgical intervention
Glottis	4
No surgery	3
Surgery done	1
Hypopharynx	3
No surgery	3
Lip	1
Surgery done	1
Maxillary sinus	5
No surgery	1
Surgery done	4
Nasopharynx	5
No surgery	3

Surgery done	2
Oral cavity	84
No surgery	24
Surgery done	60
Oropharynx	12
No surgery	12
Parotid	3
No surgery	1
Surgery done	2
Submandibular	1
Surgery done	1
Supra-glottis	15
No surgery	14
Surgery done	1

- Out of 133 patients, 72 (54%) underwent surgical intervention while 61 (46%) were treated with definitive Radiotherapy without surgical intervention.
- Out of 83 oral cavity tumors, 59(71%) underwent surgical intervention while remaining 24 (29%) underwent definitive radiotherapy or concurrent chemoradiotherapy.

# 20.2 NUMBERS OF LYMPH NODE DISSECTED-

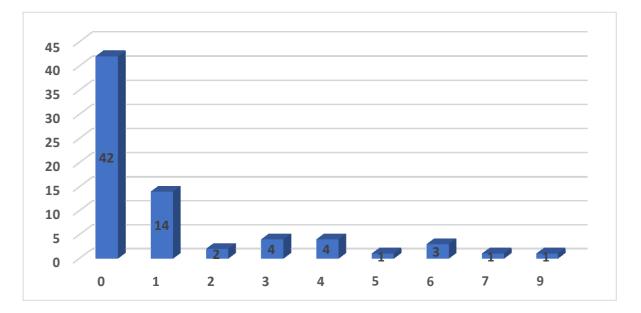
Frequency
9
8
12
17
9
8
6
1
1
1
72



Sample size	72		
Lowest value	<u>0.0000</u>		
Highest value	<u>92.0000</u> 34.5694 29.6685 to 39.4704 33.5000		
Arithmetic mean			
95% CI for the Arithmetic mean			
Median			
95% CI for the median	28.2120 to 37.7880		
Variance	434.9810		
Standard deviation	20.8562		

Out of 133 patients, 72 underwent surgical intervention. Number of lymph node dissected ranges from 0 to 92 with a mean value of 34 (95% C.I ranging from 29 to 39 LNs) and median value of 33 (95% C.I. ranging from 28 to 37).

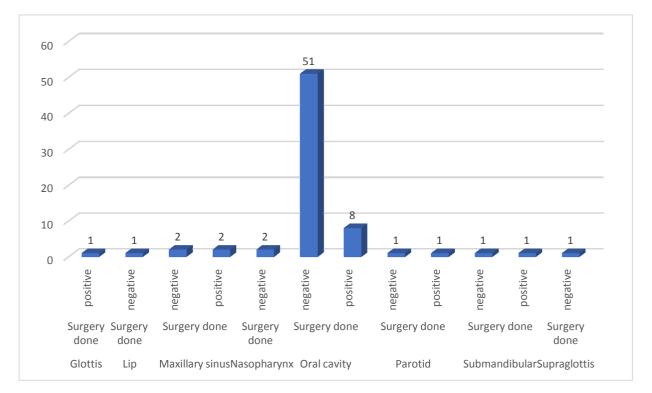
# 20.3 Lymph Node positivity-

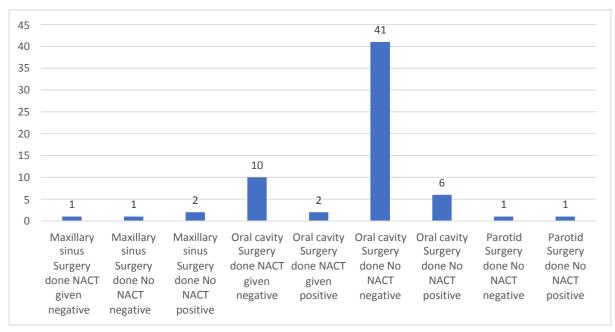


Sample size	72		
Lowest value	0.0000		
Highest value	<u>9.0000</u>		
Arithmetic mean	1.1806		
95% CI for the Arithmetic mean	0.7100 to 1.6511		
Median	0.0000		
95% CI for the median	0.0000 to 1.0000		
Variance	4.0092		
Standard deviation	2.0023		

Out of 133 patients, 72 underwent surgical intervention. Number of histopathological positive lymph node ranges from 0 to 9 with a mean value of 1.18 (95 C.I. ranging from 0.71 to 1.65).

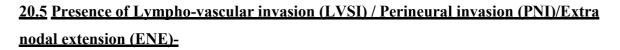
# 20.4 Margin Positivity-

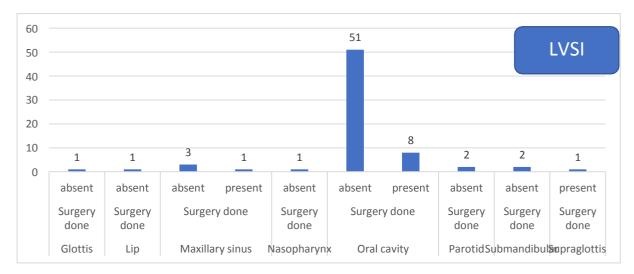


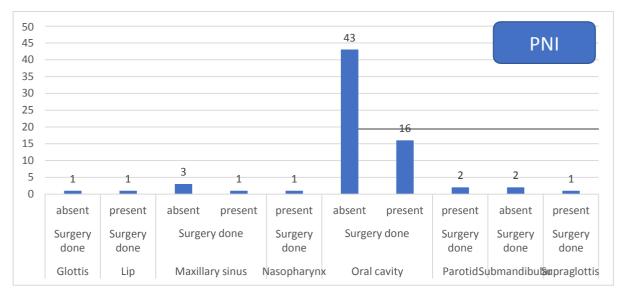


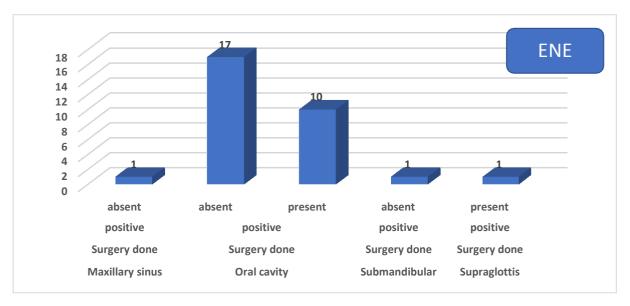
Subsites	<b>Count of MARGIN STATUS</b>
Maxillary sinus	4
Surgery done	4
NACT given	1
negative	1
No NACT	3
negative	1
positive	2
Oral cavity	59
Surgery done	59
NACT given	12
negative	10
positive	2
No NACT	47
negative	41
positive	6
Parotid	2
Surgery done	2
No NACT	2
negative	1
positive	1
Grand Total	65

- Out of 133 patients, 72 underwent surgical intervention. Out of 72 patients, 13 (18%) were margin positive while 59 (82%) were margin negative.
- ✤ Maximum margin positivity rate was in oral cavity tumors (13.5%).

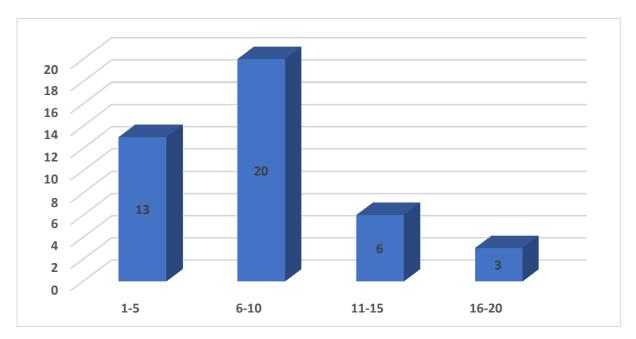








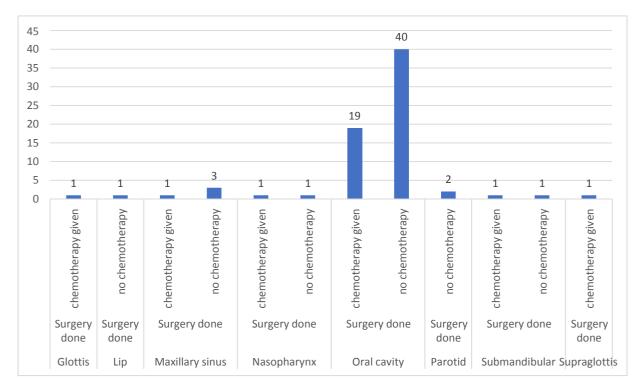
- Out of 133 patients, 72 underwent surgical intervention. Out of which LVSI details were available for 71 patients. 61 (86%) were LVSI negative while 10 (14%) were LVSI positive.
- PNI details were available for 70 patients, out of which 49 (70%) were PNI negative while 21 (30%) were PNI positive.
- ENE details were available for 68 patients out of which 11 (16%) were ENE positive and 57 (84%) were ENE negative.



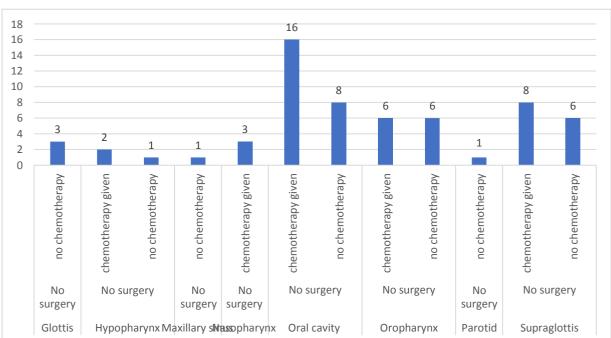
# 20.6 Depth of invasion (DOI) in mm-

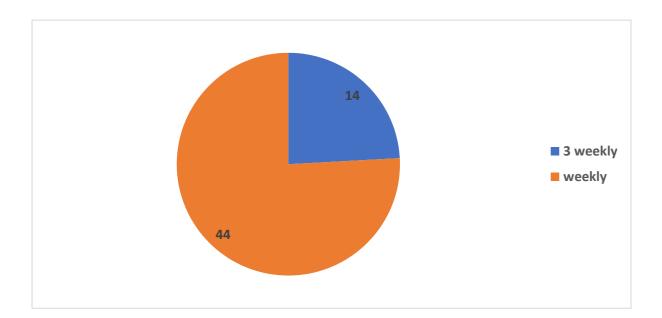
Sample size	42		
Lowest value	<u>4.0000</u>		
Highest value	<u>20.0000</u>		
Arithmetic mean	8.5952 7.3038 to 9.8866		
95% CI for the Arithmetic mean			
Median	8.0000		
95% CI for the median	7.0000 to 10.0000		
Variance	17.1736		
Standard deviation	4.1441		

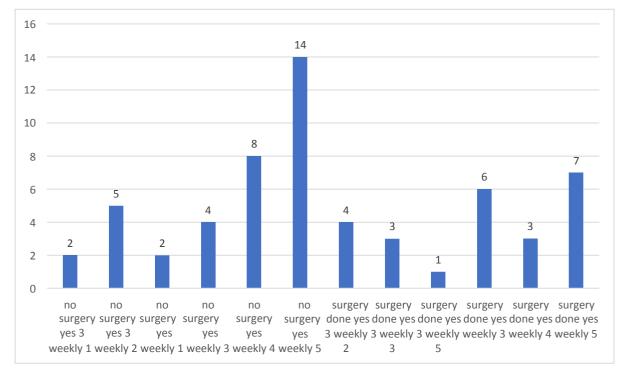
Data regarding Depth of invasion was available for 42 patients. DOI ranges from 4 to 20 mm with a mean of 8.6mm (95% C.I. ranging from 7.3 to 9.88mm) and median of 8 (95% C.I. ranging from 7 to 10mm).





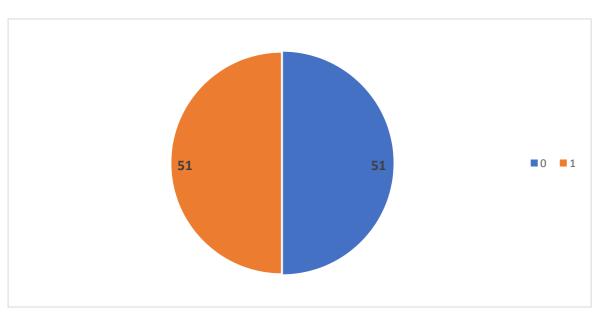






- > Out of 133 patients,59 (44%) patients received concurrent chemotherapy.
- Out of 59 patients, 58 received Injection Cisplatin as concurrent chemotherapy while 1 patient received VAC (Vincristine, Adriamycin, Cyclophosphamide) Chemotherapy as concurrent chemotherapy.
- Out of 58 patients, 44 (76%) received weekly regimen while 14 (24%) patients received 3 weekly regimen of cisplatin.
- Out of 58 patients, 4 (7%) received 1 cycle of concurrent chemotherapy, 9 (16%) received 2 cycles, 13(22%) received 3 cycles, 11(19%) received 4 cycles and 21 (36%) received 5 cycles of concurrent chemotherapy.

# 22. Final Outcome (Dead or Alive)-



Out of 133 patients, contact could be made with only 102 patients due to wrong contact details. Out of 102 patients, 51 (50%) are dead and 51 (50%) are alive.

**23.** <u>Median Follow up time</u>- Median follow-up time was calculated using Reverse Kaplan Meier curve.

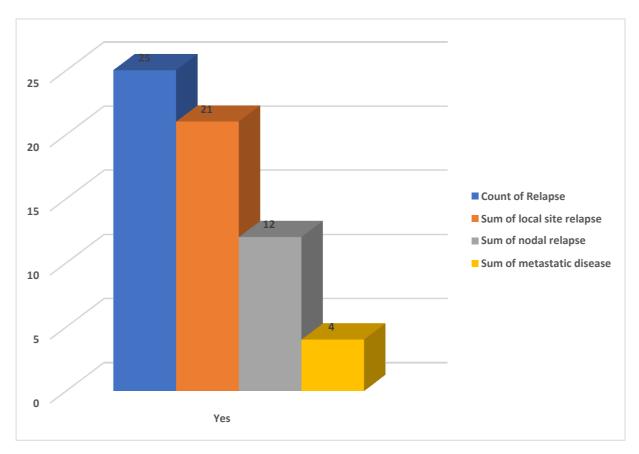
Median follow-up time was found to be 29.733 months (95% C.I. ranging from 22.063 to 37.403 months).

Mean <sup>a</sup>			Median				
Estimate	Std. Error	95% Confid	dence Interval		Std.	95% Confidence Interval	
		Lower	Upper	Estimate	Error	Lower	Upper
		Bound	Bound			Bound	Bound
32.925	2.162	28.687	37.162	29.733	3.913	22.063	37.403

## Means and Medians for Survival Time

a. Estimation is limited to the largest survival time if it is censored.

### 24. Presence/Absence of relapse-



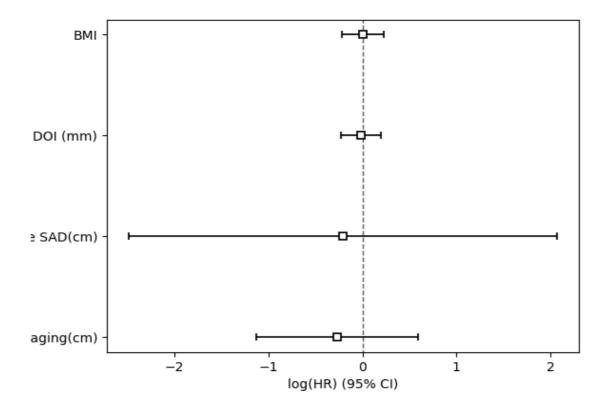
- Out of 133 patients, data regarding presence or absence of relapse was available for 96 patients out of which 25 (28%) developed relapse post treatment completion and 71 (72%) were relapse free.
- Out of 25 patients, 21(80%) patients developed local site relapse, 12 (48%) developed nodal relapse while 4 (16%) developed distant failure.

## 25. Effect of various variables on overall survival -

- Correlation between BMI and overall survival was analyzed using Cox Regression Test. It was found to be statistically insignificant with p value of 0.99 and Hazard ratio of 1.00 (95% C.I. ranging from 0.80 to 1.25).
- Correlation between largest dimension of primary on imaging and overall survival was done using Cox Regression test. It was found to be statistically insignificant with p value of 0.54 with Hazard Ratio of 0.77 (95% C.I. ranging from 0.32 to 1.81).
- Correlation between lymph node short axis diameter (SAD) on presentation, (irrespective of the treatment protocol of Surgery followed by Post Operative RT or

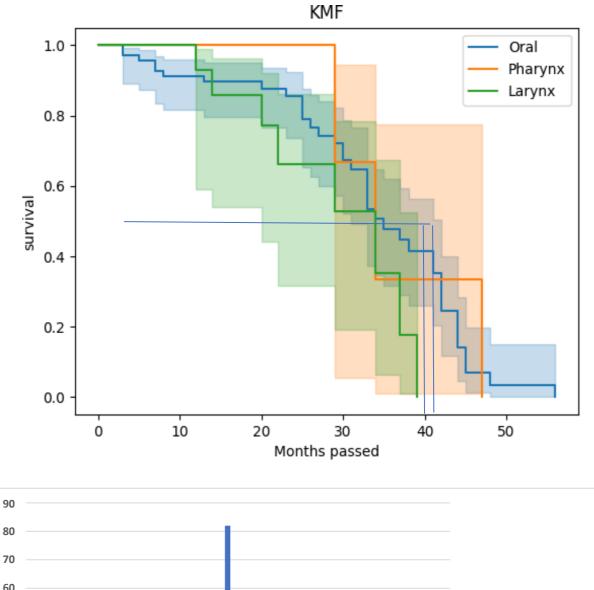
Radical Chemoradiation), and overall survival was done using Cox regression test. It was found to be statistically insignificant with p value of 0.86 with Hazard ratio of 0.81 (95% C.I. ranging from 0.08 to 7.98).

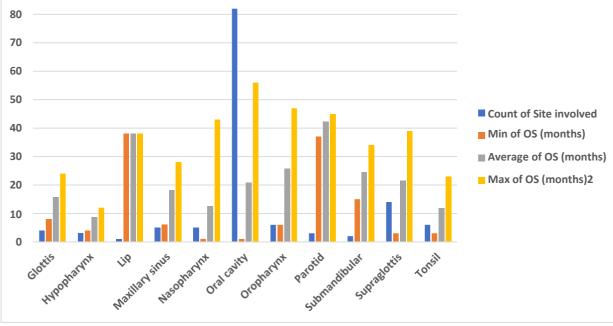
 Correlation between Depth of invasion(mm) and overall survival was done using Cox Regression test. It was found to be statistically insignificant with p value of 0.87 (95% C.I. ranging from 0.79 to 1.22).



### 26. Site wise Overall Survival Analysis-

- Log rank test was done to analyze the association between different subsites of head and neck cancer and overall survival (OS).
- There was no statistically significant difference found between overall survival of oral cavity tumors and larynx tumors, p-value was found to be 0.11.
- There was no statistically significant difference found between overall survival of oral cavity tumors and pharynx tumors, p-value was found to be 0.66.
- There was no statistically significant difference found between overall survival of larynx and pharynx tumors, p-value was found to be 0.32.

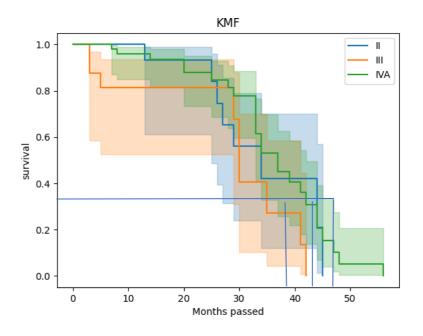




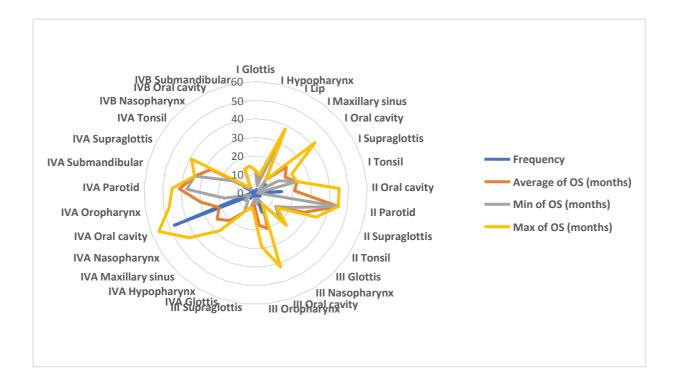
Subsite	Count of Site involved	Min of OS (months)	Average of OS (months)	Max of OS (months)
Glottis	4	8	15.75	24
Hypopharynx	3	4	8.666666667	12
Lip	1	38	38	38
Maxillary sinus	5	6	18.2	28
Nasopharynx	5	1	12.6	43
Oral cavity	82	1	20.74390244	56
Oropharynx	6	6	25.83333333	47
Parotid	3	37	42.33333333	45
Submandibular	2	15	24.5	34
Supra glottis	14	3	21.5	39
Tonsil	6	3	11.83333333	23

## 27. Stage wise Survival Analysis-

- Log rank test was done to analyze the association between stages of head and neck cancer and overall survival (OS).
- There was statistically significant difference in overall survival between stage III and stage IV with a p-value of 0.03.
- There was statistically insignificant difference in overall survival between stage II and stage III with a p-value of 0.23.

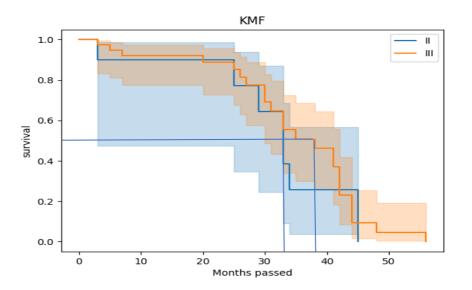


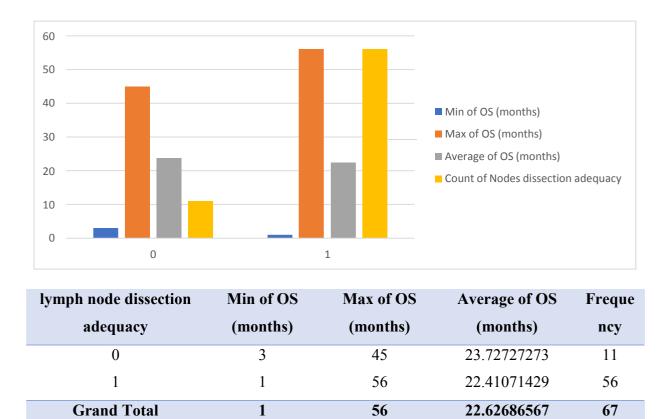
Site & Stage	Frequency	Average of OS	Min of OS	Max of OS
~~~~~~~ <b>~~~</b>	1104.000	(months)	(months)	(months)
Ι	15	18.86666667	2	42
Glottis	1	12	12	12
Hypopharynx	2	7	4	10
Lip	1	38	38	38
Maxillary sinus	1	9	9	9
Oral cavity	7	21.57142857	2	42
Supra glottis	2	18	14	22
Tonsil	1	23	23	23
II	20	21.75	1	45
Oral cavity	14	21	1	45
Parotid	1	45	45	45
Supra glottis	2	28	21	35
Tonsil	3	13.33333333	13	14
III	19	17.21052632	3	42
Glottis	2	21.5	19	24
Nasopharynx	1	7	7	7
Oral cavity	11	20.27272727	3	42
Oropharynx	2	17.5	6	29
Supra glottis	3	6.333333333	3	10
IVA	71	22.16901408	3	56
Glottis	1	8	8	8
Hypopharynx	1	12	12	12
Maxillary sinus	4	20.5	6	28
Nasopharynx	2	25	7	43
Oral cavity	47	21.0212766	3	56
Oropharynx	4	30	17	47
Parotid	2	41	37	45
Submandibular	1	34	34	34
Supra glottis	7	27.14285714	14	39
Tonsil	2	4	3	5
IVB	3	11.33333333	5	15
Nasopharynx	1	5	5	5
Oral cavity	1	14	14	14
Submandibular	1	15	15	15



### 28. Effect of Adequate Lymph node dissection on overall survival-

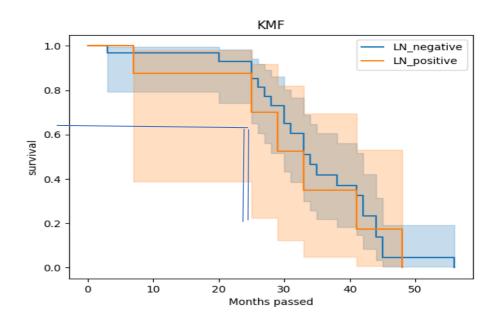
- Log rank test was done to analyze the association between lymph node dissection adequacy and overall survival (OS).
- There was no statistically significant difference found between overall survival and lymph node dissection adequacy with a p-value of 0.68.

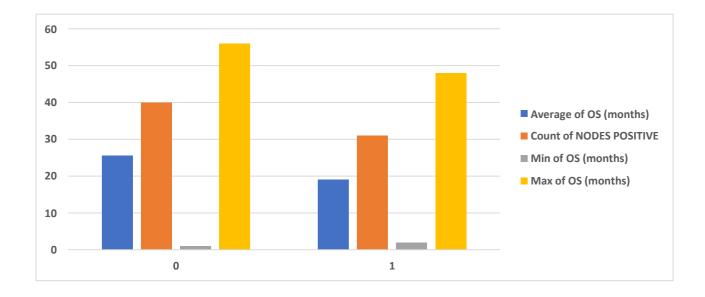




### 29. Effect of node positivity on Overall Survival-

- For patients who underwent surgery followed by PORT, Log rank test was done to analyze the association between lymph node positivity and overall survival (OS).
- There was no statistically significant difference found between overall survival and lymph node positivity with a p-value of 0.73.

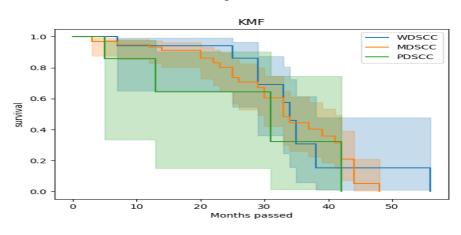


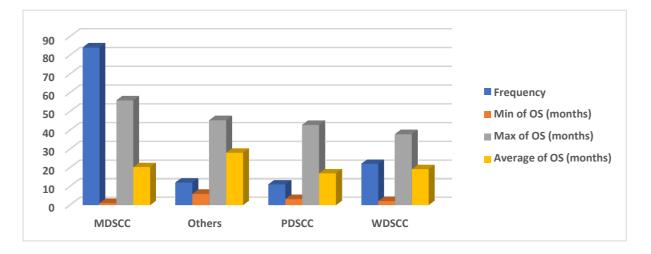


Lymph node	Average of OS	Frequen	Min of OS	Max of OS
status	(months)	cy	(months)	(months)
0	25.63888889	40	1	56
1	19.12903226	31	2	48

### 30. Effect of pre-op Histology on Overall Survival-

- Log rank test was done to analyze the association between pre-op histology and overall survival (OS).
- There was no statistically significant difference found between overall survival of WDSCC and MDSCC with a p-value of 0.64.
- There was no statistically significant difference found between overall survival of WDSCC and PDSCC with a p-value of 0.42.
- There was no statistically significant difference found between overall survival of MDSCC and PDSCC with a p-value of 0.29.

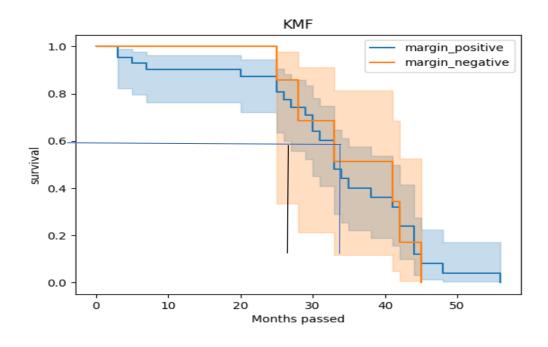


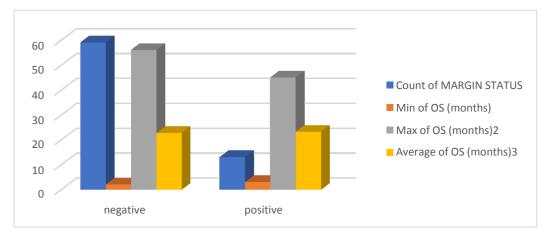


Histology	Frequency	Min of OS (months)	Max of OS (months)	Average of OS (months)
MDSCC	84	1	55.83333333	20.25079365
Others	12	5.9	45.26666667	27.96388889
PDSCC	11	3.1	42.76666667	16.92727273
WDSCC	22	2.066666667	37.83333333	19.15136364

#### 31. Effect of post-op margin status on overall survival (OS)-

- Log rank test was done to analyze the association between post op margin status and overall survival (OS).
- There was no statistically significant difference found between overall survival and post op margin status with a p-value of 0.82.

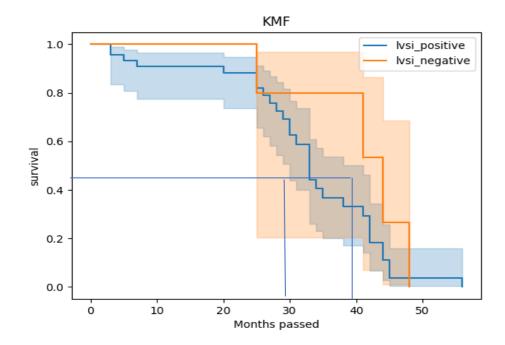


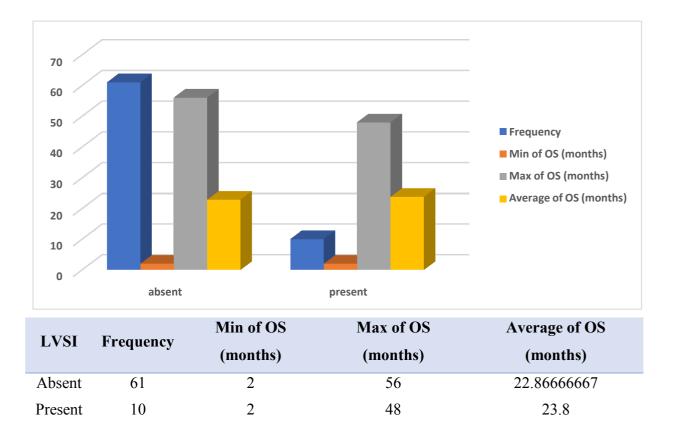


margin status	Frequency	Min of OS (months)	Max of OS (months)	Average of OS (months)
negative	59	2	56	22.67241379
positive	13	3	45	23.23076923

## 32. Effect of LVSI on overall survival (OS)-

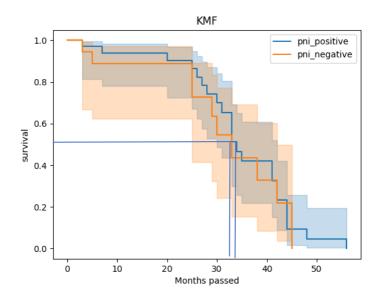
- Log rank test was done to analyze the association between LVSI and overall survival (OS).
- There was no statistically significant difference found between overall survival and LVSI with a p-value of 0.24.

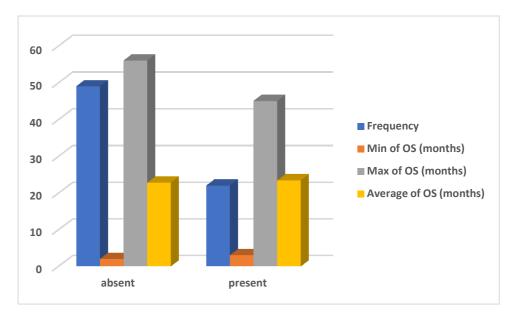




### 33. Effect of PNI on Overall Survival (OS)-

- Log rank test was done to analyze the association between PNI and overall survival (OS).
- There was no statistically significant difference found between overall survival and PNI with a p-value of 0.63.

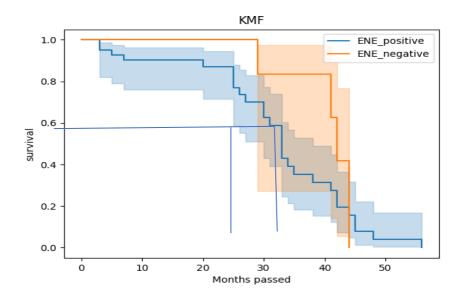


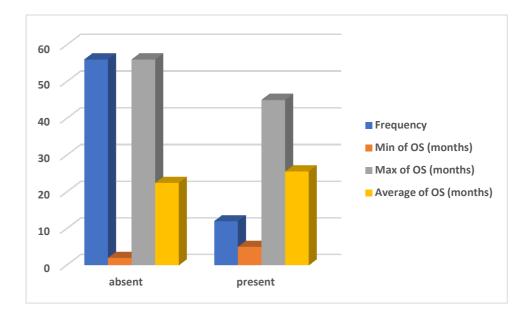


PNI	Frequency	Min of OS (months)	Max of OS (months)	Average of OS (months)
Absent	49	2	56	22.81632653
Present	22	3	45	23.42857143

## 34. Effect of ENE on Overall Survival (OS)-

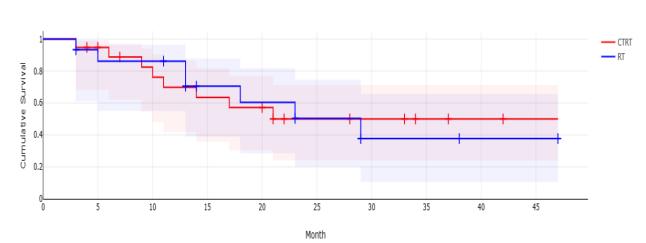
- Log rank test was done to analyze the association between ENE and overall survival (OS).
- There was no statistically significant difference found between overall survival and ENE with a p-value of 0.38.





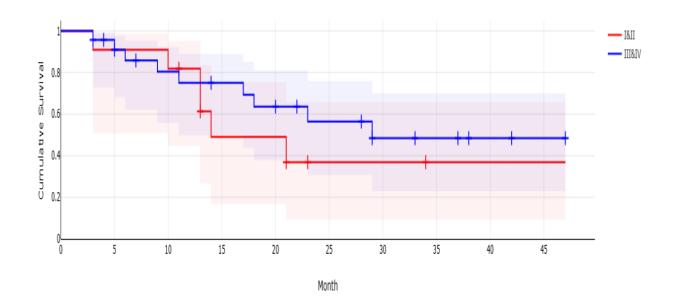
ENE	Frequenc	Min of OS	Max of OS	Average of OS	
ENE	У	(months)	(months)	(months)	
absent	56	2	56	22.47272727	
presen t	12	5	45	25.58333333	

# **35. OVERALL SURVIVAL OF PHARYNGEAL TUMOR PATIENTS TREATED WITH EITHER RADICAL RT OR CTRT** :-



Survival Function (St) - with confidence interval

### Survival Function $(S_t)$ - with confidence interval

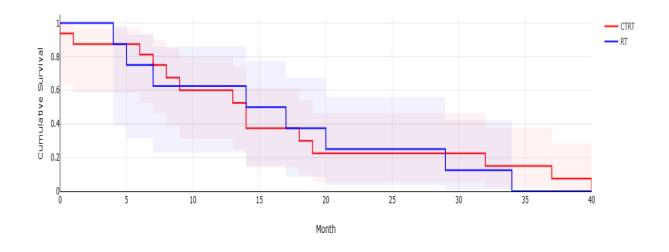


- The patients who were treated with either radical RT or CTRT were analyzed for overall survival analysis by Kaplan Meier Curve.
- Stage I & II patients were having median OS of 14 months while stage III and IV were having median OS of 29 months with a p-value of 0.42.

Site	Count of IS CONCURRENT CHEMO GIVEN	Min of OS (months)	Max of OS (months)	Average of OS (months)
Glottis	4	8.166666667	23.93333333	15.68333333
no surgery	3	11.7	23.93333333	18.18888889
no chemo	3	11.7	23.93333333	18.18888889
surgery	1	8.166666667	8.166666667	8.166666667
CTRT	1	8.166666667	8.166666667	8.166666667
Hypopharynx	3	3.6	11.83333333	8.55555553
no surgery	3	3.6	11.83333333	8.55555553
CTRT	2	10.23333333	11.83333333	11.03333333
no chemo	1	3.6	3.6	3.6
Lip	1	37.83333333	37.83333333	37.83333333
surgery	1	37.83333333	37.83333333	37.83333333
no chemo	1	37.83333333	37.83333333	37.83333333
Maxillary sinus	5	5.9	28.3	18.05333333
no surgery	1	19.66666667	19.66666667	19.66666667
no chemo	1	19.66666667	19.66666667	19.66666667

surgery	4	5.9	28.3	17.65
CTRT	1	8.666666667	8.666666667	8.666666667
no chemo	3	5.9	28.3	20.64444444
Nasopharynx	5	1.533333333	42.76666667	12.81333333
no surgery	3	5.4	42.76666667	18.5444445
CTRT	3	5.4	42.76666667	18.54444445
surgery	2	1.533333333	6.9	4.216666667
CTRT	1	6.9	6.9	6.9
no chemo	1	1.533333333	1.533333333	1.533333333
Oral cavity	83	1	55.83333333	20.82922764
No surgery	24	1	40.93333333	16.26797101
CTRT	16	1	40.93333333	15.96888889
no chemo	8	4.666666667	34.5	16.82875
surgery	59	2.066666667	55.83333333	22.60734463
CTRT	19	2.066666667	43.63333333	25.38947368
no chemo	40	2.066666667	55.83333333	21.28583333
Oropharynx	12	3.1	47.06666667	18.83888889
no surgery	12	3.1	47.06666667	18.83888889
CTRT	6	3.1	33.76666667	18.31111111
no chemo	6	5.566666667	47.06666667	19.36666667
Parotid	3	37.06666667	45.26666667	42.5222222
no surgery	1	37.06666667	37.06666667	37.06666667
no chemo	1	37.06666667	37.06666667	37.06666667
surgery	2	45.23333333	45.26666667	45.25
no chemo	2	45.23333333	45.26666667	45.25
Submandibular	2	15.1	34.33333333	24.71666667
surgery	2	15.1	34.33333333	24.71666667
CTRT	1	15.1	15.1	15.1
no chemo	1	34.33333333	34.33333333	34.33333333
Supra-glottis	15	3	38.8	21.50952381
no surgery	14	3	38.8	21.51538462
CTRT	8	6.1	37.46666667	20.61666667
no chemo	6	3	38.8	22.95333333
surgery	1	21.43333333	21.43333333	21.43333333
OTDT	-			
CTRT	1	21.43333333	21.43333333	21.43333333

## 36. SURVIVAL ANALYSIS IN INOPERABLE ORAL CAVITY TUMORS-

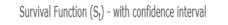


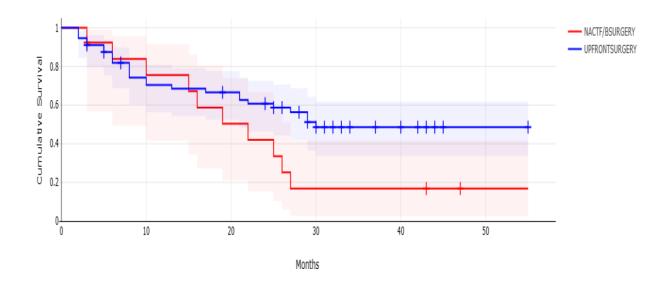
Survival Function (St) - with confidence interval

In patients with inoperable oral cavity tumors, median OS was calculated using Kaplan Meier curve. Median OS was found to be 13 months with p value of 0.77.

### 37. Effect of Induction Chemotherapy on Overall survival In HNC-

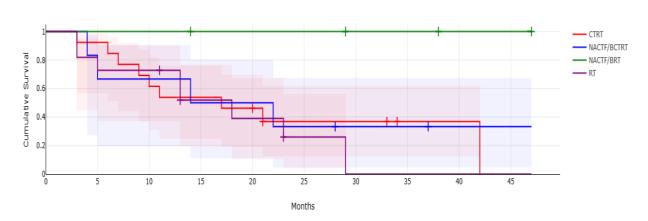
### 37.1 Effect of Induction Chemotherapy in Operated HNC-





Survival Analysis of the patients with operable subsites of HNC who received NACT or who underwent upfront surgery was done using Kaplan Meier analysis and median OS of 23 months found to be in patients who underwent NACT while median OS of 38 months who underwent upfront surgery. (p value= 0.15)

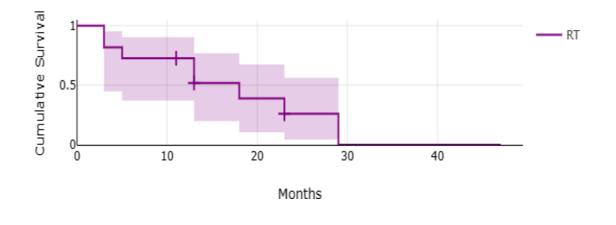
### 37.2 Effect of NACT in Pharyngeal tumor treated with Radical RT or CTRT -

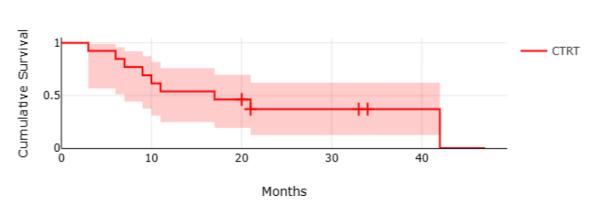


Survival Function (St) - with confidence interval

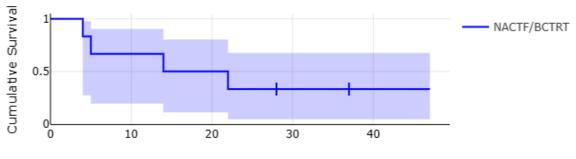
Effect of NACT in pharyngeal tumors who got treated wither Radical RT alone or CTRT was analyzed with Kaplan Meier Survival Analysis. Median OS in RT alone arm was found to be 13 months, 14 months in CTRT arm while 17 months in NACT f/b CTRT arm. (p value=0.07)

Survival Function ( $S_t$ ) - with confidence interval





Survival Function (S $_{t})$  - with confidence interval



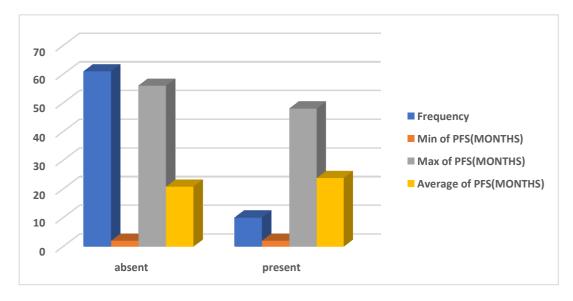
Site	Count of RECEIVED NACT?	Min of OS (months)	Max of OS (months)	Average of OS (months)
Glottis	4	8.166666667	23.93333333	15.68333333
no surgery	3	11.7	23.93333333	18.18888889
no NACT	3	11.7	23.93333333	18.18888889
surgery	1	8.166666667	8.166666667	8.166666667
no NACT	1	8.166666667	8.166666667	8.166666667
Hypopharynx	2	3.6	10.23333333	6.916666665
no surgery	2	3.6	10.23333333	6.916666665
no NACT	2	3.6	10.23333333	6.916666665
Lip	1	37.83333333	37.83333333	37.83333333
surgery	1	37.83333333	37.83333333	37.83333333
no NACT	1	37.83333333	37.83333333	37.83333333
Maxillary sinus	5	5.9	28.3	18.05333333

# Survival Function (S $_t$ ) - with confidence interval

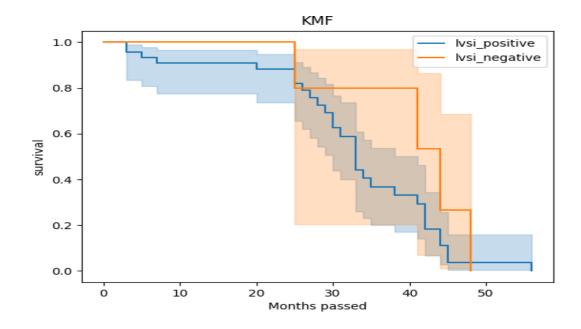
NACT given       1       19.66666667       19.66666667       19.66666667         surgery       4       5.9       28.3       17.65         NACT given       1       27.7333333       27.7333333       27.7333333         no NACT       3       5.9       28.3       14.2888889         Nasopharynx       4       5.4       42.76666667       15.6333333         no NACT       2       7.466666667       42.76666667       15.6333333         no NACT       2       7.466666667       42.76666667       25.1166667         surgery       1       6.9       6.9       6.9       6.9         no NACT       1       6.9       6.9       6.9       6.9         no NACT       1       1.9       3.746666667       14.93030303       16.26797101         NACT given       11       1       3.746666667       20.606061       14.93030303         no NACT       13       4.666666667       58.333333       22.28043478         Oropharynx       12       3.1       47.06666667       25.6333333       22.98043478         Oropharynx       12       3.1       47.06666667       18.8388889         NACT given       1       3.7066666	no surgery	1	19.666666667	19.666666667	19.666666667
surgery         4         5.9         28.3         17.65           NACT given         1         27.73333333         27.73333333         27.73333333           no NACT         3         5.9         28.3         14.2888889           Nasopharynx         4         5.4         42.76666667         18.54343333           no surgery         3         5.4         42.76666667         18.544445           no NACT         2         7.466666667         42.76666667         25.11666667           surgery         1         6.9         6.9         6.9           no NACT         1         6.9         6.9         6.9           no NACT         1         0.9333333         17.24125           no surgery         24         1         40.9333333         17.24125           no surgery         13         4.666666667         40.9333333         17.49416667           surgery         57         2.066666667         55.8333333         22.522222           NACT given         11         3.06666667         55.8333333         22.5222222           NACT given         12         3.1         47.06666667         15.3916667           no surgery         12         3.1					
NACT given no NACT         1         27.73333333         27.73333333         27.73333333           no NACT         3         5.9         28.3         14.2888889           Nasopharynx         4         5.4         42.76666667         15.6333333           no surgery         3         5.4         42.76666667         18.54344445           NACT given         1         5.4         5.4         5.4         5.4           no NACT         2         7.466666667         42.76666667         25.11666667           surgery         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         10.26797101           NACT given         11         1         37.466666667         40.9333333         10.26797101           NACT given         11         1         37.466666667         20.60606061           surgery         57         2.0666666667         40.9333333         12.2522222           NACT given         11         3.066666667         55.8333333         22.522222           NACT given         11         3.066666667         47.8666667         25.73333333           no surgery         12         3.1         47.06666667 <t< td=""><td>e</td><td>4</td><td></td><td></td><td></td></t<>	e	4			
no NACT         3         5.9         28.3         14.2888889           Nasopharynx         4         5.4         42.76666667         15.6333333           no surgery         3         5.4         42.76666667         18.54344445           NACT given         1         5.4         5.4         5.4         5.4           no NACT         2         7.46666667         42.76666667         25.11666667           surgery         1         6.9         6.9         6.9           on NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no surgery         24         1         40.9333333         16.26797101           NACT given         11         1         37.46666667         14.9303033           no NACT         13         4.666666667         55.8333333         22.5222222           NACT given         11         3.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           No Surgery         12         3.1         47.06666667         37.0666667           NACT given	•••				
Nasopharynx         4         5.4         42.76666667         15.6333333           no surgery         3         5.4         42.76666667         18.5444445           NACT given         1         5.4         5.4         5.4           no NACT         2         7.46666667         42.76666667         25.11666667           surgery         1         6.9         6.9         6.9           on NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no NACT         13         4.666666667         40.9333333         17.49416667           surgery         57         2.066666667         55.8333333         22.5222222           NACT given         11         3.06666667         47.8666667         18.8388889           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           no surgery         12         3.1         47.06666667         15.8333333           no NACT         8         3.1         33.76666667         37.06666667           no NACT         1 <td>=</td> <td>3</td> <td>5.9</td> <td></td> <td></td>	=	3	5.9		
no surgery NACT given         3         5.4         42.76666667         18.5444445           NACT given         1         5.4         5.4         5.4           no NACT         2         7.466666667         42.76666667         25.11666667           surgery         1         6.9         6.9         6.9           no NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no surgery         24         1         40.9333333         16.26797101           NACT given         11         3.746666667         14.93030303           no NACT         13         4.666666667         40.9333333         12.5222222           NACT given         11         3.066666667         47.8666667         20.60606061           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           no surgery         12         3.1         47.06666667         15.39166667           Parotid         3         37.06666667         45.25222222         10           no NACT         1 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
NACT given         1         5.4         5.4         5.4           no NACT         2         7.466666667         42.76666667         25.11666667           surgery         1         6.9         6.9         6.9           no NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no surgery         24         1         40.93333333         16.26797101           NACT given         11         1         37.46666667         14.9303033           no NACT         13         4.666666667         40.93333333         22.5222222           NACT given         11         3.066666667         47.86666667         20.60606061           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           no surgery         12         3.1         47.06666667         25.7333333           no NACT         8         3.1         33.76666667         45.2522222           no surgery         1         37.06666667         37.06666667         45.252           no NACT         2 <td></td> <td></td> <td>5.4</td> <td>42.766666667</td> <td></td>			5.4	42.766666667	
no NACT         2         7.466666667         42.76666667         25.1166667           surgery         1         6.9         6.9         6.9           no NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no surgery         24         1         40.93333333         16.26797101           NACT given         11         1         37.46666667         14.93030303           no NACT         13         4.666666667         40.9333333         17.49416667           surgery         57         2.066666667         55.83333333         22.5222222           NACT given         11         3.06666667         47.8666667         20.6060601           no NACT         46         2.066666667         47.8666667         18.8388889           no surgery         12         3.1         47.06666667         18.8388889           no surgery         12         3.1         47.06666667         25.7333333           no NACT         8         3.1         33.76666667         37.0666667           NACT given         1         37.06666667         37.06666667         45.25           no NACT		1	5.4	5.4	5.4
no NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no surgery         24         1         40.93333333         16.26797101           NACT given         11         1         37.46666667         14.93030303           no NACT         13         4.6666666667         40.93333333         17.49416667           surgery         57         2.066666667         55.8333333         22.522222           NACT given         11         3.066666667         47.86666667         20.60606061           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           NACT given         4         4.666666667         47.0666667         25.7333333           no NACT         8         3.1         33.76666667         25.7333333           no NACT         8         3.1         33.76666667         37.0666667           Parotid         3         37.06666667         37.06666667         37.06666667           no NACT         1         37.06666667         37.06666667         45.25	-	2	7.466666667	42.76666667	25.11666667
no NACT         1         6.9         6.9         6.9           Oral cavity         81         1         55.8333333         20.724125           no surgery         24         1         40.9333333         16.26797101           NACT given         11         1         37.46666667         14.93030303           no NACT         13         4.666666667         40.9333333         17.49416667           surgery         57         2.066666667         55.8333333         22.522222           NACT given         11         3.06666667         47.8666667         20.6060601           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.0666667         18.8388889           NACT given         4         4.666666667         47.0666667         25.7333333           no surgery         12         3.1         47.0666667         25.7333333           no NACT         8         3.1         33.76666667         25.7333333           no surgery         1         37.06666667         37.0666667         37.0666667           no surgery         2         45.2333333         45.26666667         45.25	surgery	1	6.9	6.9	6.9
no surgery         24         1         40.9333333         16.26797101           NACT given         11         1         37.46666667         14.93030303           no NACT         13         4.666666667         40.9333333         17.49416667           surgery         57         2.066666667         55.8333333         22.5222222           NACT given         11         3.066666667         47.86666667         20.60606061           no NACT         46         2.066666667         47.86666667         20.60606061           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           NACT given         4         4.6666666667         47.06666667         25.7333333           no NACT         8         3.1         33.76666667         42.5222222           no surgery         1         37.06666667         37.06666667         42.5222222           no NACT         1         37.06666667         37.06666667         45.25           no NACT         1         37.06666667         45.25         5           surgery         2         45.2333333         45.26666667         45.25		1	6.9	6.9	6.9
no surgery         24         1         40.9333333         16.26797101           NACT given         11         1         37.46666667         14.93030303           no NACT         13         4.666666667         40.9333333         17.49416667           surgery         57         2.066666667         55.8333333         22.5222222           NACT given         11         3.066666667         47.86666667         20.60606061           no NACT         46         2.066666667         47.86666667         20.60606061           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           NACT given         4         4.6666666667         47.06666667         25.7333333           no NACT         8         3.1         33.76666667         42.5222222           no surgery         1         37.06666667         37.06666667         42.5222222           no NACT         1         37.06666667         37.06666667         45.25           no NACT         1         37.06666667         45.25         5           surgery         2         45.2333333         45.26666667         45.25	Oral cavity	81	1	55.83333333	20.724125
NACT given       11       1       37.46666667       14.9303033         no NACT       13       4.666666667       40.9333333       17.49416667         surgery       57       2.066666667       55.8333333       22.5222222         NACT given       11       3.066666667       47.86666667       20.60606061         no NACT       46       2.066666667       55.8333333       22.98043478         Oropharynx       12       3.1       47.06666667       18.8388889         no surgery       12       3.1       47.06666667       18.8388889         NACT given       4       4.6666666667       47.06666667       25.7333333         no NACT       8       3.1       33.76666667       15.39166667         Parotid       3       37.06666667       42.5222222         no surgery       1       37.06666667       37.06666667       42.5222222         no NACT       1       37.06666667       37.06666667       45.55         surgery       2       45.2333333       45.2666667       45.25         no NACT       2       15.1       34.3333333       24.71666667         surgery       2       15.1       15.1       15.1         no		24	1	40.93333333	16.26797101
surgery572.06666666755.833333322.522222NACT given113.06666666747.8666666720.60606061no NACT462.06666666755.833333322.98043478Oropharynx123.147.0666666718.8388889no surgery123.147.0666666718.8388889NACT given44.66666666747.0666666725.7333333no NACT83.133.7666666725.7333333no NACT83.133.7666666742.5222222no surgery137.0666666737.066666737.0666667Parotid337.0666666737.0666666737.06666667no NACT137.0666666737.0666666745.25no NACT245.233333345.2666666745.25surgery215.134.333333324.71666667no NACT115.115.115.1no NACT134.333333334.3333333surgery215.138.821.51538462NACT given114.0666666738.826.74no NACT8334.6666666718.25surgery14338.826.74no NACT8334.6666666718.25surgery14334.6666666718.25no NACT8334.6666666718.25surgery14334.6666666718.25no NACT8334.66666667		11	1	37.46666667	14.93030303
NACT given no NACT         11         3.066666667         47.86666667         20.6060061           no NACT         46         2.066666667         55.8333333         22.98043478           Oropharynx         12         3.1         47.06666667         18.8388889           no surgery         12         3.1         47.06666667         18.8388889           NACT given         4         4.666666667         47.06666667         25.7333333           no Surgery         12         3.1         47.06666667         25.73333333           no NACT         8         3.1         33.76666667         15.39166667           Parotid         3         37.06666667         45.26666667         42.5222222           no surgery         1         37.06666667         37.06666667         42.5222222           no surgery         1         37.06666667         37.06666667         45.25           surgery         2         45.2333333         45.26666667         45.25           surgery         2         15.1         34.3333333         24.71666667           NACT given         1         15.1         15.1         15.1           no NACT         1         34.3333333         34.3333333         34.3333333	no NACT	13	4.666666667	40.93333333	17.49416667
no NACT462.06666666755.833333322.98043478Oropharynx123.147.0666666718.8388889no surgery123.147.0666666718.8388889NACT given44.66666666747.0666666725.7333333no NACT83.133.7666666715.3916667Parotid337.0666666745.2666666742.5222222no surgery137.0666666737.0666666737.06666667Parotid337.0666666737.0666666745.25no surgery137.0666666737.0666666745.25no NACT137.0666666737.0666666745.25surgery245.233333345.2666666745.25surgery215.134.333333324.71666667NACT given115.115.115.1no NACT134.33333334.3333333Supra-glottis15338.821.51952381no surgery14338.826.74no NACT8334.6666666718.25surgery121.433333321.433333321.4333333	surgery	57	2.066666667	55.83333333	22.5222222
Oropharynx123.147.0666666718.8388889no surgery123.147.0666666718.8388889NACT given44.66666666747.0666666725.7333333no NACT83.133.7666666725.73333333no NACT83.133.7666666742.5222222no surgery137.0666666745.2666666742.5222222no NACT137.0666666737.0666666737.06666667surgery245.233333345.2666666745.25no NACT245.233333345.2666666745.25surgery215.134.333333324.71666667r215.134.333333334.3333333surgery215.115.115.1no NACT134.333333334.333333334.3333333surgery115.115.115.1no NACT134.333333334.333333334.3333333Supra-glottis15338.821.51538462NACT given614.0666666738.826.74no NACT8334.6666666718.25surgery121.4333333321.433333321.4333333	NACT given	11	3.066666667	47.86666667	20.60606061
no surgery123.147.0666666718.8388889NACT given44.66666666747.0666666725.7333333no NACT83.133.76666666715.39166667Parotid337.0666666745.2666666742.5222222no surgery137.0666666737.0666666737.06666667no NACT137.0666666737.0666666737.06666667surgery245.233333345.2666666745.25no NACT245.233333345.2666666745.25surgery245.233333345.2666666745.25surgery215.134.333333324.71666667r215.134.333333324.71666667NACT given115.115.115.1no NACT134.333333334.333333334.3333333Supra-glottis15338.821.51538462NACT given614.0666666738.826.74no NACT8334.6666666718.25surgery121.433333321.433333321.4333333	no NACT	46	2.066666667	55.83333333	22.98043478
NACT given       4       4.6666666667       47.06666667       25.7333333         no NACT       8       3.1       33.76666667       15.3916667         Parotid       3       37.06666667       45.26666667       42.5222222         no surgery       1       37.06666667       37.06666667       37.06666667         no NACT       1       37.06666667       37.06666667       37.06666667         no NACT       1       37.06666667       37.06666667       45.25         surgery       2       45.2333333       45.26666667       45.25         no NACT       2       45.2333333       45.26666667       45.25         submandibula       2       15.1       34.3333333       24.71666667         r       2       15.1       34.3333333       34.3333333         Supery       2       15.1       15.1       15.1         no NACT       1       34.3333333       34.3333333       34.3333333         Supera-glottis       15       3       38.8       21.50952381         no surgery       14       3       38.8       26.74         no NACT       8       3       34.66666667       18.25         NACT given	Oropharynx	12	3.1	47.06666667	18.83888889
no NACT83.133.7666666715.3916667Parotid337.0666666742.5222222no surgery137.0666666737.06666667no NACT137.0666666737.06666667surgery245.233333345.26666667no NACT245.233333345.26666667surgery245.233333345.26666667surgery215.134.3333333Submandibula215.134.3333333surgery215.134.3333333surgery115.115.1no NACT134.3333333surgery215.1surgery134.3333333surgery134.3333333surgery134.3333333surgery143NACT given614.06666667NACT given614.06666667NACT given614.06666667surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.4333333surgery121.43333333surgery121.43333333surgery121.43333333surgery121.43333333 </td <td>no surgery</td> <td>12</td> <td>3.1</td> <td>47.06666667</td> <td>18.83888889</td>	no surgery	12	3.1	47.06666667	18.83888889
Parotid337.0666666745.2666666742.5222222no surgery137.0666666737.0666666737.06666667no NACT137.0666666737.0666666737.06666667surgery245.233333345.2666666745.25no NACT245.233333345.2666666745.25submandibula215.134.333333324.71666667r215.134.333333324.71666667surgery215.115.115.1no NACT115.115.115.1no NACT134.33333334.3333333surgery14338.821.50952381no surgery14338.826.74no NACT given614.0666666738.826.74no NACT8334.6666666718.25surgery121.433333321.433333321.4333333	NACT given	4	4.666666667	47.06666667	25.73333333
no surgery137.0666666737.0666666737.06666667no NACT137.0666666737.0666666737.06666667surgery245.233333345.26666666745.25no NACT245.233333345.2666666745.25Submandibula215.134.333333324.71666667r215.134.333333324.71666667NACT given115.115.115.1no NACT134.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.826.74no NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.4333333321.4333333321.43333333	no NACT	8	3.1	33.766666667	15.39166667
no NACT137.0666666737.0666666737.06666667surgery245.233333345.2666666745.25no NACT245.233333345.2666666745.25Submandibula215.134.333333324.71666667r215.134.333333324.71666667surgery215.134.333333324.71666667NACT given115.115.115.1no NACT134.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.826.74NACT given614.0666666738.826.74no NACT8334.6666666718.25surgery121.433333321.4333333321.43333333	Parotid	3	37.066666667	45.26666667	42.5222222
surgery no NACT245.233333345.2666666745.25Submandibula r215.134.333333324.71666667r215.134.333333324.71666667Surgery NACT given215.115.115.1no NACT115.115.115.1no NACT134.333333334.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.826.74NACT given614.0666666738.826.74no NACT8334.6666666718.25surgery121.4333333321.4333333321.43333333	no surgery	1	37.066666667	37.06666667	37.06666667
no NACT245.233333345.2666666745.25Submandibula215.134.333333324.71666667r215.134.333333324.71666667surgery215.134.333333324.71666667NACT given115.115.115.1no NACT134.333333334.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.826.74NACT given614.066666738.826.74no NACT8334.6666666718.25surgery121.433333321.433333321.4333333	no NACT	1	37.06666667	37.06666667	37.06666667
Submandibula r215.134.333333324.71666667surgery215.134.333333324.71666667NACT given115.115.115.1no NACT134.333333334.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.821.51538462NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.433333321.433333321.4333333	surgery	2	45.23333333	45.26666667	45.25
r215.134.33333333333333333333333333333333333	no NACT	2	45.23333333	45.26666667	45.25
r215.134.333333324.71666667NACT given115.115.115.1no NACT134.333333334.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.821.51538462NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.433333321.433333321.4333333	Submandibula	2	15 1	21 22222222	21 71666667
NACT given115.115.1no NACT134.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.821.51538462NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.433333321.433333321.4333333	r	2	13.1	54.555555555	24./100000/
no NACT134.333333334.333333334.3333333Supra-glottis15338.821.50952381no surgery14338.821.51538462NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.433333321.433333321.4333333	surgery	2	15.1	34.33333333	24.71666667
Supra-glottis15338.821.50952381no surgery14338.821.51538462NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.433333321.433333321.4333333	NACT given	1	15.1	15.1	15.1
no surgery14338.821.51538462NACT given614.0666666738.826.74no NACT8334.66666666718.25surgery121.433333321.433333321.43333333	no NACT	1	34.33333333	34.33333333	34.33333333
NACT given       6       14.06666667       38.8       26.74         no NACT       8       3       34.66666667       18.25         surgery       1       21.4333333       21.4333333       21.43333333	Supra-glottis	15	3	38.8	21.50952381
no NACT8334.66666666718.25surgery121.4333333321.4333333321.433333333	•••	14	3	38.8	21.51538462
surgery 1 21.4333333 21.43333333 21.43333333	NACT given	6	14.06666667	38.8	26.74
	no NACT	8	3	34.66666667	18.25
no NACT 1 21.4333333 21.4333333 21.43333333	surgery	1	21.43333333	21.43333333	21.43333333
	no NACT	1	21.43333333	21.43333333	21.43333333

## 38. Effect of LVSI on Progression free survival (PFS)-

- Log rank test was done to analyze the association between LVSI and progression free survival (PFS).
- There was no statistically significant difference found between progression free survival and LVSI with a p-value of 0.14.

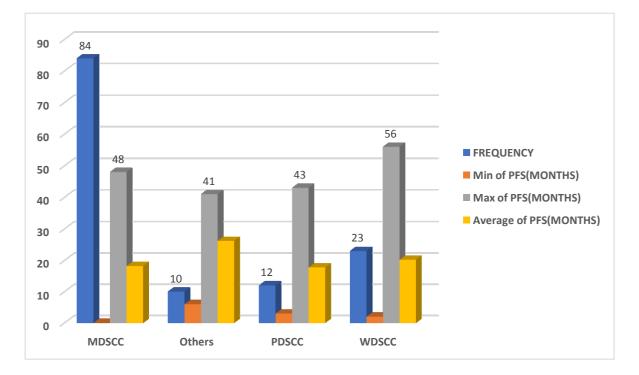


LVSI	Frequency	Min of PFS(MONTHS)	Max of PFS(MONTHS)	Average of PFS(MONTHS)
absent	61	2	56	20.78688525
present	10	2	48	23.8

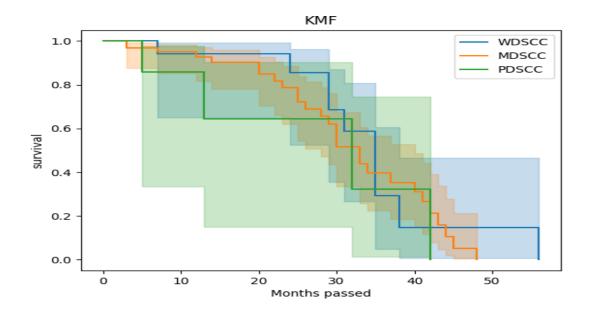


## 39. Effect of Tumor Histology on PFS-

- Log rank test was done to analyze the association between pre-op histology and progression free survival (PFS).
- There was no statistically significant difference found between PFS of WDSCC and MDSCC with a p-value of 0.47.
- There was no statistically significant difference found between PFS of WDSCC and PDSCC with a p-value of 0.46.
- There was no statistically significant difference found between PFS of MDSCC and PDSCC with a p-value of 0.39.

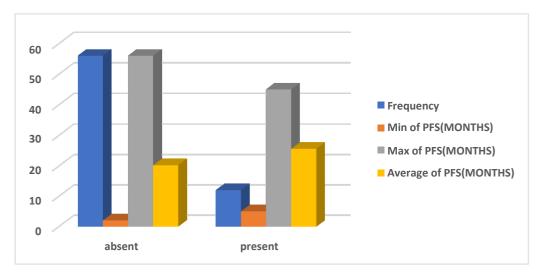


HISTOLOGY	FREQUENCY	Min of PFS	Max of	Average of
IIISTOLOGI	FREQUENCI	(MONTHS)	S)         PFS(MONTHS)         PFS(MONT           48         18.190476           41         26.2           43         17.75	PFS(MONTHS)
MDSCC	84	0	48	18.19047619
Others	10	6	41	26.2
PDSCC	12	3	43	17.75
WDSCC	23	2	56	20.2173913

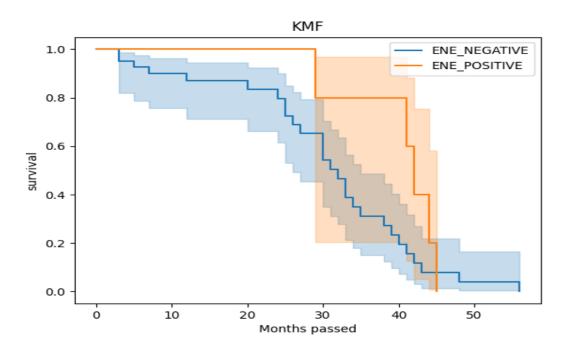


### 40. Effect of ENE on PFS-

- Log rank test was done to analyze the association between ENE and progression free survival (PFS).
- There was no statistically significant difference found between progression free survival and ENE with a p-value of 0.13.

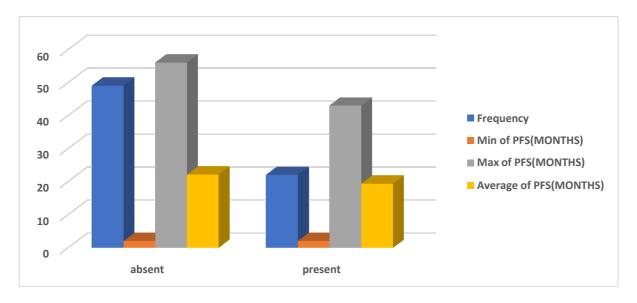


ENE	Frequency	Min of PFS(MONTHS)	Max of PFS(MONTHS)	Average of PFS(MONTHS)
absent	56	2	56	20.21428571
present	12	5	45	25.58333333

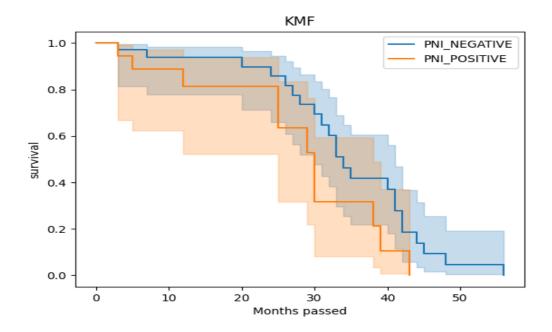


### 41. Effect of PNI on PFS-

- Log rank test was done to analyze the association between PNI and progression free survival (PFS).
- There was no statistically significant difference found between progression free survival and PNI with a p-value of 0.07.

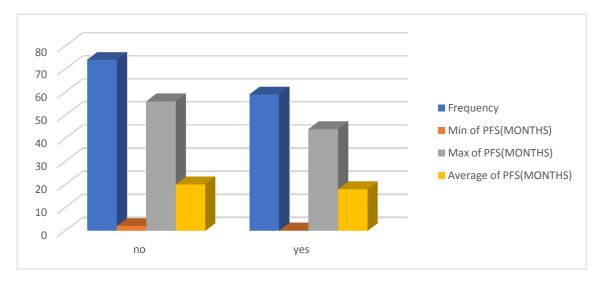


PNI	Frequency	Min of PFS(MONTHS)	Max of PFS (MONTHS)	Average of PFS(MONTHS)
absent	49	2	56	22.06122449
present	22	2	43	19.31818182

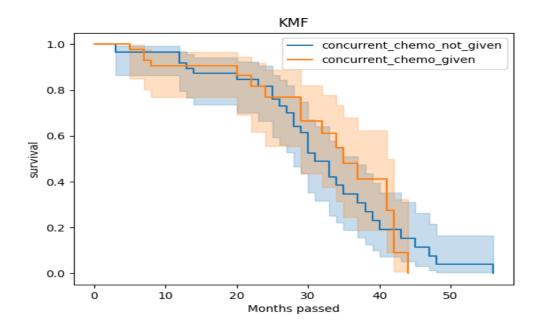


## 42. Effect of concurrent chemotherapy on PFS-

- Log rank test was done to analyze the association between concurrent chemotherapy and progression free survival (PFS).
- There was no statistically significant difference found between progression free survival and concurrent chemotherapy with a p-value of 0.8.

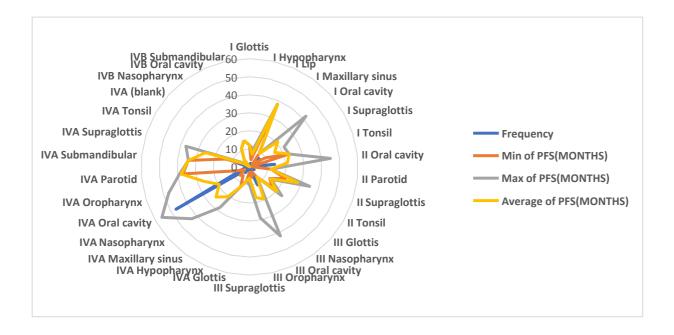


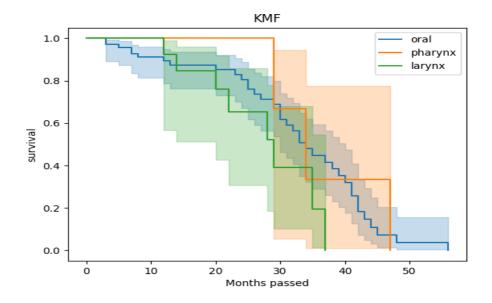
Concurrent chemo	Frequency	Min of PFS(MONTHS)	Max of PFS(MONTHS)	Average of PFS(MONTHS)
no	74	2	56	20.06849315
yes	59	0	44	17.94915254



### 43. Stage wise Progression free survival analysis-

- Log rank test was done to analyze the association between stages of head and neck cancer and progression free survival (PFS).
- There was statistically insignificant difference in PFS between stage III and stage IV with a p-value of 0.1.
- There was statistically insignificant difference in PFS between stage II and stage III with a p-value of 0.54.



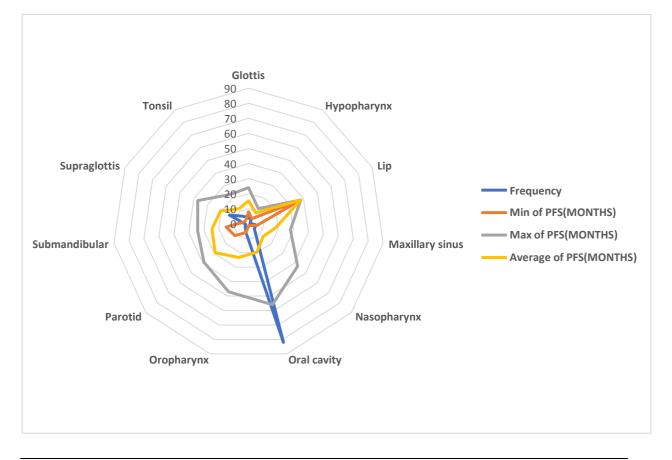


Stage & Site	Frequency	Min of PFS (MONTHS)	Max of PFS (MONTHS)	Average of PFS(MONTHS)
Ι	15	2	42	18.33333333
Glottis	1	12	12	12
Hypopharynx	2	4	10	7
Lip	1	38	38	38
Maxillary sinus	1	9	9	9
Oral cavity	7	2	42	21
Supra glottis	2	10	22	16
Tonsil	1	23	23	23
II	20	1	45	20.15
Oral cavity	14	1	45	21.07142857
Parotid	1	12	12	12
Supra glottis	2	21	35	28
Tonsil	3	13	14	13.33333333
III	19	3	42	16.63157895
Glottis	2	17	24	20.5
Nasopharynx	1	7	7	7
Oral cavity	11	3	42	19.45454545
Oropharynx	2	6	29	17.5
Supra glottis	3	3	10	6.333333333
IVA	71	0	56	20.36111111
Glottis	1	8	8	8
Hypopharynx	1	12	12	12
Maxillary sinus	4	6	28	20.5
Nasopharynx	2	7	43	25
Oral cavity	47	3	56	19.40425532
Oropharynx	4	7	47	26.25

Parotid	2	37	39	38
Submandibular	1	34	34	34
Supra glottis	7	14	37	25.57142857
Tonsil	2	3	5	4
(blank)		0	0	0
IVB	3	5	15	10.33333333
Nasopharynx	1	5	5	5
Oral cavity	1	11	11	11
Submandibular	1	15	15	15

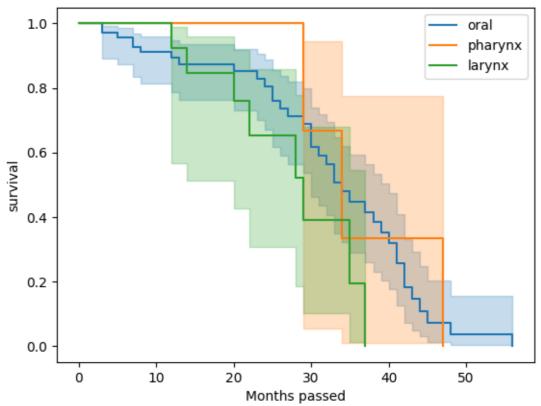
### 44. Site wise Progression free Survival Analysis-

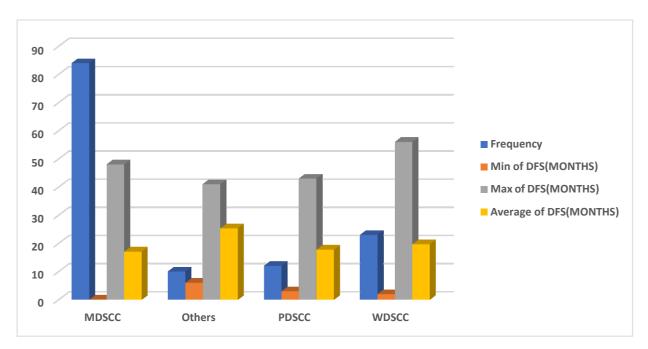
- Log rank test was done to analyze the association between different subsites of head and neck cancer and PFS.
- There was no statistically significant difference found between PFS of oral cavity tumors and larynx tumors, p-value was found to be 0.12.
- There was no statistically significant difference found between PFS of oral cavity tumors and pharynx tumors, p-value was found to be 0.59.
- There was no statistically significant difference found between PFS of larynx and pharynx tumors, p-value was found to be 0.27.



Subsite	Frequency	Min of PFS (MONTHS)	Max of PFS (MONTHS)	Average of PFS (MONTHS)
Glottis	4	8	24	15.25
Hypopharynx	3	4	12	8.666666667
Lip	1	38	38	38
Maxillary sinus	5	6	28	18.2
Nasopharynx	5	2	43	12.8
Oral cavity	82	1	56	19.63414634
Oropharynx	6	6	47	23.33333333
Parotid	3	12	39	29.33333333
Submandibular	2	15	34	24.5
Supra glottis	14	3	37	20.42857143
Tonsil	6	3	23	11.83333333

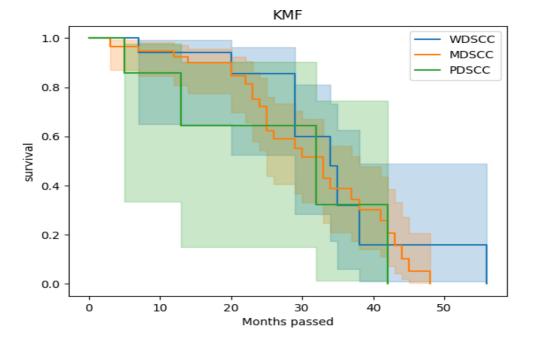
KMF



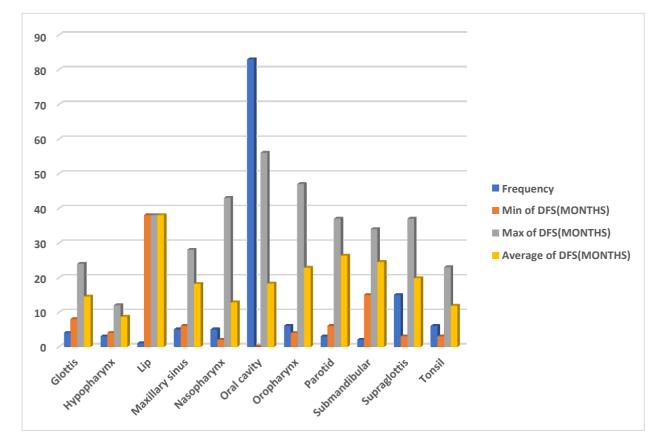


## 45. Effect of tumor histology on Disease free survival (DFS)-

	Engguerar	Min of DFS	Max of DFS	Average of DFS	
Histology	Frequency	(MONTHS)	(MONTHS) (MONTHS)		
MDSCC	84	0	48	17.05555556	
Others	10	6	41	25.30666667	
PDSCC	12	3	43	17.75277778	
WDSCC	23	2	56	19.67391304	



- Log rank test was done to analyze the association between pre-op histology and disease-free survival (DFS).
- There was no statistically significant difference found between DFS of WDSCC and MDSCC with a p-value of 0.47.
- There was no statistically significant difference found between DFS of WDSCC and PDSCC with a p-value of 0.43.
- There was no statistically significant difference found between DFS of MDSCC and PDSCC with a p-value of 0.41.

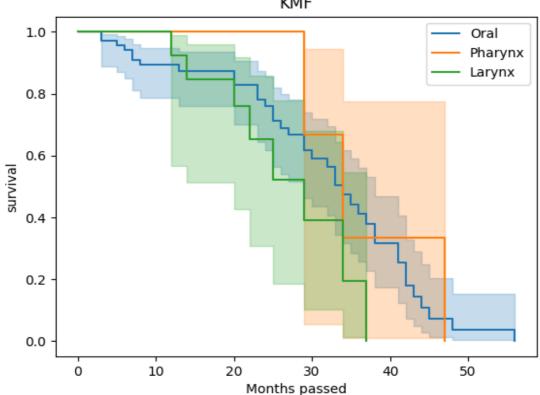


## 46. Site-wise disease-free survival analysis-

Subsite	Frequency	Min of DFS (MONTHS)	Max of DFS (MONTHS)	Average of DFS (MONTHS)
Glottis	4	8	24	14.5
Hypopharynx	3	4	12	8.666666667
Lip	1	38	38	38
Maxillary sinus	5	6	28	18.2
Nasopharynx	5	2	43	12.8

Oral cavity	83	0	56	18.27710843
Oropharynx	6	4	47	22.83333333
Parotid	3	6	37	26.33333333
Submandibular	2	15	34	24.5
Supra glottis	15	3	37	19.85714286
Tonsil	6	3	23	11.83333333

- Log rank test was done to analyze the association between different subsites of head • and neck cancer and DFS.
- There was no statistically significant difference found between DFS of oral cavity • tumors and larynx tumors, p-value was found to be 0.16.
- There was no statistically significant difference found between DFS of oral cavity • tumors and pharynx tumors, p-value was found to be 0.53.
- There was no statistically significant difference found between DFS of larynx and pharynx tumors, p-value was found to be 0.26.

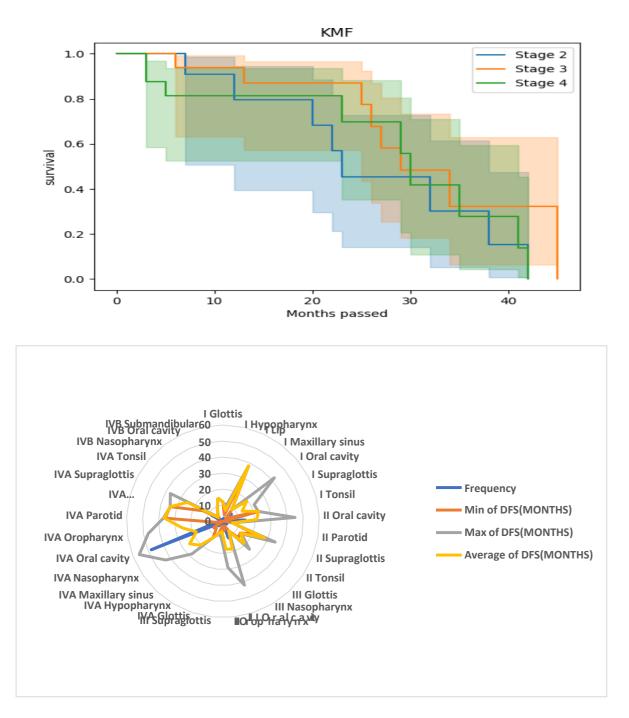


KMF

## 47. Stage wise DFS analysis-

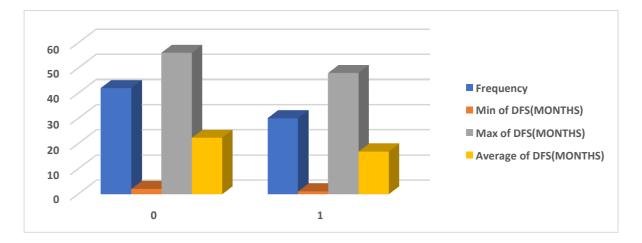
G*4 0 G4	Г	Min of DFS	Max of DFS	Average of DFS
Site & Stage	Frequency	(MONTHS)	(MONTHS)	(MONTHS)
I	15	2	42	17.26666667
Glottis	1	12	12	12
Hypopharynx	2	4	10	7
Lip	1	38	38	38
Maxillary sinus	1	9	9	9
Oral cavity	7	2	42	19.42857143
Supra glottis	2	5	22	13.5
Tonsil	1	23	23	23
II	20	1	45	19.85
Oral cavity	14	1	45	21.07142857
Parotid	1	6	6	6
Supra glottis	2	21	35	28
Tonsil	3	13	14	13.33333333
III	19	3	42	15.78947368
Glottis	2	14	24	19
Nasopharynx	1	7	7	7
Oral cavity	11	3	42	18.27272727
Oropharynx	2	6	29	17.5
Supra glottis	3	3	10	6.333333333
IVA	73	0	56	19.40277778
Glottis	1	8	8	8
Hypopharynx	1	12	12	12
Maxillary sinus	4	6	28	20.5
Nasopharynx	2	7	43	25
Oral cavity	48	0	56	17.75
Oropharynx	4	4	47	25.5
Parotid	2	36	37	36.5
Submandibular	1	34	34	34
Supra glottis	8	14	37	25.14285714
Tonsil	2	3	5	4

IVB	3	5	15	9.333333333
Nasopharynx	1	5	5	5
Oral cavity	1	8	8	8
Submandibular	1	15	15	15



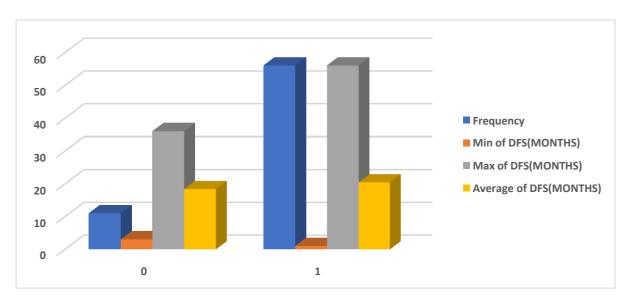
• Log rank test was done to analyze the association between stages of head and neck cancer and disease-free survival (DFS).

- There was statistically insignificant difference in DFS between stage I and stage II with a p-value of 0.35.
- There was statistically insignificant difference in DFS between stage II and stage III with a p-value of 0.52.
- There was statistically insignificant difference in DFS between stage I and stage III with a p-value of 0.91.



### 48. Effect of Lymph node positivity on DFS-

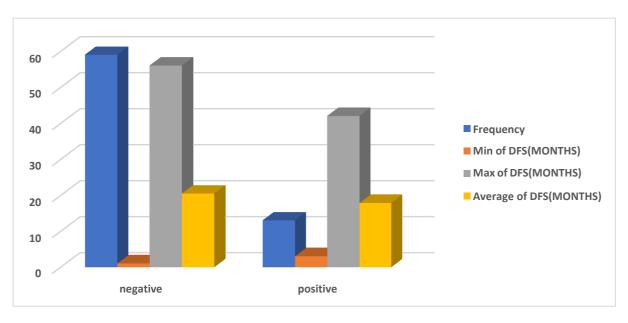
LN POSITIVITY	Frequency	Min of DFS	Max of DFS	Average of DFS
		(MONTHS)	(MONTHS)	(MONTHS)
0	42	2	56	22.30952381
1	30	1	48	16.8



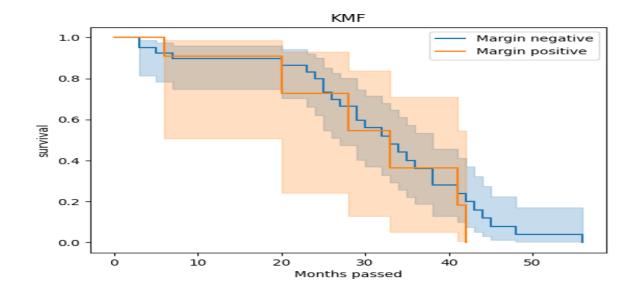
### 49. Effect of Lymph node dissection adequacy on DFS-

Lymph node dissection adequacy	Frequency	Min of DFS (MONTHS)	Max of DFS (MONTHS)	Average of DFS(MONTHS)
0	11	3	36	18.36363636
1	56	1	56	20.44642857

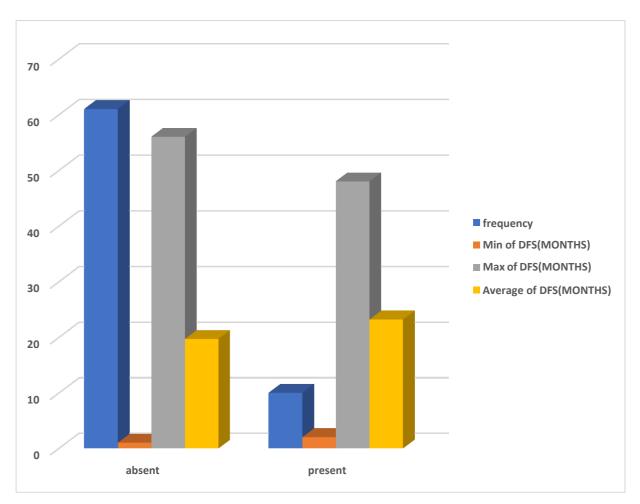
### 50. Effect of post op margin status on DFS-



Margin status	Frequency	Min of DFS (MONTHS)	Max of DFS (MONTHS)	Average of DFS (MONTHS)
negative	59	1	56	20.49152542
positive	13	3	42	17.84615385



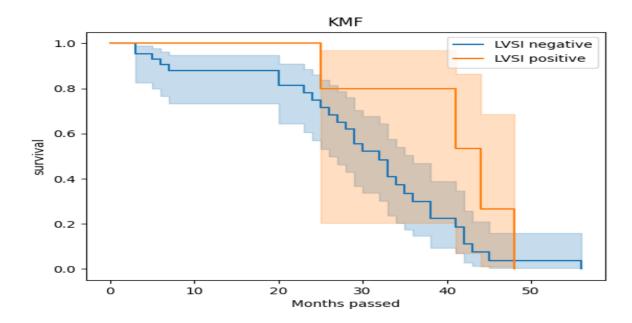
- Log rank test was done to analyze the association between post op margin status and disease-free survival (DFS).
- There was no statistically significant difference found between disease-free survival and post op margin status with a p-value of 0.63.



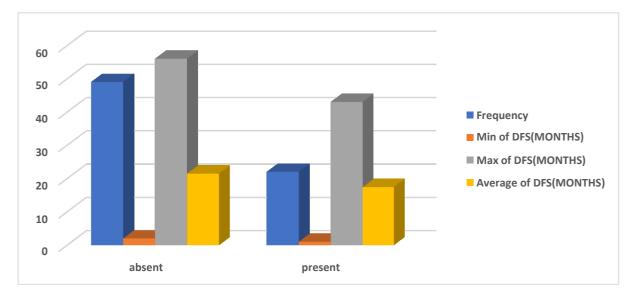
## 51. Effect of LVSI on DFS-

LVSI	frequency	Min of DFS (MONTHS)	Max of DFS (MONTHS)	Average of DFS (MONTHS)
absent	61	1	56	19.70491803
present	10	2	48	23.2

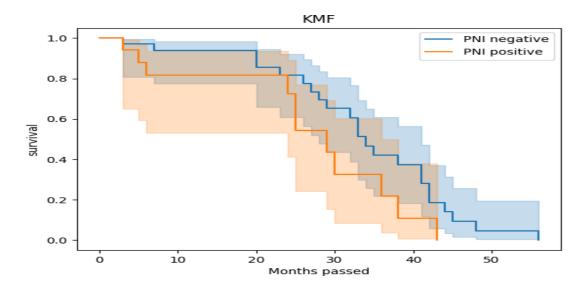
- Log rank test was done to analyze the association between LVSI and disease-free survival (DFS).
- There was no statistically significant difference found between disease-free survival (DFS) and LVSI with a p-value of 0.12.



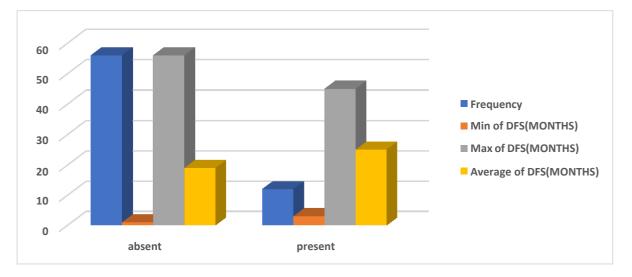
52. Effect of PNI on DFS-



PNI	Frequency	Min of DFS (MONTHS)	Max of DFS (MONTHS)	Average of DFS(MONTHS)
absent	49	2	56	21.44897959
present	22	1	43	17.40909091



- Log rank test was done to analyze the association between PNI and disease-free survival (DFS).
- There was no statistically significant difference found between disease free survival and PNI with a p-value of 0.08.

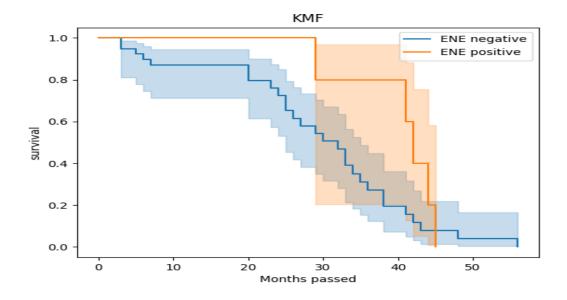


## 53. Effect of ENE on DFS-

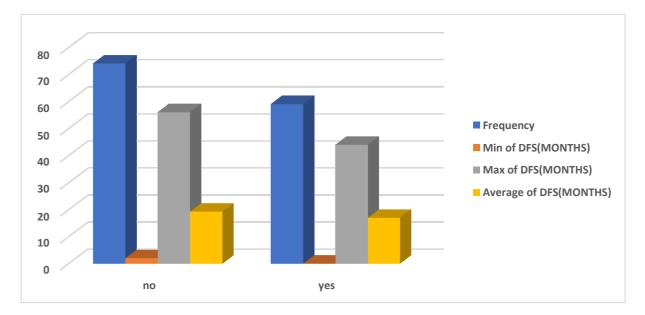
ENE	Frequency	Min of DFS (MONTHS)	Max of DFS (MONTHS)	Average of DFS(MONTHS)
absent	56	1	56	19.03571429
present	12	3	45	25.08333333

• Log rank test was done to analyze the association between ENE and disease-free survival (DFS).

• There was no statistically significant difference found between disease-free survival and ENE with a p-value of 0.11.



## 54. Effect of concurrent chemotherapy on DFS-



Concurrent	Freque	Min of	Max of	Average of
chemo	ncy	DFS(MONTHS)	DFS(MONTHS)	DFS(MONTHS)
no	74	2	56	19.26027397
yes	59	0	44	16.98305085

# **DISCUSSION**

Head and neck cancers (HNCs) are malignant tumors of the upper aerodigestive tract including the oral cavity, nasopharynx, oropharynx, hypopharynx, and larynx. Squamous cell carcinoma (SCC) constitutes >90% of HNCs.

## PATIENT CHARACTERISTICS-

After getting clearance from Institute Ethical Committee, the study started which includes follow-up of the head and neck cancer patients who received Definitive/Palliative Radiotherapy either in adjuvant or definitive setting at our Institute from 2018 to 2020. Full data could be collected for 133 patients.

Similar to other studies, most of our patients were male (73%) as compared to female (27%). Epidemiological data from studies by GLOBOCAN 2020 and ICMR Cancer Atlas etc. have also shown that three-fourths of head and neck cancer cases in India are males(11–13).

Similar to other studies, most of the patients (82%) were in their late forties while the rest of the patients (18%) were of age less than forty years(14–16).

Most of the patients (90%) were from western Rajasthan, while the remaining were from eastern Rajasthan (7%), from Uttar Pradesh (2.5%) and Delhi (1%)(17). Our Institute is the major multispecialty treatment center catering to the population in the North-western part of India

Previous studies conclude that height is having inverse association with the incidence of head and neck cancer(18). while in our database, most of the patients (92%) had the height of >=150cm and the rest of 8% had the height of <150cm.

There is no definitive causal association to be defined between Body Mass Index (BMI) and the incidence of occurrence of head and neck cancers. However, obesity is a known risk factor for many other cancers such as breast and colorectal etc. In Our study, As per the Definition of obesity for the Asian population, only 24% were obese (BMI  $\geq 25$ kg/m<sup>2</sup>) while 76% were non-obese patients (19,20).

In concordance with previous studies, most of the patients (62%) were having oral cavity involved while others were having other sites involved as pharynx, larynx, maxillary sinus

etc.(21,22). This may be related to the high prevalence of oral tobacco chewing in South East Asia including India.

Clinical presentation of the patient depends upon the primary site involved as most patients in the study group were having oral cavity involved so main initial presentation was ulcer (51%) along with pain (20%). Patient with nasopharyngeal cancer presented with complaint of nasal blockage associated with lymphadenopathy. Patients with oropharyngeal and hypopharyngeal cancer presented with laryngeal involvement presented with hoarseness of voice.

Clinical presentation time of patients with head and neck cancer is usually late, contributing due to multiple factors as literacy rate, approach to medical resources, social stigma etc. In the literature mean time interval of patients was approximately three months. In our study also, the median time of clinical presentation was four months in concordance with previous studies(23).

Consumption of alcohol and tobacco has been implicated in the pathogenesis of head and neck cancers. In countries like India, there is an increased prevalence of tobacco consumption that is associated with a relatively increased incidence of head and neck cancers as compared to the Western Population. Tobacco is considered a preventable cause of head and neck cancer pathogenesis. In our study group, most (64%) had a history of tobacco consumption, while 27% were having a history of alcohol consumption(24–26).

As history of comorbidities is of utmost significance because proper management of the malignancy includes oncological intervention to cure malignancy along with optimum control of the co-morbid condition. Studies suggest that the degree of comorbid burden may have an impact on the treatment delivered, with up to 20% receiving suboptimal regimens. Comorbidity has been cited as one of the factors implicated in treatment modification. In our study group, about 36% were having co-morbid conditions out of which 14% were having hypertension, 11% were having diabetes, and the rest were having other co-morbid condition as chronic kidney disease(CKD), cardiac disease etc.(27).

In India, most head and neck cancer patients present at a very advanced stage due to lack of awareness, education or the presence of social stigma. These patients with advanced disease do require a multi-disciplinary treatment paradigm with the involvement of Chemotherapy, radiotherapy, surgical intervention along with supportive care measures. As consistent with other studies, in our study group, most (72%) presented with the locally advanced disease, while only 28% presented with early disease(21,28,29).

Similar to other studies performed, our study group showed the presence of mostly (90%) squamous cell carcinoma and the rest (10%) with other Histology as adenoid cystic carcinoma, pleomorphic adenoma, spindle cell and basaloid variant of SCC(30,31).

## TREATMENT STRATEGY-

Many cancers of the head and neck can be cured, especially if they are found early. Although eliminating cancer is the primary goal of treatment, preserving the function of the nearby nerves, organs, and tissues is also very important. During planning treatment, consideration of how treatment might affect a person's quality of life, such as how a person feels, looks, talks, eats, and breathes, is also made. Treatment options and recommendations depend on several factors, including the site, type and stage of head and neck cancer, possible side effects, and the patient's preferences and overall health.

## TREATMENT STRATEGY IN OPERABLE SUBSITES-

In operable sites such as lip and oral cavity, surgery followed by postoperative radiation therapy is indeed the current standard and preferred strategy. Concomitant chemotherapy to postoperative radiation therapy is added on the basis of adverse factors of the surgical histopathology report. In surgical histopathology reports, various risk factors are paid attention to. The most important of these are margin status and Extra Nodal Extension (ENE) and sometimes LVSI, PNI, histology, pathological staging, lymph node status, etc., according to which adjuvant treatment is decided. Presence of positive margin status and extra-nodal extension are considered to be indication for adjuvant concurrent chemoradiotherapy(32,33).

In our study, majority of oral cavity cancer (72%) underwent surgical intervention. Out of those 25% underwent adjuvant chemoradiation while 75% underwent adjuvant radiation therapy alone. 28% patients of oral cavity were inoperable, underwent definitive chemoradiation or radiotherapy alone. Pharyngeal tumors were treated with the current standard treatment of radical chemoradiation or radiation therapy alone.

In locally advanced operable sites of head and neck cancers, although the standard treatment guidelines do not include use of NACT as in most of the studies, it has failed to increase the OS, there is always an attraction for downstaging the disease, increasing the probability of R0 resections, sometimes preservation of mandible and reducing the morbidity of the surgery. In those patients who have pCR, an advantage in survival is also possible(34,35). In our study, total 25 patients (24 oral cavity and 1 maxillary sinus) underwent NACT with intent of downstaging. 23 of these patients were stage IVA. 2 patients were early stage but received NACT as bridging therapy in view of waiting list for the OT. Out of 23 patients given NACT for the downstaging, 13 could be operated while rest of the patients continued for radiation therapy as a main treatment and were not operated. Thus, out of 50% patients who were operated, received induction chemotherapy with either two drug regimen or three drugregimen. 48% Patients received two drugs Platinum and Taxane while 30% received triple drug regimen of docetaxel, Cisplatin and 5FU (TPF). Out of 24 patients, 11 patients did not undergo surgical intervention due to tumor location at either floor of mouth or tumor of tongue encroaching posterior  $1/3^{rd}$  and with unsatisfactory regression. 1 patient was having tumor at floor of mouth opted for lesser morbid radical chemoradiation, so induction chemotherapy was followed by radiation therapy, currently doing well(31–35).

Lymph node metastases in the neck are considered to be a major prognostic factor in patients with head and neck squamous cell carcinoma (HNSCC). Assessment and treatment of lymph nodes in the neck are of great significance. Inappropriate management of lymph node metastases can result in regional failure as well as distant failure. Radical neck dissection has been and is still considered the "gold standard" for the surgical management of lymph node metastases of HNSCC. Adequate lymph node dissection is to be considered if >=18 LNs have been dissected and has been associated with better outcome. Short axis diameter (SAD) of Lymph node is also considered to a prognostic factor in Head and neck cancer patients. In our study, almost 77% were having adequate lymph node dissection. In our database, SAD of LN ranges from 0.4 cm to 3.8 cm with a median value of 1.22cm(41,42).

## **FACTORS AFFECTING OUTCOME-**

Various factors have been implicated in prediction of prognosis of head and neck cancer patients which include stage at presentation, Lymph node status, site involved, treatment strategy, risk factors in pathological staging as presence of PNI, LVSI, ENE, WPOI, margin status along with some patient related factors as age, comorbidity status, performance status, BMI etc.

Various studies have showed association of **body mass index (BMI)** with overall survival and found out that increased BMI is a predictor of better overall survival. Low BMI has been found to be associated with higher incidence of locoregional relapse along with impaired overall survival. In our study, correlation between BMI and overall survival was found to be statistically insignificant with a p-value of 0.99 and hazard ratio of 1.00(43–45).

In **Operated Patients** in our study, we found **Histopathological Features** such as LVSI, PNI, ENE, margin status etc. were found to have an impact on patient outcome.

**Depth of invasion (DOI)** has been included in AJCC staging system to upstage or downstage the cancer on the basis of DOI. Literature has concluded DOI as a strong predictor of lymph nodal recurrence and overall survival also. In our study, DOI was found be associated with overall survival with a p-value of 0.87 (95% C.I. ranging from 0.79 to 1.22)(46).

As there are multiple **subsites in head and neck cancers** and site involved determines the management strategy to a greater extent as the sites which are surgically accessible are primarily managed by surgical intervention while sites which are not accessible by surgery are to be managed with Chemoradiation or Radiation alone protocol. Prognosis is also determined to a greater extent by site involved while other factors like stage, performance status, comorbidity status, treatment modality used etc. also determines the prognosis of the patients. As per literature, lip, oral cavity, larynx, nasopharynx subsites are to be considered sites with better prognosis. In our study ,Patients with oral cavity has slightly better prognosis than pharyngeal tumors(median OS of 35 vs 32 months; p=0.66) while patients with pharyngeal and laryngeal tumors were having almost similar overall survival (median survival 32 months; p value of 0.32) (47–50).

The patients who got operated for oral cavity tumors were having 3-year cumulative survival rate of 50% which is in concordance to multi-institutional study conducted by ICMR (49).

In countries like India, due to either lack of awareness or due to lack of resources, mostly patients with head and neck cancer usually present in locally advanced **stage** for which management include multimodality treatment with surgery + either RT alone or chemoradiation. Advanced disease patients do have dismal prognosis as compared to early-

stage disease due to treatment related complications or higher incidence of metastasis. However due to better radiation technique and including concurrent chemotherapy with radiation has improved survival outcome to a much larger extent as compared to earlier. In our study also, stage IVA patients were having better OS as compared to stage III(median OS of 38 months vs 30 months ;p=0.03) (47,49,51,52).

**Lymph node metastasis** is considered to be an independent factor in predicting survival in patients with head and neck cancers. Various factors related to lymph node dissection affect outcome in the patients as adequacy of lymph node dissection, lymph node positivity, lymph node yield and density. Adequate lymph node dissection (>=18 LN) has been found to be associated with better outcome as compared to inadequate lymph node dissection(41). Increased lymph node yield is associated with better outcome(53) (54). Similar to literature, in our study also, lymph node positivity was found to be associated with dismal outcome (median OS of 32 vs 33 months; p=0.73) while adequate lymph node dissection was found to be an indicator of better outcome (median OS of 38 vs 32 months; p=0.68).

Post operative **surgical margin status** is found to be an important prognostic factor in patients with head and neck cancer who underwent surgical intervention. With reference to optimal distance between tumor and the surgical margin, recent reports recommended cutoffs less than 5mm. While assessing surgical margin, if margin is found to be involved by cancerous cells, it confers poor prognosis to the patients and requires more intensive treatment either re-resection or concurrent chemoradiotherapy. While those without margin involvement are associated with favorable outcome and doesn't require concurrent chemotherapy for management. Recent National Comprehensive Cancer Network (NCCN) guidelines define a clear margin as invasive tumor that is at least 5 mm from the resected margin, a close margin as invasive tumor that is nearer than 5 mm, and a positive margin as invasive tumor at the margin of resection. In our study also, although statistically not significant, margin positivity besides intensive treatment with adjuvant chemoradiation was associated with poor prognosis (median OS 32m vs 41m ;p=0.82)as compared to margin negativity(55–59).

The presence of **lympho-vascular invasion (LVSI)** is considered a prognostic determinant for different malignancies and is frequently taken into consideration by surgeons and oncologists to determine patients' treatment. Various studies have concluded presence of lympho-vascular invasion as a poor prognostic factor in patients with head and neck cancers.

In our study also, presence of LVSI was associated with a poor outcome (median OS of 32.5 months vs 42.5 months; p=0.24) despite intensive treatment as compared to its absence in surgical specimen(60,61).

**Perineural invasion (PNI)** is a mechanism of tumor dissemination that can provide a challenge to tumor eradication and is a common pathologic finding in head and neck cancer that is associated with poor clinical outcomes. PNI is a histologic finding of tumor cell infiltration and is distinct from perineural tumor spread (PNTS), which is macroscopic tumor involvement along a nerve extending from the primary tumor that is by definition more advanced, being radiologically or clinically apparent. In our study, PNI was present in about one third of the operated patients and was associated with poor prognosis(median OS of 31 vs 32 months; p=0.63) as compared to the patients with absence of PNI(62–66).

**Extra-nodal extension (ENE)** is a significant prognostic factor in head and neck squamouscell carcinoma and is classified as N3b by AJCC 8<sup>th</sup> edition. It represents one of the most important adverse prognostic factors for survival in patients with head and neck squamous cell carcinoma. Stratification of ENE has been done into ENEmi (minor, up-to 2mm) and ENEma (major, over 2mm). Presence of ENEmi was associated with better outcome as compared to ENEma. The clinical significance of surgical extra-nodal extension was much greater for patients with laryngeal/hypopharyngeal cancer than oral cancer. In our study also, Presence of ENE was associated with poor outcome(median OS of 32 vs 42 months ; p= 0.38 )as compared to patients with ENE negative(67–70).

Historically unresectable head and neck cancer patients were treated with radiotherapy alone. Following which concept of using low dose chemotherapy drugs as radiosensitizers came that helped in increasing survival outcome at the cost of increasing toxicities. Many chemotherapy drugs have been investigated in concurrent setting for example Cisplatin, carboplatin, cetuximab. Many recent landmark trials have showed concurrent cisplatin as standard of care as compared to concurrent cetuximab in HPV positive oropharyngeal cancer in terms of better outcome and toxicity profile. How-ever there is lack of consensus on schedule of chemotherapy interval as 3 weekly vs weekly regimens are having different toxicity, compliance profile. In our study, **concurrent chemotherapy** was associated with slightly dismal outcome as compared to patients who did not receive concurrent chemoradiotherapy (median OS of 32 vs 33 months ;p=0.73), However it was statistically insignificant(38,71–76).

# TREATMENT STRATEGY IN PHARYNGEAL TUMORS AND INOPERABLE SUBSITES-

Cancers as nasopharynx, oropharynx and hypopharynx, concurrent chemoradiation or radiation therapy alone is the mainstay of treatment based on disease stage and patients tolerability(77).

In our study also, mostly patients with these subsites underwent either definitive radiotherapy alone or chemoradiation. Out of total 133 patients, we had total 59 patients who underwent radical radiotherapy/chemoradiotherapy. Out of these, 24 patients were of inoperable oral cavity cancer while 35 patients were of other subsites as pharynx and larynx. Majority of patients were cancer of supra-glottis (8%) followed by Oropharynx (3%). Only 2% patients had glottic cancer. 100% of these patients received 66Gy-70Gy/33-35 Fr/6-7 weeks 6MV 3DRCT/IMRT. 17 patients received radiation therapy alone while 18 patients received concomitant chemotherapy too.

Out of these 17 patients who received radiation therapy alone, response assessment imaging data was available for 6 patients, all of them had complete response and 100% of them were relapse free. Only 1 patient died due to some unrelated cause. Out of these 7 patients are dead while 10 patients are alive. Out of total 35 patients treated, the median OS is 20 months and without any measurable statistically significant difference between those treated with radiation therapy alone or chemoradiation. The survival thus flattens out at 50% at 36 months. Biologically too, most recurrence happen in head and neck cancers in the initial 24 months. This result is in concordance to a multi-institutional study (12 institutes) conducted by Indian Council of Medical Research (ICMR) which shows 3-year survival of about 30-50% in patients with locally advanced oropharyngeal tumors(49).

Out of the patients received concurrent chemoradiotherapy, response assessment data was available for 8 patients our of which 4 patients were having CR, 3 patients were having PR while 1 patient was having progressive disease.

In patients with inoperable oral cavity tumors either base of tongue involvement or posterior third involvement, 16 patients received concurrent chemoradiation while 8 received radiation therapy alone. Median OS for these patients was found to be 13 months (34). This data is in concordance to a multi-institutional study (12 institutes) by ICMR which shows 3-year cumulative survival of about 50% in these patients(49).

# **CONCLUSION**

Head and Neck Squamous Cell Cancers are the major cause of morbidity and mortality in India as well as many other countries of Asia. Tobacco is the main preventable cause of this disease. Only very few patients present with stage I or II disease which can be cured in using Surgery or Radiation Therapy. Unfortunately, due to menace of tobacco and unawareness, majority (75%) patients present in locally advanced stage, at which they are either not amenable to upfront radical treatment with surgery or radiation therapy or have high incidence of local recurrence after their primary treatment. The locally advanced or recurrent head and neck cancers seriously compromise the quality of life (QOL) of patients besides limiting the survival to mere months. The multimodal treatment strategies for such patients have important goals of holding or improving the quality of life till patients live, and add ameagre amount of survival of a few months.

Despite various meticulously planned aggressive surgeries and high technology radiation therapy, patients of these locally advanced head and neck cancer carry a dismal prognosis, a finding in our study too.

Various factors contribute to the prognosis of the patients with head and neck cancers as the general condition and nutritional status of the patients, age, co-morbidity status, stage at initial presentation, treatment offered, treatment cost, availability of various treatment modalities, and in those patients who get operated, pathologic risk factors. Patient should be offered best available treatment modality for his best management and along with proper counselling about the disease status and treatment approach.

In patients who recur despite use of intensive treatment modality, there is not much advantage on survival of adding immunotherapy and other targeted agents. With such a plateauing in outcomes despite multimodal treatments it is unclear how more the needs of such patients who are in the most productive age group in the community can be met. The current study also draws attention to three urgencies where head and neck cancers are concerned:

- 1. Urgent need to explore newer, more effective and affordable treatments for locally advanced and recurrent head and neck cancers.
- 2. More honest efforts for tobacco control for primary prevention and reduce the burden of head and neck cancers.
- 3. Aggressive efforts at increasing awareness and screening of oral cancers as has been initiated in the Non-Communicable Disease Control (NCDCPS) programs by the Government of India.

# **REFERENCES**

- Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer statistics, 2022. CA Cancer J Clin. 2022 Jan;72(1):7–33.
- Gatta G, Botta L, Sánchez MJ, Anderson LA, Pierannunzio D, Licitra L, et al. Prognoses and improvement for head and neck cancers diagnosed in Europe in early 2000s: The EUROCARE-5 population-based study. Eur J Cancer Oxf Engl 1990. 2015 Oct;51(15):2130–43.
- 3. Datta S, Chaturvedi P, Mishra A, Pawar P. A review of Indian literature for association of smokeless tobacco with malignant and premalignant diseases of head and neck region. Indian J Cancer. 2014;51(3):200–8.
- Kawakita D, Matsuo K. Alcohol and head and neck cancer. Cancer Metastasis Rev. 2017 Sep;36(3):425–34.
- Spence T, Bruce J, Yip KW, Liu FF. HPV Associated Head and Neck Cancer. Cancers. 2016 Aug 5;8(8):75.
- Goldenberg D, Golz A, Netzer A, Rosenblatt E, Rachmiel A, Goldenberg RF, et al. Epstein-Barr virus and cancers of the head and neck. Am J Otolaryngol. 2001;22(3):197–205.
- 7. Mehanna H, Paleri V, West CML, Nutting C. Head and neck cancer—Part 1: Epidemiology, presentation, and prevention. BMJ. 2010 Sep 20;341:c4684.
- 8. Lo Nigro C, Denaro N, Merlotti A, Merlano M. Head and neck cancer: improving outcomes with a multidisciplinary approach. Cancer Manag Res. 2017;9:363–71.
- 9. Bar-Ad V, Palmer J, Yang H, Cognetti D, Curry J, Luginbuhl A, et al. Current management of locally advanced head and neck cancer: the combination of chemotherapy with locoregional treatments. Semin Oncol. 2014 Dec;41(6):798–806.
- Wise-Draper TM, Bahig H, Tonneau M, Karivedu V, Burtness B. Current Therapy for Metastatic Head and Neck Cancer: Evidence, Opportunities, and Challenges. Am Soc Clin Oncol Educ Book Am Soc Clin Oncol Annu Meet. 2022 Apr;42:1–14.

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021 May;71(3):209–49.
- Gormley M, Creaney G, Schache A, Ingarfield K, Conway DI. Reviewing the epidemiology of head and neck cancer: definitions, trends and risk factors. Br Dent J. 2022 Nov;233(9):780–6.
- Gender wise distribution of head and neck cancer patients [Internet]. ResearchGate.
   [cited 2022 Dec 12]. Available from: https://www.researchgate.net/figure/Gender-wisedistribution-of-head-and-neck-cancer-patients\_tbl1\_358309357
- Bajpai S, Zhang N, Lott DG. Tracking changes in age distribution of head and neck cancer in the United States from 1975 to2016. Clin Otolaryngol Off J ENT-UK Off J Neth Soc Oto-Rhino-Laryngol Cervico-Facial Surg. 2021 Nov;46(6):1205–12.
- 15. Halmos GB, Bras L, Siesling S, van der Laan BF a. M, Langendijk JA, van Dijk B a. C. Age-specific incidence and treatment patterns of head and neck cancer in the Netherlands-A cohort study. Clin Otolaryngol Off J ENT-UK Off J Neth Soc Oto-Rhino-Laryngol Cervico-Facial Surg. 2018 Feb;43(1):317–24.
- Head and Neck Cancer Risk Factors and Prevention [Internet]. Cancer.Net. 2012 [cited 2022 Dec 12]. Available from: https://www.cancer.net/cancer-types/head-and-neck-cancer/risk-factors-and-prevention
- Aggarwal V, Rao D, Mathur A, Batra M, Makkar D. Prevalence of head and neck and oral cancer in Rajasthan: An infirmary based retrospective study. Climical Cancer Investig J. 2015 Apr 1;0.
- Leoncini E, Ricciardi W, Cadoni G, Arzani D, Petrelli L, Paludetti G, et al. Adult height and head and neck cancer: a pooled analysis within the INHANCE Consortium. Eur J Epidemiol. 2014 Jan;29(1):35–48.
- 19. Bakar D, Mehrzad R. 12 Obesity and head and neck cancer. In: Mehrzad R, editor. The Link Between Obesity and Cancer [Internet]. Academic Press; 2023 [cited 2022
  Dec 12]. p. 187–201. Available from: https://www.sciencedirect.com/science/article/pii/B9780323909655000167

- 20. Wang K, Yu X hua, Tang YJ, Tang Y ling, Liang X hua. Obesity: An emerging driver of head and neck cancer. Life Sci. 2019 Sep 15;233:116687.
- Dandekar M, Tuljapurkar V, Dhar H, Panwar A, DCruz AK. Head and neck cancers in India. J Surg Oncol. 2017 Apr;115(5):555–63.
- Simard EP, Torre LA, Jemal A. International trends in head and neck cancer incidence rates: differences by country, sex and anatomic site. Oral Oncol. 2014 May;50(5):387–403.
- Philip PM, Kannan S. Patient Interval and Associated Factors in the Diagnostic Journey of Oral Cancer: A Hospital-Based Cross-Sectional Study from Kerala, India. Asian Pac J Cancer Prev APJCP. 2021 Oct 1;22(10):3143–9.
- Maier H, Weidauer H. [Alcohol drinking and tobacco smoking are the chief risk factors for ENT tumors. Increased incidence of mouth cavity, pharyngeal and laryngeal carcinomas]. Fortschr Med. 1995 Apr 20;113(11):157–60.
- 25. Jethwa AR, Khariwala SS. Tobacco-related carcinogenesis in head and neck cancer. Cancer Metastasis Rev. 2017 Sep;36(3):411–23.
- 26. Maier H, Dietz A, Gewelke U, Heller WD, Weidauer H. Tobacco and alcohol and the risk of head and neck cancer. Clin Investig. 1992;70(3–4):320–7.
- Paleri V, Wight RG, Silver CE, Haigentz M, Takes RP, Bradley PJ, et al. Comorbidity in head and neck cancer: A critical appraisal and recommendations for practice. Oral Oncol. 2010 Oct 1;46(10):712–9.
- Pandey KC, Revannasiddaiah S, Pant NK, Bhatt HC. Stage-wise presentation of nonmetastatic head and neck cancer: an analysis of patients from the Kumaon hills of India. Asian Pac J Cancer Prev APJCP. 2014;15(12):4957–61.
- 29. Vernham GA, Crowther JA. Head and neck carcinoma--stage at presentation. Clin Otolaryngol Allied Sci. 1994 Apr;19(2):120–4.
- Mehrotra R, Singh M, Gupta RK, Singh M, Kapoor AK. Trends of prevalence and pathological spectrum of head and neck cancers in North India. Indian J Cancer. 2005;42(2):89–93.

- Lung T, Tăşcău OC, Almăşan HA, Mureşan O. Head and neck cancer, epidemiology and histological aspects - Part 1: a decade's results 1993-2002. J Cranio-Maxillo-fac Surg Off Publ Eur Assoc Cranio-Maxillo-fac Surg. 2007 Mar;35(2):120–5.
- 32. Haffty BG. CONCURRENT CHEMORADIATION IN THE TREATMENT OF HEAD AND NECK CANCER. Hematol Oncol Clin North Am. 1999 Aug 1;13(4):719–42.
- 33. Seiwert TY, Salama JK, Vokes EE. The chemoradiation paradigm in head and neck cancer. Nat Clin Pract Oncol. 2007 Mar;4(3):156–71.
- D'Cruz AK, Vaish R, Dhar H. Oral cancers: Current status. Oral Oncol. 2018 Dec;87:64–9.
- 35. Bossi P, Lo Vullo S, Guzzo M, Mariani L, Granata R, Orlandi E, et al. Preoperative chemotherapy in advanced resectable OCSCC: long-term results of a randomized phase III trial. Ann Oncol. 2014 Feb 1;25(2):462–6.
- 36. Haddad R, Colevas AD, Tishler R, Busse P, Goguen L, Sullivan C, et al. Docetaxel, cisplatin, and 5-fluorouracil-based induction chemotherapy in patients with locally advanced squamous cell carcinoma of the head and neck: the Dana Farber Cancer Institute experience. Cancer. 2003 Jan 15;97(2):412–8.
- Posner MR, Colevas AD, Tishler RB. The role of induction chemotherapy in the curative treatment of squamous cell cancer of the head and neck. Semin Oncol. 2000 Aug;27(4 Suppl 8):13–24.
- 38. Rapidis AD, Trichas M, Stavrinidis E, Roupakia A, Ioannidou G, Kritselis G, et al. Induction chemotherapy followed by concurrent chemoradiation in advanced squamous cell carcinoma of the head and neck: final results from a phase II study with docetaxel, cisplatin and 5-fluorouracil with a four-year follow-up. Oral Oncol. 2006 Aug;42(7):675–84.
- Ferrari D, Ghi MG, Franzese C, Codecà C, Gau M, Fayette J. The Slippery Role of Induction Chemotherapy in Head and Neck Cancer: Myth and Reality. Front Oncol. 2020;10:7.

- 40. Lorch JH, Goloubeva O, Haddad RI, Cullen K, Sarlis N, Tishler R, et al. Induction chemotherapy with cisplatin and fluorouracil alone or in combination with docetaxel in locally advanced squamous-cell cancer of the head and neck: long-term results of the TAX 324 randomised phase 3 trial. Lancet Oncol. 2011 Feb;12(2):153–9.
- Divi V, Chen MM, Nussenbaum B, Rhoads KF, Sirjani DB, Holsinger FC, et al. Lymph Node Count From Neck Dissection Predicts Mortality in Head and Neck Cancer. J Clin Oncol Off J Am Soc Clin Oncol. 2016 Nov 10;34(32):3892–7.
- 42. Hamoir M, Schmitz S, Gregoire V. The role of neck dissection in squamous cell carcinoma of the head and neck. Curr Treat Options Oncol. 2014 Dec;15(4):611–24.
- 43. Gama RR, Song Y, Zhang Q, Brown MC, Wang J, Habbous S, et al. Body mass index and prognosis in patients with head and neck cancer. Head Neck. 2017 Jun;39(6):1226–33.
- 44. Wu EL, Peesay T, Randall JA, Nelson LL, Shearer SC, Johnson BC, et al. Increased body mass index predicts prolonged survival in patients with head and neck squamous cell carcinoma. Head Neck. 2022;44(2):325–31.
- 45. (PDF) The effect of BMI at cancer diagnosis on survival of patients with head and neck carcinoma [Internet]. [cited 2022 Dec 15]. Available from: https://www.researchgate.net/publication/364702594\_The\_effect\_of\_BMI\_at\_cancer\_d iagnosis\_on\_survival\_of\_patients\_with\_head\_and\_neck\_carcinoma
- 46. Pentenero M, Gandolfo S, Carrozzo M. Importance of tumor thickness and depth of invasion in nodal involvement and prognosis of oral squamous cell carcinoma: a review of the literature. Head Neck. 2005 Dec;27(12):1080–91.
- 47. Pruegsanusak K, Peeravut S, Leelamanit V, Sinkijcharoenchai W, Jongsatitpaiboon J, Phungrassami T, et al. Survival and prognostic factors of different sites of head and neck cancer: an analysis from Thailand. Asian Pac J Cancer Prev APJCP. 2012;13(3):885–90.
- 48. Yeole BB, Sankaranarayanan R, Sunny M Sc L, Swaminathan R, Parkin DM. Survival from head and neck cancer in Mumbai (Bombay), India. Cancer. 2000 Jul 15;89(2):437–44.

- Nandakumar A, Nandakumar A. Survival in Head and Neck Cancers Results of A Multi- Institution Study. Asian Pac J Cancer Prev APJCP. 2016;17(4):1745–54.
- 50. Du E, Mazul AL, Farquhar D, Brennan P, Anantharaman D, Abedi-Ardekani B, et al. Long-term Survival in Head and Neck Cancer: Impact of Site, Stage, Smoking, and Human Papillomavirus Status. The Laryngoscope. 2019 Nov;129(11):2506–13.
- 51. Five-Year Survival Rates | SEER Training [Internet]. [cited 2022 Dec 19]. Available from: https://www.training.seer.cancer.gov/head-neck/intro/survival.html
- 52. Understanding the Staging of Head and Neck Cancer [Internet]. Cancer Treatment Centers of America. 2018 [cited 2022 Dec 19]. Available from: https://www.cancercenter.com/cancer-types/head-and-neck-cancer/stages
- Cheraghlou S, Otremba M, Kuo Yu P, Agogo GO, Hersey D, Judson BL. Prognostic Value of Lymph Node Yield and Density in Head and Neck Malignancies. Otolaryngol--Head Neck Surg Off J Am Acad Otolaryngol-Head Neck Surg. 2018 Jun;158(6):1016– 23.
- Merz S, Timmesfeld N, Stuck BA, Wiegand S. Impact of Lymph Node Yield on Outcome of Patients with Head and Neck Cancer and pN0 Neck. Anticancer Res. 2018 Sep;38(9):5347–50.
- 55. Baddour HM, Magliocca KR, Chen AY. The importance of margins in head and neck cancer. J Surg Oncol. 2016 Mar;113(3):248–55.
- 56. Eldeeb H, Macmillan C, Elwell C, Hammod A. The Effect of the Surgical Margins on the Outcome of Patients with Head and Neck Squamous Cell Carcinoma: Single Institution Experience. Cancer Biol Med. 2012 Mar 1;9(1):29–33.
- 57. Haque R, Contreras R, McNicoll MP, Eckberg EC, Petitti DB. Surgical margins and survival after head and neck cancer surgery. BMC Ear Nose Throat Disord. 2006 Feb 17;6:2.
- Li MM, Puram SV, Silverman DA, Old MO, Rocco JW, Kang SY. Margin Analysis in Head and Neck Cancer: State of the Art and Future Directions. Ann Surg Oncol. 2019 Nov;26(12):4070–80.

- Thomas Robbins K, Triantafyllou A, Suárez C, López F, Hunt JL, Strojan P, et al. Surgical margins in head and neck cancer: Intra- and postoperative considerations. Auris Nasus Larynx. 2019 Feb;46(1):10–7.
- Fives C, Feeley L, O'Leary G, Sheahan P. Importance of lymphovascular invasion and invasive front on survival in floor of mouth cancer. Head Neck. 2016 Apr;38 Suppl 1:E1528-1534.
- Martins-Andrade B, Dos Santos Costa SF, Sant'ana MSP, Altemani A, Vargas PA, Fregnani ER, et al. Prognostic importance of the lymphovascular invasion in head and neck adenoid cystic carcinoma: A systematic review and meta-analysis. Oral Oncol. 2019 Jun;93:52–8.
- Ampil FL, Hardin JC, Peskind SP, Stucker FJ. Perineural invasion in skin cancer of the head and neck: a review of nine cases. J Oral Maxillofac Surg Off J Am Assoc Oral Maxillofac Surg. 1995 Jan;53(1):34–8.
- Bakst RL, Glastonbury CM, Parvathaneni U, Katabi N, Hu KS, Yom SS. Perineural Invasion and Perineural Tumor Spread in Head and Neck Cancer. Int J Radiat Oncol Biol Phys. 2019 Apr 1;103(5):1109–24.
- 64. Hughes RT, Farris J, Steber C, Frizzell BA, Greven KM. Perineural Invasion As the Sole Pathologic Risk Factor After Surgical Resection for Head and Neck Squamous Cell Carcinoma. Cureus. 2021 Feb 3;13(2):e13094.
- 65. Miller ME, Palla B, Chen Q, Elashoff DA, Abemayor E, St John MA, et al. A novel classification system for perineural invasion in noncutaneous head and neck squamous cell carcinoma: histologic subcategories and patient outcomes. Am J Otolaryngol. 2012;33(2):212–5.
- Schmitd LB, Scanlon CS, D'Silva NJ. Perineural Invasion in Head and Neck Cancer. J Dent Res. 2018 Jul;97(7):742–50.
- Hiyama T, Kuno H, Nagaki T, Sekiya K, Oda S, Fujii S, et al. Extra-nodal extension in head and neck cancer: how radiologists can help staging and treatment planning. Jpn J Radiol. 2020 Jun;38(6):489–506.

- 68. Kwon M, Roh JL, Lee J, Cho KJ, Choi SH, Nam SY, et al. Extranodal extension and thickness of metastatic lymph node as a significant prognostic marker of recurrence and survival in head and neck squamous cell carcinoma. J Cranio-Maxillo-fac Surg Off Publ Eur Assoc Cranio-Maxillo-fac Surg. 2015 Jul;43(6):769–78.
- Matsumoto F, Mori T, Matsumura S, Matsumoto Y, Fukasawa M, Teshima M, et al. Prognostic significance of surgical extranodal extension in head and neck squamous cell carcinoma patients. Jpn J Clin Oncol. 2017 Aug 1;47(8):699–704.
- 70. Tirelli G, Tofanelli M, Sacchet E, Bussani R, Shafiei V, Gatto A, et al. Extranodal extension in head and neck squamous cell cancer: is there a role for further stratification? Br J Oral Maxillofac Surg. 2021 Jun;59(5):567–72.
- Brockstein B, Vokes EE. Concurrent chemoradiotherapy for head and neck cancer. Semin Oncol. 2004 Dec;31(6):786–93.
- 72. Burri RJ, Lee NY. Concurrent chemotherapy and radiotherapy for head and neck cancer. Expert Rev Anticancer Ther. 2009 Mar;9(3):293–302.
- 73. Iqbal MS, Chaw C, Kovarik J, Aslam S, Jackson A, Kelly J, et al. Primary Concurrent Chemoradiation in Head and Neck Cancers with Weekly Cisplatin Chemotherapy: Analysis of Compliance, Toxicity and Survival. Int Arch Otorhinolaryngol. 2017 Apr;21(2):171–7.
- 74. Urba SG. Concurrent chemoradiotherapy in head and neck cancer. Curr Oncol Rep. 1999;1(2):105–9.
- 75. Xiang M, Colevas AD, Holsinger FC, Le QTX, Beadle BM. Survival After Definitive Chemoradiotherapy With Concurrent Cisplatin or Carboplatin for Head and Neck Cancer. J Natl Compr Cancer Netw JNCCN. 2019 Sep 1;17(9):1065–73.
- 76. EORTC [Internet]. EORTC. [cited 2022 Dec 21]. Available from: https://www.eortc.org/research\_field/clinical-detail/22931/
- 77. Dastidar AG, Saha S, Srivastava A, Chakroborty D, Sardar B. Management of unresectable head and neck cancers a retrospective analysis at a rural medical college

of India. Indian J Otolaryngol Head Neck Surg Off Publ Assoc Otolaryngol India. 2010 Jan;62(1):49–54.

- Mathur P, Sathishkumar K, Chaturvedi M, Das P, Sudarshan KL, Santhappan S, et al. Cancer Statistics, 2020: Report From National Cancer Registry Programme, India. JCO Glob Oncol. 2020 Jul;6:1063–75.
- 79. Gillison ML, Trotti AM, Harris J, Eisbruch A, Harari PM, Adelstein DJ, et al. Radiotherapy plus cetuximab or cisplatin in human papillomavirus-positive oropharyngeal cancer (NRG Oncology RTOG 1016): a randomised, multicentre, noninferiority trial. Lancet Lond Engl. 2019 Jan 5;393(10166):40–50.
- Mehanna H, Robinson M, Hartley A, Kong A, Foran B, Fulton-Lieuw T, et al. Radiotherapy plus cisplatin or cetuximab in low-risk human papillomavirus-positive oropharyngeal cancer (De-ESCALaTE HPV): an open-label randomised controlled phase 3 trial. The Lancet. 2019 Jan 5;393(10166):51–60.

# **ANNEXURES**

## ANNEXURE-1



# अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर All India Institute of Medical Sciences, Jodhpur संस्थागत नैतिकता समिति Institutional Ethics Committee

No. AIIMS/IEC/2021/2548

Date: 12/03/2021

## ETHICAL CLEARANCE CERTIFICATE

Certificate Reference Number: AIIMS/IEC/2021/3383

Project title: "Prognostic factors in head and neck cancer patients treated with radiotherapy: A retrospective analysis"

Nature of Project:	Research Project Submitted for Expedited Review
Submitted as:	D.M. Dissertation
Student Name:	Dr. Atul Kumar Gupta
Guide:	Dr. Puncet Pareek
Co-Guide:	Dr. Poonam Elhence & Dr. Jeewan Ram Vishnoi

Institutional Ethics Committee after thorough consideration accorded its approval on above project.

The investigator may therefore commence the research from the date of this certificate, using the reference number indicated above.

Please note that the AIIMS IEC must be informed immediately of:

- Any material change in the conditions or undertakings mentioned in the document.
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The Principal Investigator must report to the AIIMS IEC in the prescribed format, where applicable, bi-annually, and at the end of the project, in respect of ethical compliance.

AIIMS IEC retains the right to withdraw or amend this if:

- · Any unethical principle or practices are revealed or suspected
- Relevant information has been withheld or misrepresented

AIIMS IEC shall have an access to any information or data at any time during the course or after completion of the project.

Please Note that this approval will be rectified whenever it is possible to hold a meeting in person of the Institutional Ethics Committee. It is possible that the PI may be asked to give more clarifications or the Institutional Ethics Committee may withhold the project. The Institutional Ethics Committee is adopting this procedure due to COVID-19 (Corona Virus) situation.

If the Institutional Ethics Committee does not get back to you, this means your project has been cleared by the IEC.

On behalf of Ethics Committee, I wish you success in your research.

Dr. Praveen Sharma Member Secretary

Member secretary Institutional Ethics Committee AtiMS\_Jodhpur

Basni Phase-2, Jodhpur, Rajasthan-342005; Website: www.aiimsjodhpur.edu.in; Phone: 0291-2740741 Extn. 3109 E-mail : ethicscommittee@aiimsjodhpur.edu.in; ethicscommitteeaiimsjdh@gmail.com

## ALL INDIA INSTITUTE OF MEDICAL SCIENCES, JODHPUR (Department of Radiation Oncology) PERFORMA FOR DATA COLLECTION

Name of	the patient:		Ag	e:	Sex:	REG. ID:
Education	<b>1</b> :		Occup	ation:		Monthly Income:
Religion:						
Residenc	e:					
Mobile N	lo:					
ECOG:						
Ht:	Wt:	BSA:		AT STAR	T OF 1	REATMENT
Ht:	Wt:	BSA:		AT END	OF TRI	EATMENT
DIAGNO	SIS:					
DATE O	F DIAGNOS	SIS:				
TUMOR	VOLUME:					
NODAL VOLUME:						
SYMPTOMS AT PRESENTATION:						
DURATION OF SYMPTOMS:						
ADDICT	ION HISTO	RY:				

HISTORY OF CO-MORBIDITIES AND PAST HISTORY:

PERFORMANCE STATUS:

CLINICAL FINDINGS:

IMAGING AT DIAGNOSIS (Tumor and node volume, level of node involvement, ENE, necrosis):

DISEASE STAGE AT PRESENTATION:

TREATMENT RECEIVED: 1. SURGERY:

a) DATE:

b) TYPE:

c) NODAL DISSECTION LEVELS:

d) NODES DISSECTED:

e) PATHOLOGIC STAGE/MARGINS/ENE:

## 2. CHEMOTHERAPY:

INTENT	START	END	CYCLES	AGENTS	CUM DOSE

Significant toxicities if available:

## 3. RADIOTHERAPY:

- a) TECHNIQUE:
- b) DOSE AND FRACTIONATION:
- c) GAPS IN TREATMENT:
- d) CONCURRENT CHEMOTHERAPY (AGENT/CYCLES/CUM. DOSE):
- e) TARGET SPECIFICATION

CTV	DEFINITION	VOLUME
HIGH		
INTERMEDIATE		
LOW		

- f) DVH PARAMETERS
  - a. PTV\_HR 95%-
  - b. PTV\_IR 95%-
  - c. PTV\_LR 95%-
  - d. OAR PARAMETERS-

## RESPONSE ASSESSMENT

- a) DATE:
- b) MODALITY:
- c) STATUS:

## CURRENT DISEASE STAGE:

## RELAPSE/PROGRESSION:

- a) DATE:
- b) DISTAL/LOCAL(SITE AND NUMBER):
- c) TREATMENT OFFERED:

## DATE OF DEATH:

CAUSE OF DEATH:

#### Table 1

American Joint Committee on Cancer (AJCC)

TNM Staging Classification for the Oral Cavity (including mucosa of lip) (8th ed., 2017)

(Nonepithelial tumors such as those of lymphoid tissue, soft tissue, bone, and cartilage, mucosal melanoma, and cutaneous squamous cell carcinoma of the vermilion lip are not included)

## Primary Tumor (T)

- TX Primary tumor cannot be assessed
- Tis Carcinoma in situ
- T1 Tumor ≤2 cm with depth of invasion (DOI)\* ≤5 mm
- T2 Tumor ≤2 cm, with DOI\* >5 mm and ≤10 mm or tumor >2 cm and ≤4 cm, with DOI\* ≤10 mm
- **T3** Tumor >2 cm and  $\leq$ 4 cm, with DOI\* >10 mm or tumor >4 cm, with DOI\*  $\leq$ 10 mm
- T4 Moderately advanced or very advanced local disease
  - T4a Moderately advanced local disease Tumor >4 cm, with DOI\* >10 mm or tumor invades adjacent structures only (eg, through cortical bone of the mandible or maxilla, or involves the maxillary sinus or skin of the face) Note: Superficial erosion of bone/tooth socket

(alone) by a gingival primary is not sufficient to classify a tumor as T4. Very advanced local disease

T4b Very advanced local disease Tumor invades masticator space, pterygoid plates, or skull base and/or encases the internal carotid artery

\*DOI is depth of invasion and not tumor thickness.

## Regional Lymph Nodes (N)

## Clinical N (cN)

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension ENE(-)
- N2 Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension, and ENE(-)
  - N2a Metastasis in a single ipsilateral lymph node larger than 3 cm but not larger than 6 cm in greatest dimension, and ENE(-)
  - N2b Metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension, and ENE(-)
  - N2c Metastases in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension, and ENE(-)
- N3 Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or metastasis in any node(s) and clinically overt ENE(+)
  - N3a Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-)
  - N3b Metastasis in any node(s) and clinically overt ENE(+)

Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

### Table 1 — Continued

### American Joint Committee on Cancer (AJCC)

TNM Staging Classification for the Oral Cavity (including mucosa of lip) (8th ed., 2017) (Nonepithelial tumors such as those of lymphoid tissue, soft tissue, bone, and cartilage, mucosal melanoma, and cutaneous squamous cell carcinoma of the vermilion lip are not included)

## Regional Lymph Nodes (N)

### Pathological N (pN)

- NX Regional lymph nodes cannot be assessed
- NO No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(-)
- N2 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension, ENE(-)
  - N2a Metastasis in single ipsilateral node 3 cm or smaller in greatest dimension, and ENE(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-)
     N2b Metastases in multiple ipsilateral node(s), none larger than 6 cm in greatest dimension and
  - ENE(-) N2c Metastases in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest
- dimension, and ENE(-) N3 Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or metastasis
  - in a single ipsilateral node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral or bilateral nodes any with ENE(+); or a single contralateral node of any size and ENE (+)
  - N3a Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-)
  - N3b Metastasis in a single ipsilateral node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral or bilateral nodes any with ENE(+); or a single contralateral node of any size and ENE (+)

Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

### Distant Metastasis (M)

- M0 No distant metastasis
- M1 Distant metastasis

#### Histologic Grade (G)

- GX Cannot be assessed
- G1 Well differentiated
- G2 Moderately differentiated
- G3 Poorly differentiated

#### **Prognostic Stage Groups**

Stage 0	Tis	N0	MO
Stage I	T1	N0	MO
Stage II	T2	NO	MO
Stage III	T1,T2	N1	MO
	Т3	N0,N1	MO
Stage IVA	T1	N2	MO
	T2	N2	MO
	Т3	N2	MO
	T4a	N0,N1,N2	MO
Stage IVB	Any T	N3	MO
	T4b	Any N	MO
Stage IVC	Any T	Any N	M1

TNM	e 2 rican Joint Committee on Cancer (AJCC) Staging System for the Nasopharynx (8th ed., 2017) following types of cancer are not included: Mucosal melanoma, lymphoma, sarcoma of the sof	t tissue, bone ar	d cartilage.)		
Prin	nary Tumor (T)	Distant	Metastasis (M)		
TX	Primary tumor cannot be assessed	MO NO	distant metast	asis	
ТО	No tumor identified, but EBV-positive cervical node(s) involvement	M1 Di	stant metastasi	s	
Tis	Carcinoma <i>in situ</i>	Watalaat	o Orada (O)		
T1	Tumor confined to nasopharynx, or extension to oropharynx and/or nasal cavity without parapharyngeal involvement		c Grade (G) system is not u	used for NPCs	
T2	Tumor with extension to parapharyngeal space, and/or adjacent soft tissue involvement (medial pterygoid, lateral pterygoid, prevertebral muscles)		c Stage/Progn		
<b>T</b> 3	Tumor with infiltration of bony structures at skull base, cervical vertebra, pterygoid structures, and/or paranasal sinuses	Stage 0 Stage I	Tis T1	N0 N0	M0 M0
<b>T4</b>	Tumor with intracranial extension, involvement of cranial nerves, hypopharynx, orbit, parotid gland, and/ or extensive soft tissue infiltration beyond the lateral surface of the lateral pterygoid muscle	Stage II Stage III		N1 N0,N1 N2	M0 M0 M0
Rec	ional Lymph Nodes (N)	Otoma D	T3	N0,N1,N2	MO
-	Regional lymph nodes cannot be assessed	Stage IV		N0,N1,N2	MO
NO	No regional lymph node metastasis	Stage IV	Any T B Any T	N3 Any N	M0 M1
N1	Unilateral metastasis in cervical lymph node(s) and/or unilateral or bilateral metastasis in retropharyngeal lymph node(s), 6 cm or smaller in greatest	Stagen			

N2 Bilateral metastasis in cervical lymph node(s), 6 cm or smaller in greatest dimension, above the caudal border of cricoid cartilage N3 Unilateral or bilateral metastasis in cervical lymph node(s), larger than 6 cm in greatest dimension, and/or extension below the caudal border of cricoid cartilage

### Table 3

### American Joint Committee on Cancer (AJCC)

TNM Staging System for the Oropharynx (p16-) and Hypopharynx (8th ed., 2017) (Not included: P16-positive (p16+) oropharyngeal cancers and nasopharyngeal cancer)

### Oropharynx (p16-)

- ТΧ Primary tumor cannot be assessed
- Tis Carcinoma in situ
- Tumor 2 cm or smaller in greatest dimension T1
- Τ2 Tumor larger than 2 cm but not larger than 4 cm in greatest dimension

dimension, above the caudal border of cricoid cartilage

- Tumor larger than 4 cm in greatest dimension or extension to lingual surface of epiglottis **T**3
- **T4** Moderately advanced or very advanced local disease
  - T4a Moderately advanced local disease Tumor invades the larynx, extrinsic muscle of tongue, medial pterygoid, hard palate, or mandible\*
  - T4b Very advanced local disease Tumor invades lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base or encases carotid artery

\*Note: Mucosal extension to lingual surface of epiglottis from primary tumors of the base of the tongue and vallecula does not constitute invasion of the larynx.

### Hypopharynx

ТΧ Primary tumor cannot be assessed

- Tis Carcinoma in situ
- Tumor limited to one subsite of hypopharynx and/or 2 cm or smaller in greatest dimension T1
- T2 Tumor invades more than one subsite of hypopharynx or an adjacent site, or measures larger than 2 cm but not larger than 4 cm in greatest dimension without fixation of hemilarvnx
- Т3 Tumor larger than 4 cm in greatest dimension or with fixation of hemilarynx or extension to esophageal mucosa
- T4 Moderately advanced or very advanced local disease Moderately advanced local disease T4a Tumor invades thyroid/cricoid cartilage, hyoid bone, thyroid gland, esophageal muscle or central compartment soft
  - tissue\* T4b Very advanced local disease Tumor invades prevertebral fascia, encases carotid artery, or involves mediastinal structures

\*Note: Central compartment soft tissue includes prelaryngeal strap muscles and subcutaneous fat.

Table 3 — Continued American Joint Committee on Cancer (AJCC) TNM Staging System for the Oropharynx (p16-) and Hypopharynx (8th ed., 2017) (Not included: P16-positive (p16+) oropharyngeal cancers and nasopharyngeal cancer)

### Regional Lymph Nodes (N):

## Pathological N (pN) - Oropharynx (p16-) and Hypopharynx

#### NX Regional lymph nodes cannot be assessed

- N0 No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(-)
- Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and N2 ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension and ENE(-)
  - N2a Metastasis in single ipsilateral node 3 cm or smaller in greatest dimension and ENE(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-)
  - N2b Metastases in multiple ipsilateral nodes, none larger than 6 cm in greatest dimension and ENE(-)
  - N2c Metastases in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension and ENE(-)
- N3 Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or in a single ipsilateral node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral or bilateral nodes, any with ENE(+); or a single contralateral node of any size and ENE(+)
  - N3a Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-)
  - N3b Metastasis in a single ipsilateral node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral or bilateral nodes, any with ENE(+) or a single contralateral node of any size and ENE(+)

Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

### Table 3 — Continued

N3

## American Joint Committee on Cancer (AJCC)

TNM Staging System for the Oropharynx (p16-) and Hypopharynx (8th ed., 2017) (Not included: P16-positive (p16+) oropharyngeal cancers and nasopharyngeal cancer)

#### Regional Lymph Nodes (N)

### Clinical N (cN) - Oropharynx (p16-) and Hypopharynx

#### NX Regional lymph nodes cannot be assessed

- NO No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(-)
- N2 Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-)
  - N2a Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-)
  - N2b Metastases in multiple ipsilateral nodes, none larger than 6 cm in greatest dimension and ENE(-)
  - N2c Metastases in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-)
  - Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or metastasis in any node(s) and clinically overt ENE(+)
  - N3a Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-) N3b Metastasis in any node(s) and clinically overt ENE(+)
- Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

Distant Metastasis (M) M0 No distant metastasis M1 Distant metastasis

### Histologic Grade (G)

- GX Grade cannot be assessed
- G1 Well differentiated
- G2 Moderately differentiated
- G3 Poorly differentiated G4 Undifferentiated

Stage 0	Tis	NO	MO
Stage I	T1	NO	MO
Stage II	T2	NO	MO
Stage III	<b>T</b> 3	NO	MO
-	T1	N1	MO
	T2	N1	MO
	T3	N1	MC
Stage IVA	T1	N2	MC
	T2	N2	M
	T3	N2	MC
	T4a	N0,N1,N2	M
Stage IVB	T4b	Any N	MO
	Any T	N3	MC
Stage IVC	Any T	Any N	M1

#### Table 4 American Joint Committee on Cancer (AJCC)

TNM Staging System for HPV-Mediated (p16+) Oropharyngeal Cancer (8th ed., 2017) (Not including: P16-negative (p16-) cancers of the oropharynx)

## Primary Tumor (T)

- T0 No primary identified
- T1 Tumor 2 cm or smaller in greatest dimension
- T2 Tumor larger than 2 cm but not larger than 4 cm in greatest dimension
- T3 Tumor larger than 4 cm in greatest dimension or extension to lingual surface of epiglottis
   T4 Moderately advanced local disease
- Tumor invades the larynx, extrinsic muscle of tongue, medial pterygoid, hard palate, or mandible or beyond\*

Nucosal extension to lingual surface of epiglottis from primary tumors of the base of the tongue and vallecula does not constitute invasion of the larynx.

## Regional Lymph Nodes (N)

## Clinical N (cN)

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 One or more ipsilateral lymph nodes, none larger than 6 cm
- N2 Contralateral or bilateral lymph nodes, none larger than 6 cm
- N3 Lymph node(s) larger than 6 cm

#### Pathological N (pN)

- NX Regional lymph nodes cannot be assessed
- pN0 No regional lymph node metastasis
- pN1 Metastasis in 4 or fewer lymph nodes

## pN2 Metastasis in more than 4 lymph nodes

#### Distant Metastasis (M)

M0 No distant metastasis

M1 Distant metastasis

### Histologic Grade (G)

No grading system exists for HPV-mediated oropharyngeal tumors

### Table 3 — Continued

American Joint Committee on Cancer (AJCC) TNM Staging System for the Oropharynx (p16-) and Hypopharynx (8th ed., 2017) (Not included: P16-positive (p16+) oropharyngeal cancers and nasopharyngeal cancer)

### Regional Lymph Nodes (N):

## Pathological N (pN) - Oropharynx (p16-) and Hypopharynx

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(-)
- N2 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension and ENE(-);
  - N2a Metastasis in single ipsilateral node 3 cm or smaller in greatest dimension and ENE(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-)
  - N2b Metastases in multiple ipsilateral nodes, none larger than 6 cm in greatest dimension and ENE(-)
  - N2c Metastases in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension and ENE(-)
- N3 Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or in a single ipsilateral node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral or bilateral nodes, any with ENE(+); or a single contralateral node of any size and ENE(+)
  - N3a Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-)
  - N3b Metastasis in a single ipsilateral node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral or bilateral nodes, any with ENE(+) or a single contralateral node of any size and ENE(+)

Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L).

Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

## Prognostic Stage Groups

Clinical				
Stage I	T0,T1,T2	N0,N1		MO
Stage II	T0,T1,T2	N2		MO
	T3	N0,N1,N	2	MO
Stage III	T0,T1,T2,T3	N3		MO
	T4	N0,N1,N	2,N3	M0
Stage IV	Any T	Any N		M1
Pathologi	cal			
Stage I	T0,T1,T2	N0,N1	MO	
Stage II	T0,T1,T2	N2	MO	
	T3,T4	N0,N1	MO	
Stage III	T3,T4	N2	MO	
Stage IV	Any T	Any N	M1	

### Distant Metastasis (M)

M0 No distant metastasis M1 Distant metastasis

## Histologic Grade (G)

- GX Grade cannot be assessed
- G1 Well differentiated
- G2 Moderately differentiated
- G3 Poorly differentiated
- G4 Undifferentiated

Prognostic	Stage	Groups	
Stage 0	Tis	NO	M0
Stage I	T1	NO	MO
Stage II	T2	NO	MO
Stage III	<b>T</b> 3	NO	M0
	T1	N1	MO
	T2	N1	MO
	<b>T</b> 3	N1	MO
Stage IVA	T1	N2	MO
	T2	N2	MO
	T3	N2	MO
	T4a	N0,N1,N2	MO
Stage IVB	T4b	Any N	MO
	Any T	N3	MO

Stage IVC Any T Any N

M1

**T1** 

#### Table 5

American Joint Committee on Cancer (AJCC) TNM Staging System for the Larynx (8th ed., 2017) (Nonepithelial tumors such as those of lymphoid tissue, soft tissue, bone and cartilage, and mucosal melanoma of the lip and oral cavity are not included) Glottis

### Primary Tumor (T)

- TX Primary tumor cannot be assessed
- Tis Carcinoma in situ

#### Supraglottis

- **T1** Tumor limited to one subsite of supraglottis with normal vocal cord mobility
- T2 Tumor invades mucosa of more than one adjacent subsite of supraglottis or glottis or region outside the supraglottis (eg, mucosa of base of tongue, vallecula, medial wall of pyriform sinus) without fixation of the larvnx
- Т3 Tumor limited to larynx with vocal cord fixation and/ or invades any of the following: postcricoid area, preepiglottic space, paraglottic space, and/or inner cortex of thyroid cartilage
- **T4** Moderately advanced or very advanced T4a Moderately advanced local disease
  - Tumor invades through the outer cortex of the thyroid cartilage and/or invades tissues beyond the larynx (eg, trachea, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus) Very advanced local disease T4b
  - Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

- Tumor limited to the vocal cord(s) (may involve anterior or posterior commissure) with normal mobility T1a Tumor limited to one vocal cord
- T1b Tumor involves both vocal cords
- T2 Tumor extends to supraglottis and/or subglottis, and/or with impaired vocal cord mobility
- Tumor limited to the larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage **T3**
- Moderately advanced or very advanced Τ4 T4a Moderately advanced local disease Tumor invades through the outer cortex of the thyroid cartilage and/or invades tissues beyond the larynx (eg, trachea, cricoid cartilage, soft tissues of neck
  - including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus) T4b Very advanced local disease
  - Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

### Subglottis

- Tumor limited to the subglottis T1
- Tumor extends to vocal cord(s) with normal or impaired mobility T2
- **T**3 Tumor limited to larvnx with vocal cord fixation and/or inner cortex of the thyroid cartilage **T4** 
  - Moderately advanced or very advanced T4a Moderately advanced local disease Tumor invades cricoid or thyroid cartilage and/or invades tissues beyond the larynx (eg, trachea, soft tissues of neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus) T4b Very advanced local disease
  - Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

### Table 5 — Continued

#### American Joint Committee on Cancer (AJCC) TNM Staging System for the Larynx (8th ed., 2017)

(Nonepithelial tumors such as those of lymphoid tissue, soft tissue, bone, and cartilage are not included)

## Regional Lymph Nodes (N)

### Clinical N (cN)

N2

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension ENE(-)
  - Metastasis in a single ipsilateral node, larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and

ENE(-);

or metastasis in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-)

- N2a Metastasis in a single ipsilateral lymph node, larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-)
- N2b Metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-)
- N2c Metastases in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-)
- N3 Metastasis in a lymph node, larger than 6 cm in greatest dimension and ENE(-); or metastasis in any lymph node(s) with clinically overt ENE(+)
  - N3a Metastasis in a lymph node, larger than 6 cm in greatest dimension and ENE(-)
  - N3b Metastasis in any lymph node(s) with clinically overt ENE(+)

Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L).

Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

# Table 5 — Continued

American Joint Committee on Cancer (AJCC) TNM Staging System for the Larynx (8th ed., 2017) (Nonepithelial tumors such as those of lymphoid tissue, soft tissue, bone, and cartilage are not included)

### Pathological N (pN)

- Regional lymph nodes cannot be assessed NX
- N0 No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension ENE(-)
- N2 Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension and ENE(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension and ENE(-)
  - N2a Metastasis in a single ipsilateral node, 3 cm or smaller in greatest dimension and ENE(+); or metastasis in a single ipsilateral node, larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-)
  - N2b Metastases in multiple ipsilateral nodes, none larger than 6 cm in greatest dimension and ENE(-)
  - N2c Metastases in bilateral or contralateral lymph node(s), none larger than 6 cm in greatest dimension and ENE(-)
- Metastasis in a lymph node, larger than 6 cm in greatest dimension and ENE(-); or metastasis in a single ipsilateral node, larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral, or bilateral lymph nodes and any with ENE(+); or a single contralateral node of any size and ENE(+) N3
  - N3a Metastasis in a lymph node, larger than 6 cm in greatest dimension and ENE(-) N3b Metastasis in a single ipsilateral node, larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral, or bilateral lymph nodes any with ENE(+); or a single contralateral node of any size and ENE(+)

\*Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

### Distant Metastasis (M)

- M0 No distant metastasis
- M1 Distant metastasis

#### Histologic Grade (G)

- GX Grade cannot be assessed
- G1 Well differentiated
  - G2 Moderately differentiated
  - G3 Poorly differentiated

Stage 0	Tis	NO	MO		
Stage I	T1	NO	MO		
Stage II	T2	NO	MO		
Stage III	<b>T3</b>	NO	MO		
	T1	N1	MO		
	T2	N1	MO		
	<b>T</b> 3	N1	MO		
Stage IVA	T1	N2	MO		
	T2	N2	MO		
	<b>T</b> 3	N2	MO		
	T4a	N0,N1,N2	MO		
Stage IVB	Any T	N3	MO		
	T4b	Any N	MO		
Stage IVC	Any T	Any N	M1		

S.NO E HOSPITAL ID A	GE SEX ADDRESS RELIGION Ht(cm) Wt(kg) BSA BMI	INITIAL SYMPTOMS	DURATION(months) ADDICTIONS	COMORBIDITIES RECEIVED NACT?	NACT REGIMEN OF dimension on CYCLES imaging(cm)	SITE OF PRIMARY IN CT/MRI	Site involved Level of LN in imaging	Lymph TNM AT node PRESENTATIO	STAGE AT PRESENTATIO DATE OF SURGERY	TYPE OF SX	NODES DISSECTE D	PRE OP HISTOLOGY	POST OP HISTOLOGY	MARGIN STATUS LVSI PNI ENE? DOI(mm) HP STAGING CONCURRENT CHEMO STATUS LVSI PNI ENE?	CYCLES DATE OF DATE OF DATE OF DATE OF	IF G DOSE Clinically Imaging last last imaging available find	g Date Site of rela	DATE OF LAST VISIT TO Date of FIRST VISIT HOSPITAL death	OS OS (months) PFS (months) DFS (davs) DFS (months)
	55 M JODHPUR HINDU 157 50.5 1.48 20.36	PAIN DURING SWALLOWING	6 ALCOHOL & BIDI	ND No	NA 0 4.8	soft palate and usula	Oral cavity IB	SAD(cm) N 1.3 cT4aN2aMx	N IVA NA	NA	NA NA	WD Keratinising SCC	NA	NA	NA 02/12/2019 04/05/2	119 66Gy/33# DEAD NA NA	NA NA	19/12/2018 08/01/2019 08/02/20	OS (days)         OS (months)         PFS (days)         PFS (months)         DFS (days)         DFS (months)           11         226         7.53         226         7.53         226         7.53
2 JS 2018/10/014351		non healing ulcer over tongue	2 tobacco chewer	ND Yes	TPF 2 2.3	anterior two third tongue	Oral cavity -	- cT4aN0M0		WLE+Extended SOHND	20 1	MD Keratising SCC	hyperplastic and hyperkeratotic stratified squamous epithelium (no evidence of dysplasia	noted) negative positive absent absent NA ypT0N1 no NA	NA 15/04/2019 06/04/2	019 60Gy/30# no fresh complains 09/05/2019 on CPMS	no NA	11/04/2018 10/10/2022 NA	1436 47.86666667 1436 47.86666667 1436 47.86666667
4 SP 2020/06/004417 5	57         M         Jodhpur         hindu         169         45.7         1.46         17.57           54         M         Jodhpur         HINDU         173         69         1.82         22.09	INTERMITTENT SPONTANEOUS LEFT SIDE NASAL BLEED ulcer over left BM	3 tobacco & smoking since 30 yrs 2 tobacco chewing 30 yrs	ND No DM+HTN No	NA 0 3.7 NA 0 2.7	left maxillary sinus left BM	Maxillary sinus - Oral cavity IA, IB	- cT4aN0Mx - cT4aN0M0	IVA 15/06/2020 IVA 13/07/2020	left infrastructure maxiliectomy + excision of tmor WLE + Left sided MRND	0 0	MALIGNANT GIANT CELL TUMOR md soc	MALIGNANT GIANT CELL TUMOR Convertional SCC WD			Initial company solution         Carically better         O4/06/2022         no residual/recurrent lesion           22         66gY/33#         good         08/04/2022         no residual/recurrent lesion           23         66gY/33#         good         08/04/2022         no residual/recurrent lesion	NA NA NA		758 25.26666667 758 25.26666667 758 25.26666667
5 JH 2019/03/010401	S4         M         Jodhpur         HINDU         173         69         1.82         22.09           38         M         Jodhpur         Muslim         163         50.6         1.51         19.09	ulcer over right angle of mouth	5 Tobacco	No No	NA 0 0.8	BM at level of right angle of mouth	Oral cavity III			Rt MM + ESOHND + PMMC	36 0	MD SOC	MD SCC	negative absent absent present NA pT2NoMx no No	NA 04/09/2019 31/05/2	019 60Gy/30# no fresh complaint	no NA		1337 44.56666667 1337 44.566666667 1337 44.56666667
7 MS 2019/01/026442 5	43 F Jodhpur Hindu 167 59 1.65 21.23 paini 52 M Jodhpur Hindu 161 54.7 1.56 21.11	in left ear (5 yrs), spice intolerance (6 months), mass in oral cavity (1 month ulcer over left border of tongue	h) 60 no addiction or substance abuse 2 tobacco and smoking	NO NO	NA 0 2 NA 0 2.4	POST 1/3RD TONGUE WITH BOT ieft lateral border of tongue	Oral cavity II Oral cavity -	1.3 cT3N2bM0 - cT2N0M0	II 29/12/2019	WLE+Left MND -II WLE + NECK DISSECTION	28 1 22 1	Adenoid cystic Ca MD SCC	Adenoid cystic Ca grade 2 MD SCC	negative assent assent present NA p12N2aNU yes weeky penative mesent present 6 p12N2 pp pp	5 16/04/2019 06/04/2 NA 20/02/2019 04/11/2	119 66/1/33# good 21/06/22 no residualitecurrent lesion     119 66/1/33# good 19/03/21 no residualitecurrent lesion	no NA no NA		
8 MD 2019/01/026615 3	35 F NAGAUR HINDU 149 50.2 1.44 22.31	non healing ulcer over left BM	10 tobacco chewing 20 yrs	No No	NA 0 4	left upper buccal vestibule at alveolar margin of maxilla	Oral cavity IB		III 02/07/2019	WLE+Left MND -III+Marginal mandibulectomy	69 5	MD Keratinising SCC	MD Keratinising SCC	negative absent present absent 4 pT2N2b no NA	NA 04/08/2019 27/05/2	019 60Gy/30# good NA NA	No NA	30/01/2019 05/10/2019 NA	100 3.33333333 100 3.33333333 100 3.33333333
9 MS 2018/10/002313 3 10 MH 2019/03/004718 3	33         M         PALI         HINDU         149         44.2         1.35         19.64           38         M         Jodhpur         Maxim         167         43.6         1.42         15.68           51         M         Jodhpur         Muxim         166         52         1.54         18.9	swelig over left parotid region throat pain & dysphagia	24 no addiction or substance abuse 2 GUTKHA	No No No No	NA 0 2 NA 0 0.74	left parotid region PPW, post criccid region and adjacent cervical esophagus	Parotid IB,II Oropharynx IV	2.2 cT3N2aM0 1.5 cT4aN2cM0	IVA 19/11/2018 IVA NA	left total conservative parotidectomy NA	3 0 NA NA	pleomorphic adenoma PD SCC	Adenocystic caGrade 2 NA	negative         absent         present         absent         NA         no         NA           NA         NA         NA         NA         NA         yes         weekly	NA 30/01/2019 14/02/2 5 29/03/2019 28/05/2	015         60Gy/30#         recurrence         08/12/2022         local recurrence with lung m           515         70Gy/35#         dead         NA         NA	s 02/12/2022 local with lung No No	02/11/2010 09/02/010 09/02/20	1357         45.2333333         1176         39         1094         36.466666667           22         514         17.13333333         514         17.13333333         514         17.13333333
12 PR 2018/10/003638 4	43 M Barmer Hindu 165 72.4 1.82 26.61	swelling right lower alveolus ulcerative lesion over left side of cheek	5 tobacco and smoking 4 tobacco and smoking	NO Yes No No	P+C 2 2.4 NA 0 2.3	right lower alveolus, right lower GBS and adjacent BM right lower GBS	Oral Cavity IB,II Oral cavity IB,II	0.9 cT2N2am0 2.4 cT2N2cM0	IVA 12/12/2018 IVA NA	right composite resection +MND + distal mandibulectomy + partial maxillectomy WLE+ right segmental mandibulectomy	28 0 50 1	MD SCC MD SCC	MD SCC MD SCC	regative absent absent negative NA ypT1N0M0 no NA regative absent absent penative NA ypT1N1M0 yes weekky	NA 02/11/2019 29/03/2 3 15/03/2019 28/05/2	019 60Gy/30# on RT feed PETICT local disease with nodal recurr 119 50Gy/30# doing well NA NA	17/05/2022 local with no NA	idal 02/09/2019 20/09/2022 NA 15/10/2018 28/05/2019 NA	1319 43.96666667 1193 40 1145 38.16666667
13 AK 2017/07/013004	20 M Jothaur Hindu 102 55.0 1.50 21.2	earache boarseness d'voice	24 no addiction or substance abuse 6 bid smoking since 10 yrs	No Yes	TPF 2 3.11	posterior pharyngeal wall right trux VC F/M	Oropharynx IB Giottis	1.22 cT4aN1M0	NA NA	NA NA	NA NA	Not available MD SCC	NA	NA NA NA NA NA NA no NA	NA 29/03/2019 05/04/2	019 39.6Gy(22# (re- irradiation) no fresh complaints 03/05/2020 no residual dis	no progression NA.	01/11/2019 23/11/2022 NA 28/01/2019 14/01/2020 NA	351 117 351 117 351 117
15 AS 2019/02/015980 6	AD M Jalore Hindu 158 58.6 1.6 23.53     AD M PALL MIRLM 157 68.3 1.72 27.46	hoarseness of voice non healing uicer in FOM growth at lateral border of tongue	1 smoking 20 yrs 5 tobacco	HTN Yes HTN+DM+Hypothyroidism No	Doce-Cis 1 2.5	FOM right lateral border of tongue	Oral cavity III Oral cavity -	0.9 cT1N0M0 0.7 cT1N0M0	Not done 27/03/2019	NA WLE+SOHND	NA NA NA NA 26 0	WD SCC WD SCC	NA MD SCC	NA         NA<	5 04/05/2019 29/05/2 NA 05/01/2019 17/06/2	119 66gY/33# doing well 2021 no residual/recurrent lesion	No NA		218         7.266666667         218         7.266666667         218         7.266666667           62         2.066666667         62         2.066666667         62         2.066666667
17 BL 2019/02/001927	88         M         jallore         Hindu         118         56.6         1.6         23.55           40         M         PALI         MUSLIM         157         68.3         1.72         27.46           70         M         JODHPUR         HINDU         168         57         1.63         20.21           96         M         JODHPUR         HINDU         172         69         1.81         23.38	hoarseness of voice and dysphagia difficulty in swallowing for solids and weight loss	6 beed smoker 30yrs 1 tobacco and smoking	CAD (byepass) No No No	NA 0 3.2	left PEF hypopharync,cenical and upper thoracic esophagus	Supragiotis II Hypopharynx paraesophage and naratrache	1 cT2N1M0 al 0.8 cT1N0M0	III NOT DONE	NA NA	NA NA NA NA NA NA	MDSCC	NA	NA NA NA NA NA NA NA NA NA	NA 18/03/2019 05/06/2	119 660y/33#			90 3 90 3 90 3
19 DS 2019/01/025283 4	42 M JODHPUR HINDU 163 51.4 1.52 19.39	discussion of the solid share and solid share solid sh	3 tobacco chewing AND BIDI	No No	NA 0 1.4	rt ARF, LPW SI level of epiglottis and rt pharyngoepiglottic fold	Supragiotis No	1.1 cT2N0MD	II NOT DONE	NA	NA NA	MD SCC	NA	NA NA NA NA NA NA Yes weeky	4 20/02/2019 18/04/2	113 BOGY/35# patient baid Nex No.     113     113 70Gy/35# patient dead 22/10/2020 residual disease with change aspiration			10         3.6         108         3.6         108         3.6           26         637         21.2333333         637         21.2333333         637         21.2333333
20 RS 2019/02/008628 3	30 M Nagaur HINDU 174 67.4 1.804 22.31	non healing ulcer in left BM	3 tobacco chewing (10 packets/day)	No No	NA. 0 1.9	left lower BM reaching upto GBS	Oral cavity IB	1 cT1N1MD	III 03/11/2019	WLE+LEFT SIDE MM+MRND III + SPLIT SKIN GRAFTING	51 0	MD SCC	Moderately differentiated keratinizing squarrous cell carcinoma.	negative absent absent negative 8 8mm, WPOI- no na	na 05/06/2019 27/06/2	119 60Gy/30# doing well NA NA	in 2021 local		899 29.96666667 899 30 685 22.8333333
21 SB 2019/01/019953 5	56 M Nagaur Hindu 172 51.7 1.57 17.52	ulcer in oral cavity	12 tobacco chewer	no No	NA 0 1	right BM extending into sup GBS ,RMT , abutts rt masseter	Oral cavity IB	- cT4aN1M0	IVA not done	NA	NA NA	MDSCC	NA	NA NA NA NA NA NA yes weekiy	5 21/02/2019 18/04/2	119 70Gy/35# patient dead no follow up image no follow up data	NA NA	24/01/2019 06/06/2019 06/05/20	22 1228 40.9333333 1228 40.9333333 1228 40.9333333
22 S 2019/01/023876 6	52 F JODHPUR HINDU 151 39 1.27 17.33	swelling left lateral border of tongue	6 NA	NA Yes	P+C 2 2.69	left lateral border of longue , intrinsic ms infiltration	Oral cavity IB	0.81 cT4aN2bM0	IVA 25/01/2019	WLE+SOHND	37 0	Infitrating MD SCC	WD SCC	positive absent absent negative 5 pT2ND yes weekly	4 03/02/2019 23/04/2	119 60Gy/30# patient dead no imaging NA	as per attender, dis recurrence in 2020 and took 1 year of local ?	13/02/2019 20/04/2020 04/10/20	2 787 26.2333333 432 14 387 12.9
23 KK 2019/01/015340	72 F jodhpur Hindu 156 44.8 1.86 18.43	non healing ulcer left side tongue with earpain	4 tobacco addiction	no No	NA 0 4.2	left posterior two third of tongue, with involvement of all four right intrinsic muscles	Oral cavity IA,IB,II	0.98 cT4N1MD	IVA not done	NA	NA NA	MD SCC	NA	NA NA NA NA NA NA no no	NA 03/02/2019 05/01/2	019 66Gy/33≢ dead no imaging NA	no NA		2 526 17.5333333 526 17.5333333 526 17.5333333
24 SD 2018/12/012900 3 25 HK 2019/03/002075 2	72         F         jothpur         Hindu         156         44.8         1.86         18.43           33         M         JODHPUR         HINDU         162         58.7         1.61         22.4           23         F         JODHPUR         HINDU         156         61.5         1.63         25.3           41         F         atbiduara         Hindu         167         42.5         1.51         17.8	wound right side cheek swelling in left neck	6 tobacco chewer 3 no addiction or substance abuse	No Yes	P+C 4 4.5 NA 0 5 poster	right buccal mucesa involving superior and inferior gingivobuccal suicus and right retro molar trigone. superior resonarymenal wall causing partial obstruction of nascenharymenal air column as well as posterior nasal choana.	Oral cavity 1B,II Nasopharynx IB,II,III,IV,V	2 cT4aN1M0 2 cT2N1Mo	IVA not done III not done	NA. NA		MD SCC MD SCC	NA NA	NA         NA         NA         NA         NA         NA         no         no           NA         NA         NA         NA         NA         NA         Na         yes         weekly           NA         NA         NA         NA         NA         NA         yes         weekly	1 23/04/2019 07/04/2 5 28/04/2019 25/06/2	70Gy/35# patient dead 22/10/2021 s/o locally advanced diseas     incoming call not     rocgi/35# incoming call not     ro	22/10/2021 local and no not available NA	dal 28/12/2018 22/10/2021 25/01/20 03/05/2019 15/10/2019 not know	22 1124 37.46666667 1029 34 841 28.0333333 m 224 7.466666667 224 7.466666667 224 7.466666667
26 K 2019/01/021957 4 27 KK 2018/03/000222	41         F         nathdwara         Hindu         167         49.5         1.51         17.8           76         F         JODHPUR         HINDU         155         90.5         1.97         37.7           55         M         Jodhpur         Hindu         171         53         1.58         18.15	non healing uicer on torgue thisat pain with odynophagia uicer over rt tonsil	1 no addiction or substance abuse 3 tobacco chewing 3 beedi & tobacco	No Yes cis+Paci no Yes	citaxe1fib CR fib 1 cycle Doce+Cls 3 3 doce+Cls 2 2.6	rt haif of longue with inflitration of intrinsic muscles, GBS, RMT, tonsil arising from epiglotis mainly right side extending into rt valecula and accuss midline towards left right brankling and succes, patiente brand & BOT	Oral cavity Supragiotis II	1.2 cT4aN2bM0 1.8 cT2N2cM0 - cT1N0M0	IVA not done	NA NA	NA NA NA NA NA NA	MDSCC MDSCC	NA. NA				N 13/11/2019 locoregion 07/12/2021 CR	al 14/01/2019 15/01/2020 18/03/2 13/03/2019 20/05/2022 NA	22 429 14.3 303 10 189 6.3 1164 38.8 852 28 747 24.9 603 23.1 603 23.1 693 23.1
29 VR 2020/06/002269 4	52 M PALL HINDLI 177 65.6 1.79 20.95	swelling in left side of neck	3 chronic tobacco chewer	No No Yes	NA 0 1.8 P+C 2 1.4	left valiecula	oropharynx - Supragiotis -	- cT1N0M0	I not done		NA NA NA NA NA NA	MDSCC MD SCC	NA NA	NA         NA<	NA 11/05/202 24/12/2 5 12/08/202 20/01/2	zcc rocyrs5# no recurrence 18/07/2022 no residual/recurrence 221 660y/33# patient dead 07/09/2021 nodal deposits and supractav n	No NA des 18/06/2021 cervical nodes with sup disease	aclav with local 14/08/2020 08/03/2021 10/10/20	2 422 14.06666667 308 10 149 4.966666667
A4 1000 2010 100 100 11 01	44         F         JOURPUK         HINDU         156         44         1.38         18.03           50         M         Bhliwara         Hindu         179         70.5         1.87         22.03           26         F         BARMER         HINDU         169         69.3         1.8         24.31	non nearing uicer over it lateral border of tongue uicerative lesion over left side of cheek	4 no addition or substance abuse 18 tobacco chewer	NO NO NO Yes	NA U 1.8 TPF 3 6.1	It tatletal bolder of torgue, no extension accross misline or to FUM, BU1 left BM, lower GBS, upper lower GB sulcus, RMT	Oral cavity II Oral cavity IB,II	1.1 CT1N1MU 1.1 CT4aN2M0	IVA not done	WEPMOND NA	51 / NA NA	PDSCC WDSCC	PD SCC NA	Insparve         asserts         pressure         asserts         yes         weshby           NA         NA         NA         NA         NA         yes         weshby           Insparve         assert         assert         ngative         NA	5 23/11/2019 15/01/2 5 02/05/2020 25/03/2	I20         600/jr30#         00/ing well         NA         NA           I20         660/jr33#         dead         NA         NA	ND NA NO NA	40.00.0040 00.0010000 00.0010	161         5.366666667         161         5.366666667           12         964         32.1333333         964         32.1333333           1030         34.3333333         1030         34.3333333         1030
33 HR 2018/12/009308 6	26         F         BARMER         HINDU         169         69.3         1.8         24.31           89         M         jodhpur         Hindu         167         47.4         1.48         17.05           51         M         LICKNOW         HINDU         107         178.2         2.26         37.43	swelling in left submandibular region and lump in left RMT hoarseness of voice and breathing difficulty pain in cli side of face and peek during sealowing	4 no addiction or substance abuse 24 tobacco chewer	No No No No HTN+DM+CKD No	NA 0 5.1 NA 0 3.7 NA 0 27	submandbular region, abutiling mylohyoid muscle and body of mandble epicenteed at right TVC initiation into and commissure, post commisure of takena hover of known, of the uncomoscal accesses to be insolved	Submandibular IB Glottis - Oral cavity	1.1 cT4aN2M0 - cT3N0M0 - cT2N0M0	IVA 12/06/2020	ieft submandibular gland excision+left MND 3+ left RMT lesion WLE NA	9 0 NA NA NA NA	myoepithelial ca left submandibular gland with infitration into F MD Keratnising SCC WD SCC	RMT myoepithelial ca left submand bular gland with infiltration into RMT NA	negative         absent         negative         NA         pT3r0         no         NA           NA         NA         NA         NA         NA         NA         NA         NA           NA         NA         NA         NA         NA         NA         NA         NA	NA 31/01/2019 19/03/2	119 660v/33# DEAD NA NA	NO NA No NA	20/12/2018 19/11/2019 12/07/20	1030         34.3333333         1030         34.3333333         1030         34.3333333           22         718         23.90333333         718         23.9333333         718         23.9333333           21         1026         34.5         1026         34.5         1026         34.5
34 GS 2019/11/004196 6 35 GM 2019/04/007080 4 36 GD 2019/04/0119240 4	51         M         LUCKNOW         HINDU         170         108.2         2.26         37.43           48         M         jodhpur         HINDU         171         47         1.49         16.09           90         F         jalone         Hindu         154         40.8         1.45         21.73           83         M         JODHPUR         HINDU         166         68         1.77         24.72	pain in rt side of face and neck during swallowing difficulty in swallowing for solids and weight loss non healing uicer over right side of BM	tobacco+alcohol     2     tobacco     6     no addiction or substance abuse	no No no No	NA 0 2.7 NA 0 2.9 NA 0 3.2	rt lateral border of tongue , rt hypogiossal appeares to be involved nt tonaliar pilar crossinf anterior midline rt lowar GISS with rt RMT involved	Oral cavity - oropharynx - Oral cavity IB	cT2N0M0     cT2NoM0     1.2     cT4aN1M0	II NOT DONE II not done IVA 05/03/2019	NA NA WLE+Segmental mandibulectomy+MND	NA NA NA NA 47 0	WD SCC WD SCC MD SCC	NA NA MDSCC	NA         NA<	NA 19/11/2019 01/04/2 NA 05/03/2019 15/07/2 NA 29/07/2019 17/09/2	222 100/028 UEAU		04/10/2019 01/04/2020 09/07/2 04/10/2019 12/04/2019 16/05/2 16/04/2019 13/10/2022 MA	22         1035         34.5         1035         34.5           24         402         13.4         402         13.4         402         13.4           1276         42.533333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.53333333         1276         42.533333333         1276         42.53333333         1276         42.53333333         1276         42.533333333         1276         42.533333333         1276         42.533333333
37 GG 2015/08/001877 6	83 M JODHPUR HINDU 166 68 1.77 24.72	non healing ulcer over it lat border of tongue ow charge in voce and othersty in swallowing	1 tobacco	No No HISAQ+ YES	NA 0 1.6	left lat margin of middle 1/3rd longue	Oral cavity I,II,II Subraciotis IB,II	1.1 cT1N0M0	I 19/09/2018	partial gloosecomy rexerred SOHND f/b left MRND i/v/o nodal recurrence in june 2019	20 0 NA NA	PD SCC	MD SCC	regative absent absent negative NA pT1N0Mo yes 3 weekly NA NA NA NA NA NA NA NA NA	3 21/08/2019 10/10/2	019 66gy/33# doing well 26/03/2022 no residual	No NA	23/08/2019 26/03/2022 No	946 31.5333333 946 31.5333333 946 31.5333333 946 31.5333333
39 GR 2019/07/002769	42 M BARMER hindu 175 74.7 1.9 24.41	decreased mouth opening and non healing ulcer	3 guidena (30yrs)	No No	NA 0 2.8	let BM extending in RMT ,min extension in left infratemporal fossa	Oral cavity -	- cT4aN0M0	IVA 23/07/2019	WLE+MRND II+ Upper maxilarya/veolectomy	38 1	WDSCC	MDSCC	negative absent absent negative NA pT2N1Mo no NA	NA 09/10/2019 11/01/2	119 60gY/30#		29/07/2019 19/02/2020 -	205 6.83333333 205 6.83333333 205 6.83333333
	46 M jodhpur hindu 170 87 2.02 30.1 59 M JODHPUR HINDU 171 50 1.54 17.24	non healing painless ulcer in It BM difficulty in breatthing and swallowing	12 gulkha(30yrs) 6 smoking 20 yrs 12 tobacco	No Yes COPD No	TPF 3 4	left upper GBS , extending anteriorly to mid part of upper lip , posteriorly to RMT not available	Oral cavity - Oral cavity	- cT4aNDM0 - cT4aN2cM0	NA NOT DONE	WLE+MRND Lt type 3+ segmental mandibulectomy NA	34 3 NA NA	WDSCC Adenoid cystic ca	MDSCC	negative absent present negativ 10 pT2N2aM0 no NA NA NA NA NA NA NA NA yes weekly	6 40000000 000000	parolid LN Portuguera L	02/05/2020 left parolid reci No NA	07.04/2010 40/20/2020 104	22 770 25.666666667 462 15 260 8.6666666667 230 7.6666666667 230 7.6666666667 230 7.6666666667
42 PB 2018/06/017023 6 43 PRM 2019/03/012811 5	Mill         JODHPUK         HINDU         1/1         50         1.54         17.24           83         M         JODHPUK         HINDU         160         55.6         1.57         21.71           58         M         JODHPUK         HINDU         160         55.6         1.57         21.71           58         M         JODHPUK         HINDU         167         61.6         1.69         22.15           54         C         JODHPUK         HINDU         167         61.6         1.69         22.15	throat pain and difficulty in swallowing ulcer on left BM	12 tobacco 1 no addiction or substance abuse 1 gutkha 10yrs 12 Miraj for 10yrs	No Yes HTN No	NA 0 2.92 P+C 3 4.1 NA 0 1.1	supragiottic region involving epigiottis , it vallecula left cheek.left inferior GBS and left RMT	Supragiotis - Oral cavity IB Oral cavity IB	1 cT4aN1M0 1.2 cT4aN1M0 0.7 cT2N1M0	NA not done NA 31/07/2018	NA commando operation +Left MND	NA NA 36 4	MDSCC WD SCC	NA WD SCC	NA NA NA NA NA NA NA Vice year weeky regative absert absert present przystawa weeky populiwi absert absert present przystawa yes weeky	4 23/09/2019 11/06/2 5 20/09/2019 11/07/2	116 0031133# LOURGWELL NA NA 119 660/33# dOINGWELL NA NA 119 660/33# -006 	No NA	07/04/2018 29/02/2020 NA 26/08/2019 04/12/2021 -	2.30         7.080800001         2.30         7.080800001         2.30         7.08080001           605         20.16866867         605         20.16866867         605         20.16866867           595         19.8333333         595         19.8333333         595         19.8333333           20         886         29.5333333         886         29.5333333         886         29.5333333
45 PD 2015/04/018289 5	52 F JODHPUR HINDU 154 62.4 1.63 26.32 38 F JODHPUR HINDU 157 60.5 1.62 24.59	ulcer of right upper gum ulcer in upper alveolar region PAIN IN RT MOLAR REGION	1 GUTKHA(8 YRS)	NO NO NO NO NO Yes	NA 0 3.3	Ingit posterior gingle- extension to imply-to-buccas succes left upper posterior gingle- extension to interference rate succes rt mandbular ramus beginning at level of last premoter and extending \$II RMY rt RMT_coloridad and Sesse	Oral cavity IB,II,V Oral cavity IB,II	1.5 cT4aN2cM0 1.6 cT4aN3bM0	II 28/02/2018 IVA not done IVB 10/07/2019	WLE+RT Interior maxiletomy+MRND 3 NA WLE+right segmental mandbulectomy+MRND type 1	NA NA 30 6	MDSCC MD Keratising SCC MD SCC	NISCC	negative assert absert ingative NA p12V0800 yets 3 weekly     NA NA NA NA NA NA NA yets 3 weekly     positive absert absert negative 7 p12V223M0 yets 3 weekly     NA NA NA NA NA NA NA yets 3 weekly	3 21/05/2019 07-No 2 16/09/2019 29/10/2 3 30/01/2020 14/03/2	V /03//35# DEAD NA NA 119 660//33# DEAD yes NA 20 6607/33# DEAD yes NA 119 6607/33# DEAD NA NA	Yes locoreolo	al 06/11/2019 09/01/2020 09/06/20	Zi         886         Zii .5333333         886         Zii .5333333         886         Zii .5333333         886         Zii .5333333         886         Zii .53333333         886         Zii .533333333         886         Zii .533333333         886         Zii .533333333         886         Zii .533333333         886         Zii .5333333333         886         Zii .53333333333         886         Zii .53333333333         886         Zii .5333333333         886         Zii .53333333333         886         Zii .533333333333         886         Zii .53
	38         M         JODHPUR         HINDU         161         69.2         1.75         26.71           80         M         pail         hindu         166         63         1.7         22.9           51         M         jodhpur         Hindu         158         63         1.66         24.6	ulcer in oral cavity difficulty in swallowing solidand voice change non healing ulcer on it lateral border of tongue	6 tobacco chewer     2 bid smoking since 30-40yrs     6 tobacco chewer and smoker (20 yrs)	No No No Yes	NA 0 0.8 P+C 2 5.2	ri HBMT, polypotial a cdf ssaue poslarior , Bil orophanyngaal and hypophanyngaal wal ri Librai a border pri tungua	Oral cavity - Oropharynx - Oral cavity -	0.9 cT3N26M0 - cT3N0M0 - cT1N0M0	IVA not done III not done III 04/05/2019	not done NA WLE-tr/MRND typer III	NA NA NA NA 69 2	MDSCC basabid variant of SCC	NA NA	NA NA NA NA NA NA NA yes 3 weeky NA NA NA NA NA NA NA yes weeky required absent present 9 p12N2aN0 yes 3 weeky	2 24/09/2019 11/06/2 5 27/11/2019 01/11/2	315         66Gy/33#         DEAD         NA         NA           320         66Gy/33#         DOING WELL         NA         NA           319         66gy/33#         doing well         24/09/2022         NAD	NA NĂ No NA No NA	08/09/2019 03/05/2020 15/04/20 14/10/2019 23/02/2022 NA	IZ         250         8.33333333         250         8.33333333         250         8.33333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.3333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.333333333         250         8.3333333333         250<
50 PK 2020/03/009597 51 KLS 2020/02/008321 5	50 M jodhpur Hindu 169 58.8 1.66 20.34 50 M jodhpur Hindu 170 68.3 1.79 23.63	non healing uber on rtiatera border ottongue foreign body sensation in throat recurrence of soft ssue lision	totacco cnewer and smoker (20 yrs)     z     totacco chewer & smoking     z     totacco chewer	HIN NO NO Yes ashthma No	P+C 2 5.2 NA 0 2.2 P+C 2 NA 0 1.8	left tonsillar region involving tonsillar pillars rt upper alveolar gingiya	oropharynx III,IV,V Oral cavity II			NA. NA. right upper alveolectomy+SMF flap +SOHDN	NA NA	MD SCC WD SCC	NA MD SCC keratinking	negavų abseint present present v przNcanto yes 3 weekly NA NA NA NA NA NA NA NA Veekly negavų abseit absent negativ NA pT4aN0M0 no NA	2 21/05/2019 22/07/2 5 07/02/2020 27/08/2 NA 03/04/2020 17/04/2	12 60g/30#	N0 NA   	23/11/2019 09/02/2022 NA 23/04/2020 09/10/2020 - 2/ 14/02/2020 17/10/2022 NA	12/1         42.3000006/         12/1         42.3000006/           140         45.0000066/         140         4.60000067           976         32.5333333         941         31         878         29.2000067           22         664         22.1333333         259         9         33         1.1           19         775         5.9         177         5.9         177         5.9
53 KK 2018/10/006703 8	83         M         jodhpur         Hindu         158         60         1.62         24.09           54         F         Pai         Hindu         157         53.4         1.52         21.7           63         M         PALI         HINDU         158         42.1         1.35         16.9	LESION OVER LEFT LATERAL BORDER OF TONGUE blackish discoloration of gingiva	2 chronic tobacco chewer 12 tobacco	no Yes No No	TPF 3 3.1 NA 0 2.9	left lateral border of anterior third tongue left alveolar process of maxillary and left palatine process of maxilla	Oral cavity IA,IB,II Maxilary sinus oropharyrx	1.5 cT4aN2aM0 - cT4aN0M0	NA 05/06/2019 NA 24/01/2019	WLE+MRND TYPE 3= Submental flap ant maxiliactiony +BIL SOHND	57 4 53 3	MD SCC malignant melanoma	MD SCC malgnant melanoma	negative absent present negative NA p12A2aM0 yes weekly negative absent absent negative NA p14aNM0 no NA NA NA NA NA NA NA NA NA NA no NA	3 07/10/2019 31/08/2 NA 04/12/2019 31/05/2 NA 24/07/2019 17/09/2	019 60g/30# DEAD NA NA 119 60g/30# DEAD NA NA	10/03/2019 nodal recum NA NA	nce 17/01/2019 14/09/2020 11/11/2 03/06/2019 22/05/2019 30/08/2	20 664 22.1333333 259 9 33 1.1 19 177 5.9 177 5.9 177 5.9
55 KR 2019/09/020420 5	52 M JODHPUR HINDU 163 59.2 1.63 22.34	ulcerated growth in tonsillar region increased difficulty in respiration pain in neck a/w change in voice	2 tobacco (30)vs)     6 tobacco adorhol, opium     4 opium & bidi 1 bundle *40 yrs     12 tobacco	no No DM,CKD No No No	NA         0         2.9           NA         0         2.3           NA         0         5.2           NA         0         3.24	right bronilar party infitrating uvula nt FVC, BL TVC, in AEF and pyriform ainus BOT, central and lateral giotsception: 605 with distortion of normi valeculia	Supraglottis III,UI Oral cavity	cT2N0M0     1.3 cT4aN2bM0     cT2N0M0		NA total laryngectomy + central and lat neck dissection + partial pharyngectomy NA	67 6 NA NA	MDKSCC MDSCC MDSCC	NA MDSCC NA	negative present present NA pT4aN3cM0) yes weekly	5 17/02/2020 04/08/2 NA 04/05/2020 27/06/2	22 66Gy/33# DEAD 20/06/2020 NAD	NA NA No NA No NA	07/03/2019 06/12/2020 14/08/20 01/10/2020 08/12/2021 14/10/20 17/02/2020 21/10/2021 22/10/20	11         177         5.9         177         5.9           22         408         13.6         408         13.6         408         13.6           22         643         21.4333333         643         21.43333333         21.43333333         21.43333333           22         643         20.43333333         613         20.43333333         23.3333
58 P 2019/08/015165	Sourgen         Hindu         158         71         1.17         28.17           35         M         Jodhpur         Hindu         172         56.2         1.83         19.05           40         M         Jodhpur         Hindu         172         57         1.87         19.32           72         M         Jodhpur         Hindu         168         47.7         1.48         16.91	ron healing ulcer over left lower jaw ulcer at right RMT increasing difficulty in breathing and voice change	12 tobacco 4 tobacco	NO NO NO NO HTN & IWM NO	NA         0         3.24           NA         0         3.1           NA         0         1.72           NA         0         2.4	BOT, FOM and left RMT rt RMT, exosion of underlying ramus mandible epigetiss boths sides of midline	Oral cavity IB,II Oral cavity - Suprapibitis II.III	<ul> <li>cT4aN0M0</li> </ul>	IVA 24/01/2020 IVA 28/01/2020 IVA NOT DONE	WLE+kft hemimandibulectomy+keft MRND type 1 WLE+rt segmental mandiblectomy+kight upper alveolectomy +MRND	72 1 17 0 NA NA	MDSCC MDSCC	MDSCC MDSCC	negative absert absert absert 4 praNM0 no NA negative absert present absert 4 praNM0 no NA NA NA NA NA NA NA NA	NA 15/06/2020 08/03/2 NA 07/06/2020 19/08/2	221 603Y/30# doing well 11/04/2020 no residual/recurrence 221 603y/30# LIVE 23/08/2022 local dis with LAP 221 703y/35# DEAD NA NA	NA NA 23/08/2022 locoregional rec No NA	rrence 02/50/2020 12/50/2022 MA	902 33.06666667 902 33.05666667 902 33.0666667 976 32.533333 915 30 734 24.46656667 22 888 29.6 888 29.6 888 29.6
60 GC 2015/12/008661 7	72 M jodhpur Hindu 168 66.7 1.76 23.65	increasing attruty in preatring and voice change change in voice and dysphagia burning sensation and evere inflation while swallowing UPG over it BM	2 beed 3 totacco chever 2 smoker and totacco * 30 yrs	HTN, CAD, DM No	NA 0 1.7	left D/C and art completing	Glottis - Oral cavity II Oral cavity -	0130000	III NOT DONE	NA NA WLE	NA NA	High grade dyspasia with teatures suspicious for invasion. MDSCC MD SCC	NA NA NA NA	NA         NA<	NA 23/06/202 13/08/2 na 03/01/2019 26/04/2 na 31/12/2019 18/02/2 NA 13/01/2020 03/04/2	NA DEAD NA NA	17/06/2020 local recurre No NA	nce 24/01/2019 24/06/2020 14/08/2	2 568 18.0333333 510 17 418 13.93333333
63 KR 2019/10/001543 6	Solition         Hindu         Horizon         Horizon <th< td=""><td>UPG over It BM hoarseness voice and SOB UPG over left BM</td><td>2 smoker and tobacco * 30 yrs 12 tobacco * 50yrs</td><td>No Yes</td><td>TPF         2         2.8           NA         0         2.3</td><td>left BM with no extension to RMT antcommisure ,rt tVC and FVC extending to subglottic region</td><td>Oral cavity - Glottis -</td><td>- cT4aN2M0     - cT4N0M0     - cT2N0M0</td><td>NA 20/11/2019 NA 12/02/2019</td><td>WLE+Left MRND Total laryngectomy+partical Phangectomy+nt Hemithyroidectomy WLE+MRND</td><td>35 3 11 0</td><td>WD SCC MD SCC</td><td>MD SCC WD SCC</td><td></td><td>NA 13/01/2020 03/04/2 3 14/01/2020 03/12/2 5 10/01/2019 21/11/2</td><td></td><td>NO NA NA NA</td><td>09/07/2019 29/05/2020 26/07/20 16/12/2019 13/02/2020 17/08/20</td><td>22 901 30.03535333 901 30.03535353 901 30.03535353 901 30.03535353 201 20.0355555 201 201 201 201 201 201 201 201 201 201</td></th<>	UPG over It BM hoarseness voice and SOB UPG over left BM	2 smoker and tobacco * 30 yrs 12 tobacco * 50yrs	No Yes	TPF         2         2.8           NA         0         2.3	left BM with no extension to RMT antcommisure ,rt tVC and FVC extending to subglottic region	Oral cavity - Glottis -	- cT4aN2M0     - cT4N0M0     - cT2N0M0	NA 20/11/2019 NA 12/02/2019	WLE+Left MRND Total laryngectomy+partical Phangectomy+nt Hemithyroidectomy WLE+MRND	35 3 11 0	WD SCC MD SCC	MD SCC WD SCC		NA 13/01/2020 03/04/2 3 14/01/2020 03/12/2 5 10/01/2019 21/11/2		NO NA NA NA	09/07/2019 29/05/2020 26/07/20 16/12/2019 13/02/2020 17/08/20	22 901 30.03535333 901 30.03535353 901 30.03535353 901 30.03535353 201 20.0355555 201 201 201 201 201 201 201 201 201 201
65 KC 2020/07/004176 6	50 F jalore Hindu 162 37.2 1.29 14.19	UPG at right tonsillar region	2 totacco 20/rs 6 totacco 2 arecanut cheving	NO NA NO NO NO NO	NA 0 3.1	rt bonsiliar fossa ith extension to rt parapharyngeal space and BOT rt ant BM with GBS obliteration	oropharynx IV Oral cavity -	- c12NDMU 1.7 cT3N2cM0 - cT2N0M0	IVA 14/06/2019 IVA not done II 29/07/2020	NA Wie+mind+REE FLAP	NA NA	wasoc PDSOC porokeratosis	MUSCC NA MOSCC	positive absent absent attacent s pri1060ko yes weekly negative absent posent present na pri24283M0 yes weekly NA NA NA NA NA NA NA NA NA Wa yes weekly negative absent absent na p2M0 no NA	4 14/09/2020 28/10/2	120 60Gy/30# DEAD NA NA	NA NA	29/07/2020 28/10/2020 - 29/07/2020 28/10/2020 30/10/20 19/08/2020 11//02/2022 NA	22         245         8.166666667         245         8.166666667         245         8.166666667           503         16.76666667         503         16.76666667         503         16.76666667           22         93         3.1         93         3.1         93         3.1           805         26.8333333         805         26.8333333         805         26.8333333
67 JD 2019/01/030183 6 68 JK 2018/08/01/0922 2	S2         F         Jodhpur         Hindu         164         48.4         1.48         18.05           52         F         Jodhpur         Hindu         158         47         1.43         18.87           22         F         Jodhpur         Hindu         149         68.8         1.68         30.99	UPG ar rt upper alveolus not available	2 tobacco no addiction or substance abuse	HTN Yes NO No	P+C 2 4.2 NA 0 2.4 D4C 2 2	rt maxilia with erosive changes of umdelying bone including hard palate rt nasal cavity extending into nasopharynx through posterior choana rt PFS invelvion rt AE fold	Maxilary sinus Nasopharynx II	- cT4aN1M0 2.1 cT4aN2bM0	NA 16/04/2019 NA May-18	WLE+interior maxilectomy+SOHND FESS	55 0 0 0	MD SCC NA	MDSCC Spindle cell sarcoma, morphologically resembling rhabdomyosarcoma.	regative absent absent 13 p13N0 no NA regative NA NA NA NA NA NA Ves VAC	NA 06/10/2019 23/07/2 16 weeks 31/01/2019 03/12/2	019 603Y/30# 08/11/2021 NAD 119 54Gy/27# DEAD NA NA	NO NA NA NA	05/02/2019 08/11/2021 - 17/08/2018 03/12/2019 03/12/2	005         26 8333333         005         26 8333333           152         27.7333333         152         27.7333333         152         27.7333333           152         27.733333         152         27.7333333         152         27.7333333         152         27.7333333         152         27.7333333         152         27.7333333         152         27.733333         152         17.733333         152         17.733333         152         17.733333         152         17.1333333         152         17.13333333         17.13333333         12.133333         12.133333         12.133333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.1333333         12.13333333         12.13333333         12.13333333         12.13333333         12.13333333         12.13333333         12.133333333         12.13333333333333333         12.133333333333333         12.13333333333333333333333333333         12.133333333333333333333333333333333333
69 JS 2020/07/006200 7 70 JS 2018/06/017213 7 71 LJ 2019/06/016951 5	Image         Image <th< td=""><td>dysphagia non healing uicer over right lower alveolus dyschagia</td><td>3 totacco and smoking 2 totacco 6 no addiction or substance abuse</td><td>No Yes DM&amp;HTN No No NA</td><td>NA 0 2 NA 0 24</td><td>rt mandibular alveolus</td><td>Supragibitis IB,II Oral cavity Hypopharynx III</td><td>1.6 cT4aN2aM0 - cT2N1M0 0.7 cT2N2bM0</td><td>NA not done     III 26/12/2019     NA not done</td><td>NA wie+mnd+flap NA</td><td>38 0 NA NA</td><td>NA WDSCC MDSCC</td><td>MDSCC mdscc NA</td><td>NA         NA         na&lt;</td><td>NA 09/09/202 22/10/2 NA 03/04/202 04/11/2 1 13/01/202 03/04/2</td><td>12 660/33# dead 06/09/2020 residuald/s</td><td>No NA</td><td>NA NA NA 20/11/2019 29/09/2022 NA 07/01/2019 06/11/2020 20/06/21</td><td>NA NA NA NA NA NA NA 1044 34.8 1044 34.8 1044 34.8 23 355 11.8333333 355 11.8333333 355 11.83333333</td></th<>	dysphagia non healing uicer over right lower alveolus dyschagia	3 totacco and smoking 2 totacco 6 no addiction or substance abuse	No Yes DM&HTN No No NA	NA 0 2 NA 0 24	rt mandibular alveolus	Supragibitis IB,II Oral cavity Hypopharynx III	1.6 cT4aN2aM0 - cT2N1M0 0.7 cT2N2bM0	NA not done     III 26/12/2019     NA not done	NA wie+mnd+flap NA	38 0 NA NA	NA WDSCC MDSCC	MDSCC mdscc NA	NA         na<	NA 09/09/202 22/10/2 NA 03/04/202 04/11/2 1 13/01/202 03/04/2	12 660/33# dead 06/09/2020 residuald/s	No NA	NA NA NA 20/11/2019 29/09/2022 NA 07/01/2019 06/11/2020 20/06/21	NA NA NA NA NA NA NA 1044 34.8 1044 34.8 1044 34.8 23 355 11.8333333 355 11.8333333 355 11.83333333
72 LD 2019/05/008289 3 73 SL 2019/05/004320 3	1         Indu         152         38.6         1.27         16.7           33         F         jodhpur         hindu         152         38.6         1.27         16.7           53         M         Hindu         167         7.3         1.84         26.25           42         M         Jodhpur         175         77.2         1.93         25.22	dysphagia tmoat pain and dysphagia	4 not available 6 1002000 4 PanMagia & Inhann	no No No No	NA 0 1.4 NA U 2 NA 0	post cricold region and adjacent cervical esophagus upper esophageal wall n valecuma , encreacing upper per pergente cear corregoue into in. A-E: tot	Hypopharynx - Supragiotis -	- cT1N0M0 - c12N1M0 - cT45N0M0	I not done	NA. NA.	NA NA NA NA 11 1	PDSCC MDSCC	NA NA	NA NA NA NA NA NA NA yes 3 weekiy Na Na Na Na NA NA yes weekiy	1 30/05/2019 30/07/2 3 10/01/2019 21/11/2 NA 07/02/2021 21/08/2	113 000/133# 0ead 03/07/2020 residuald/s	No NA NA		
75 SRP 2019/12/011927 6 76 NS 2019/01/019428	61 M nagaur Hindu 172 68.3 1.8 23.23 72 M Pai Hindu 176 67.6 1.81 21.87	ulcerated lesion over it upper alveolus non healing ulcer at it it border of tongue dysphagia and throat pain	4 Pan Masaa & tobacco 3 no adiction or substance abuse 2 beed smoker	No No No Yes No No	NA         U           P+C         2         2.1           NA         0         3.5           NA         0         1	right upper alveolus with subtle encoion of the underlying bone. rit lateral border of tongue kit BUT, extending laterally abring kit hybryrfloepigditic fold	Oral cavity - Oral cavity I,II,III,IV Oral cavity -	3.3 cT2N2cMo - cT2N0M0	IVA Mar-20 IVA not done	NA	NA NA	MDSCC	NA NA	positive absent absent present NA pT4aN1M0 no NA NA NA NA NA NA NA NA VA yes weeky NA NA NA NA NA NA NA NA	5 08/04/2020 22/09/2 NA 02/05/2019 23/03/2	20 66gyr33# - 08/10/2021 cervical nodal recurrence 119 66(3)r33# - NA NA	NO NA 08/10/2021 nodal recum NA NA		1 153 5.1 153 5.1 153 5.1 574 19.1333333 560 19 322 10.7333333 140 4.6666856867 140 4.566666867
77 VR 2019/07/013365 5 78 TR 2019/08/014879 5	59         M         jalone         Hindu         161         53.4         1.54         20.61           56         M         Nagaur         Hindu         168         78         1.9         27.65           58         M         JALORE         HINDU         168         72.3         1.83         25.63	fingating growth over lower lip left side tongue ulter THERDAT ACHE	5 Tobacco 1 beed smoker 4 beed smoker	HTN , Psychosis No No Yes DM No	NA 0 1 TPF wookly 7 3 NA 0 3.3	lower lip post third of left side of longue inflitating into FOM and involving BOT left lateral wild of occoharvex tonalilar fossa	oral cavity - Oral cavity -	cT1N0M0     cT2N0M0     1.5     cT2N1M0	I 26/08/2019 II not done	WLE+SOHND NA	24 0 NA NA NA NA	WDSCC MDSCC	WDSCC NA	negative absent present absent 5 pt1NDMx no NA NA NA NA NA NA NA NA VA yos weeky NA NA NA NA NA NA NA NA	NA 25/11/2019 17/01/2 5 24/12/2019 26/02/2	22 60gY/30年 no elo any disease NA NA NA 23 620y/31年 - NA NA NA 4902y/32年 22 月24日 NA NA	no NA NA NA	10/01/2019 11/09/2022 NA 01/06/2020 02/05/2020 -	140         4.00000000/         140         4.00000000/         140         4.00000000/         140         4.00000000/         140         4.00000000/         140         4.00000000/         140         4.00000000/         150         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170          170
80 NY 2019/11/009186 2 81 ND 2019/06/014573 4	29 M Jodhpur Hindu 190 115 2.46 31.85 46 M jodhpur HINDU 176 75 1.91 24.27	pain and ulcer in left lateral border of tongue	v Deed shrows     12 pan eater     1 guildha and cigaratte	No No No Yes No Yes	NA 0 2.35 TDE 2 2.3	left lateral border of antrior tongue left lower buccal space	Oral cavity - Oral cavity IB	- cT2N0M0 1.3 cT2N1M0	III 06/09/2019	WLE+MND+segmental mandibulectomy	15 1 14 0	WDSCC	MDSCC WDSCC	negative absent present present NA pT2N2aM0 yes 3 weekly negative absent absent absent NA ypTxNoMx no NA	2 31/12/2019 17/02/2 NA 31/07/2019 19/09/2	120 66g//33# DOING WELL 20/10/2021 NAD 119 60g//30# DOING WELL 20/11/2019 NAD	ND NA NA NA	18/11/2019 24/03/2022 NA 24/06/2019 10/03/2019 NA	857 28.56666667 857 28.56666667 857 28.56666667 101 3.366666667 101 3.366666667 101 3.366666667
82 NR 2019/04/000200 1	S8         M         Jodhpur         Hindu         170         56.6         1.63         19.58           46         M         Jodhpur         MUSLIM         159         50         1.48         19.84           41         M         BARMER         HINDU         169         52.8         1.57         18.52	non healing ulcer over it side of mouth upg at right cheek	2 tobacco 4 tobacco	No Yes No No	P+C 3 3.2 NA 0 4.3	rt BM, upper and lower GBS ad RMT rt side rt girgyosulai complex rt BM standing in lower GBS	Oral cavity IB Oral cavity IB Oral cavity IB,IA	1 cT2N1M0 1.5 cT4aN1M0		WLE+RI SM+MRND wie+rmd wie+RND	45 0 41 0 37 2	WDSCC MDSCC	MDSCC MDSCC	negative absent absent absent 7 p13ND no NA negative absent absent absent 10 p14aN0MD no NA positive absent absent absent 10 p14aN2MD no NA	NA 09/09/2019 23/10/2 NA 28/06/2019 08/09/2 NA 20/01/2020 03/04/2	019 60gY/30# DEAD NA NA	NA NA 10/05/2019 locoregional rec	04/08/2019 23/10/2019 30/10/20	19 205 6.83333333 205 6.83333333 205 6.83333333
	41         M         Deriver K         PH/OD         169         52.6         1.57         16.52           83         M         Jodhpur         Hindu         164         75         1.84         27.98           83         F         JODHPUR         HINDU         159         56.6         1.58         22.46           89         M         Jodhpur         Hindu         168         54.8         1.59         19.41	upg over left BM not available non healing ulcer over rt BM Upg over left BM	NA     60 no addiction or substance abuse	HTN, TVD, CABG NA No Yes No No	NA         U         4.3           NA         0         5.2           NA         0           Cis+5-FU         1         2.5	NA rt BM witb abutting mandble upto approx 1.9cm , no enseion	Nasopharynx - Oral cavity -	1.5 cT4aN2bM0 - NA - cT4aN0M0	IVA 07/01/2019	WLE+Left MRND WLE+MRND	42 0	NA	MD10 PDSCC MDSCC	negative absent present absent 15 pT4aN0M0 no NA	NA 04/03/2019 20/05/2 NA 18/09/2019 11/01/2	019 60g/30# - NA NA	No NA NA NA No NA	04/04/2019 20/05/2019 - 08/10/2019 30/12/2020 -	24         558         17.0533335         131         4         57         1.0           999         33.3         999         33.3         999         33.3         1999         33.3         1999         33.3         160         1.533333333         46         1.533333333         46         1.533333333         508         16.9333333         508         16.9333333         508         16.9333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.83333333         778         25.833333333         778         25.833333333         778         25.833333333         778         25.83333333         778         25.83333333         778         25.833333333         778         25.8333333333
PP EM 2010/06/07297 /	39         M         Jodhpur         Hindu         168         54.8         1.59         19.41           42         M         Jodhpur         Musilm         155         34.5         1.21         14.37           29         M         siKAR         HINDU         168         58.7         1.65         21.58	Upg over left BM ulcer over it lat border of tongue B/L neck swelling a/w pain and difficulty in swilowing	24 tobacco *15yrs 6 tobacco & alcoholic 2 po difetico o cubritore alturo	No No No No	Cars-ro         I         2.5           NA         0         3           NA         0         2.7           No         0         1.0	left BM extending anterforty upto midline and posteriorly upto third molar merior and donai aspect of tongue rt side, inferiorly to FOM, involves extirnsic musices and severe description and at a distillation beaut with ord force at the beaution is of homesel a conce	Oral cavity - Oral cavity II	- cT2N0M0     1 cT2N1M0     1.9 cT2N2Mx	11 23/07/2019 111 not done	WLE+MRND NA NA	02 1 37 0 NA NA	MDSCC MDSCC	MDSCC NA NA	Insparve absent adsent adsent o         p12/Nink         Ino         NA           negave absent absent 4         absent 4         p11N0         no         NA           NA         NA         NA         NA         yes         3 weekly           NA         NA         NA         NA         yes         3 weekly           NA         NA         NA         NA         yes         3 weekly	NA 31/07/2019 20/09/2 2 07/08/2019 06/04/2 2 07/08/2019 13/09/2	60gY/30# DOING WELL NA NA     15     70g/35# dead 16/12/2020 locoregional with lung meth     70g/35# dead 16/12/2020 locoregional with lung meth     70g/35#     70gJ/35#     70gJ/35#	No NA Yes 24/02/2020 locoregional rec	05/08/2019 21/06/2021 NA arrence 06/12/2019 12/10/2020 12/12/20 21/06/2019 24/11/2022 NA	775         25.83333333         775         25.83333333         775         25.83333333           22         547         18.23333333         257         9         265         8.833333333           1283         42.76665667         1283         42.76665667         1283         42.76665667
90 TS 2016/10/004776 5	20 M Sirok Hindu 168 56.7 1.85 21.56 59 M Jodhpur Hindu 171 59.4 1.67 20.34 klob C	Ca oropharynx post CTRT piw o'o drynes of mouth , slight difficulty in swallowir difficulty in swallowing and pain interceat	ing 2 Gutiha	No Yes	P+C 3 4.4	emaged racip maying an act it passine octain with one association of the action of the	Maxilary sinus - Craicavity -	- cT4N0M0	IVA not done	NA NA	NA NA NA NA NA NA NA NA	MDSCC	NA NA	NA         NA<	NA 31/07/2019 09/11/2 5 26/06/2019 21/06/2	45gY/25# (RE- IRRADIATION) DEAD NA NA	NA NA NA	07/06/2018 12/11/2019 16/02/2	22 590 19.66666667 590 19.66666667 590 19.66666667
92 V 2019/01/028259	14 M Jodhpur Hindu 135 24.8 0.96 13.62 77 F Joleaner Hindu 156 24.2 121 14.07	swelling neck alw nasal cavity discharge , bleeding , headache growth over hard palate	Onicial (eu yrs)     4     no addiction or substance abuse     1     tobacco	No Yes No Yes No No	CIS+5+U         2         4           TPF         2         6           NA         0         6.3	posenero triuro torgue externang to extrinsic and utminisic musclese postenoroly mucosal thickening of nasophanyms, blateriar lorus atbasis, fossa a drosenmuler. soft palae and extending into positrior part of hard palate on left side	Nasopharynx IB,II,III,IV,V Oral cavity	- cT3N3aM0 - cT4N1M0	IVB not done IVA not done	NA. NA.	NA NA NA NA NA NA 47 0	PDSCC	NA. NA.	NA NA NA NA NA NA yes weekiy Na Na Na Na Na Na na na na	4 06/10/2019 08/02/2 NA 22/07/2019 14/09/2	119 70gY/35# - NA NA 119 66/3Y/33# - 28/12/2019 locoregional d/s	NA NA 28/12/2019 locoregion	15/02/2019 27/07/2019 -	162 5.4 162 5.4 162 5.4 178 5.93333333 190 6 105 3.5
95 NR 2020/06/004364 8	83         M         Jodhpur         Hindu         161         65.5         1.71         25.58           88         M         Jodhpur         Hindu         174         54.4         1.62         18.01           99         M         'Nagaur         Hindu         170         67.3         1.78         23.28	uicer in tongue pain while swallowing non bealing uicer in rt BM	1 tobacco 1 tobacco 5 tobacco šalcohol	No No No No	NA 0 1.5	NA left toraliar fossa rtBMII RMT with no bony estasion	Oral cavity - oropharynx - Oral cavity -	NA     cT2N0M0     cT4aN1M0	NA 27/05/19 II not done IVA 06/08/2020	Ieff hemiglossectomy +MRND NA WLE +MRND+ MM	NA NA	MDSCC PDSDC MDSCC	MDSCC NA Littory	negative absent absent 4 pT1N0M0 no NA NA NA NA NA NA NA NA NA no NA nocitie absent absent 12 r013/2h vss weekk	NA 16/07/2019 09/04/2 NA 24/07/2020 09/09/2 3 22/07/2020 09/19/2	119 60gY/30# - NA NA 120 66Gy/33# DOING WELL NA NA 120 66Gy/33# dead 14/10/2021 lung and liver mets with V1	NA NA No NA 25/05/2021 supraday	20002010 000042010	71         2.366666667         71         2.366666667         71         2.366666667           404         13.46666667         404         13.46666667         404         13.46666667           22         651         21.7         440         15         25         8.56666667           106         3.53333333         106         3.53333333         106         3.53333333
	bit         M         Nagaur         Hindu         1/0         6/3         1.78         23.28           52         M         Jodhpur         Muslim         156         88         1.95         36.21           55         M         Jodhpur         Hindu         170         94.4         2.11         32.66           48         M         Jodhpur         MUSLIM         164         59.7         1.64         22.27	not available(surgery outside) not available (treated outside)	NA Tobacco	NO NO DM+Hypothyroidism No HTN+DM+SLIP DISC No	NA 0 1 NA 0 2 NA 0 3.8	left BM with extension info RMT rt cheek, extending into inf GBS with erosion of mandible	Oral cavity - Oral cavity IB,II,III Oral cavity IB Oral cavity -	- C14aN1M0     1.7 cT4aN2aM0     2.3 cT4aN1M0     - cT4aN1M0	NA 2307/2019	W F+MM+MND	33 6 30 1 26 4	mdscc MDSCC	MDSCC PDSCC	positive absert absert absert 12 pT3N2b yes weekly positive absert absert 12 pT3N2b yes weekly positive absert absert 7 pT3N2bM0 no NA negative zesent absert present 15 pT4AN2bMx yes weekly negative absert absert absert 3 pt2N0 no NA			NA NA No NA	07/12/2019 26/10/2019 - 04/05/2019 11/04/2022 NA	12         051         21.7         440         15         257         8.5e0000000           106         3.53333333         106         3.53333333         106         3.53333333           1309         43.6333333         100         43.6333333         106         3.53333333           1675         55.83333333         1075         55.83333333         1675         55.83333333
100 R 2020/05/001501 3 101 RP 2019/08/001548 3	33 F Jodhpur Muslim 157 50.8 1.48 20.65 55 M Aimer Hindu 160 47.8 1.45 18.67	UPG over left upper alveolus not available non healing uper in oral cyty	6 gutikha NA 1 toharon rhawer	No No NA No No Ves	NA 0 3.6 NA 0 3.6 NA 0 P+C 2 4.4	left upper alweolus and upper GBS left A-E foid, left pyritform fossa and post criccid region inferior to life and e of mouth- infiltration ei le subcutaneous tissue	Oral cavity - Supragiotis - Oral cavity -	cT4aN1M0     cT1N0M0     cT4aN0M0	IVA 25/03/2019 I not done IVA not done	left inferior maxiliadiomy+SOHND NA NA	33 0 NA NA NA NA	WDSCC MDSCC MDSCC	MDSCC NA NZ	NA NA NA NA NA NA NA yes weeky	3 25/06/2020 08/07/2	120 60Gy/30年 DOING WELL 26/03/2022 NAD	No NA No NA 23/06/20 local with lunc	24/06/2020 04/05/2022 NA	650 21.66666667 650 21.66666667 650 21.666666667 20 417 12.9 208 10 106 85
102 NDM 2018/12/007595	62 M Jodhpur Hindu 160 89.6 1.99 35	non nearing ucer in oral cvity painthroat increased with difficulty in swallowing non healing uicer over rt lower alveolus	3 no addiction or substance abuse 2 tobacco chewer	NO YES HTN NO NO NO	NA 0 4.5 NA 0 1.9	interiorio letti angio oti moutin, interiarangi etti o subcutaneous trissue intonsii, nt laiterai orophanymx and typophany angio angio nt mandibular alveolar,	Oropharynx II,III Orol cavity -	- c14aNDMD 1.8 cT2N2cMx - cT4aNDMD	IVA not done IVA not done IVA 01/05/2020	NA wie+segmental mandibulectomy+MRND	NA NA NA NA 45 0	MDSCC MDSCC	NA WDSCC	NA         Yes         weekly           NA         NA         NA         NA         NA         NA         NA         Yes         weekly           NA         NA         NA         NA         NA         NA         Yes         weekly	5 27/11/2019 01/08/2 NA 03/12/2020 18/04/2	22 60gY/30# DOING WELL 16/08/2021 NAD	No NA NA	12/06/2019 14/09/2022 NA 23/12/2019 08/12/2021 NA	24         417         13.59         308         10         195         6.5           1013         33.70660667         1013         33.70660667         1013         33.70660667           508         19.0333333         508         19.0333333         508         19.0333333           1124         37.46666667         1124         37.4666667         124         37.4666667           193         6.43333333         195         6.43333333         195         6.43333333         195         6.43333333
104 LV 2019/09/008759 6 105 UD 2019/01/029449 4	72         M         Jödnpur         Hindu         15/         58.8         1.6         23.9           51         F         Jalpur         Hindu         156         70.4         1.74         28.97           45         F         jodhpur         Hindu         156         43         1.36         17.69           33         M         Jodhpur         Hindu         152         88.5         20.5         30	rt sided ear pain and throat pain ulcer over left side gum ulcer involving left upper alveolus	2 totacco crewer 2 no addiction or substance abuse 4 tobacco 4 tobacco	NO NO NO Yes NO Yes	NA U 1.9 P+C 1 P+C 3 4.4 NA 0 6	ri A-E fois with effacement of PFS Internet of PFS left grigviouscoloompix: hindling left superior and inferior GBS and buscal muscaa hant.ustr plataupger arkeoust, PRI/It patitive tonail on left aide	Oral cavity - Supraglottis II,V Oral cavity - Oral cavity IIIB III	1.23 cT2N2bM0 - cT4aN2bM0 3.8 cT4aN2bM0	IVA not done IVA not done IVA not done	NA NA NA	NA NA NA NA	MDSCC MDSCC	NA NA NA	NA         NA         NA         NA         NA         yes         weekly           NA         NA         NA         NA         NA         yes         3/weekly           NA         NA         NA         NA         NA         yes         3/weekly	3 18/10/2019 29/11/2 2 07/01/2019 23/08/2 5 15/02/2019 00000	119         66Gy/33#         DOING WELL         NA         NA           111         70g/35#         -         NA         NA           121         70g/95#         -         NA         NA	NO         NA           NO         NA           NA         NA           05/12/20/21         local with lung	10.01/2019 29/10/2022 NA 02/11/2019 23/08/2019 - mets 05/12/2022 49/07/2014 ///0000	1124 37.46666667 1124 37.46666667 1124 37.46666667 193 6.43333333 193 6.4333333 193 6.43333333 433 14.4333333 144 14.4 45.43333333
	wo         r         Joshpur         Hindu         136         4-3         1.36         17.60           33         M         Jodhpur         Hindu         172         88.5         2.05         30           50         M         Jodhpur         Hindu         165         52.3         1.54         19.21           44         M         Agra         Hindu         162         52         1.52         22.22	ulcer right border of tongue ulcer over left lower GBS	12 beed and alcohol 12 tobacco	No tes No No No Yes No No	TPF 2 3.91	rt lateral border of tongue infiltrating intrinsic muscle left lower GBS infiltrating adjacent skin	Oral cavity - Oral cavity IUB,III Oral cavity - Oral cavity -	cT2N0M0	17/10/2019	NA WLE+MRRD WLE+SOHND	NA NA 12 0 20 1	WDSCC MDSCC	WDSCC	NA NA NA NA NA NA NA Yes 3 weeky NA NA NA NA NA NA NA Yes weeky free absert present absert 8 pT2N000 no NA free present absert 5 pT1N1 yes weeky	NA 11/09/2019 31/12/2 5 29/11/2019 15/01/2	22. 7037735# UEAU NA NA 1916-6003/930# - NA NA 22. 6033/30# - NA NA	05/12/2021 local with lung NA NA NA NA	31/09/2019 31/12/2019 - 14/11/2019 15/01/2020 -	193         0.43333333         113         0.43333333         113         0.43333333           22         433         1.43333333         33.4         11         251         8.366666667           92         3.066666666         92         3.066666667         92         3.066666667           62         2.066666667         62         2.066666667         62         2.066666667
109 ARK 2019/04/013723 5 110 RCP 2019/10/000514 6 111 BKP 2020/06/002820 4	Hindu         Hindu <th< td=""><td>nasal regurgitation of water and food swelling in lower jaw UPG at it lateral border of toncue</td><td>1 Gutkha, alcohol 5 tobacco 4 Gutkha</td><td>HTN No</td><td>NA         0         1.3           NA         0         2         4.5           NA         0         2         3.3</td><td>soft palate, uvula, hard palate, BL. cropharyngeal wall middle Thrid brogue with control ar crosice present it side of anterior three board hour hour way from incusal sectum and doesnot cross midline</td><td>Orophanynx II Oral cavity - Oral cavity -</td><td><ul> <li>T4aN0M0</li> </ul></td><td>NA 30/10/2019</td><td>A/ WL=+MND CMM this vancbasedons with</td><td>28 0</td><td>MDSCC MDSCC MDSCC</td><td>NA MDSCC MDSCC</td><td>feel         present         absent         absent         5         pT1Ni         yes         weekly           negative         absent         AN         NA         NA         NA         yes         weekly           negative         absent         absent         16         p14aMMD         no         NA           negative         No         present         absent         19         p13ND         no         NA           negative         No         present         absent         19         p13ND         no         NA</td><td>1 06/10/2019 31/07/2 NA 16/12/2019 31/07/2 NA 07/04/2029 22:00/2</td><td>719 70g//35# - 26/02/21 locoregional d's     100//30# - NA NA     102     100//30# DOING WELL NA NA</td><td>12/01/2019 residual d NA NA No NA</td><td>Is 22/04/2019 23/02/2021 - 10/01/2019 08/11/2021 - 20/05/2020 11/10/2022 AIA</td><td>62         2.00660607         62         2.00600007         62         2.00600007           057         224.33333         223         7         22         4.1           060         22.00000007         200         22.00000007         900         22.00000007           904         301.333333         904         301.333333         904         301.333333         304         303.333333           924         8.7         261         8.7         261         8.7           752         25.00000007         752         25.00000007         752         25.00000007</td></th<>	nasal regurgitation of water and food swelling in lower jaw UPG at it lateral border of toncue	1 Gutkha, alcohol 5 tobacco 4 Gutkha	HTN No	NA         0         1.3           NA         0         2         4.5           NA         0         2         3.3	soft palate, uvula, hard palate, BL. cropharyngeal wall middle Thrid brogue with control ar crosice present it side of anterior three board hour hour way from incusal sectum and doesnot cross midline	Orophanynx II Oral cavity - Oral cavity -	<ul> <li>T4aN0M0</li> </ul>	NA 30/10/2019	A/ WL=+MND CMM this vancbasedons with	28 0	MDSCC MDSCC MDSCC	NA MDSCC MDSCC	feel         present         absent         absent         5         pT1Ni         yes         weekly           negative         absent         AN         NA         NA         NA         yes         weekly           negative         absent         absent         16         p14aMMD         no         NA           negative         No         present         absent         19         p13ND         no         NA           negative         No         present         absent         19         p13ND         no         NA	1 06/10/2019 31/07/2 NA 16/12/2019 31/07/2 NA 07/04/2029 22:00/2	719 70g//35# - 26/02/21 locoregional d's     100//30# - NA NA     102     100//30# DOING WELL NA NA	12/01/2019 residual d NA NA No NA	Is 22/04/2019 23/02/2021 - 10/01/2019 08/11/2021 - 20/05/2020 11/10/2022 AIA	62         2.00660607         62         2.00600007         62         2.00600007           057         224.33333         223         7         22         4.1           060         22.00000007         200         22.00000007         900         22.00000007           904         301.333333         904         301.333333         904         301.333333         304         303.333333           924         8.7         261         8.7         261         8.7           752         25.00000007         752         25.00000007         752         25.00000007
112 R 2019/12/003378 4	bb         M         Jodhpur         Hindu         1/2         0'.8         1.8         22.48           b1         M         Jodhpur         Hindu         169         54.6         1.8         18.89           40         M         Jodhpur         Hindu         179         62         1.75         19.375           55         M         Jodhpur         Hindu         170         67.2         1.78         23.25	UPG at that lateral border of tongue nonhealing uicer over inner side of left cheek growth oral cavity	4 Guttina     3 smoking and tobacco     6 tobacco	No No	NA 0 3.3 NA 0 1.42	instate intro assigner with concert and concert prevaints in side of antiterior three fourth tronger, away thermitingual septom and doesnot cross midline telt side BM with extension to upper UBS r (B), bucchnakter, mussetter involved	Oral cavity - Oral cavity - Oral cavity IA,IB,II,III	- cT4aN0M0 1.3 cT4aN2aM0	III 28/05/2020 NA 02/03/2020 NA 07/03/2019	rt hemiglossectomy with MND WLE+MRND+SM WLE+MRND III +alveolectomy	46 0 67 0	MDSCC	MDSCC MDSCC	negative absent present absent 10 pTaANUMO no NA	NA 05/08/202 25/06/2 NA 10/04/2010 16/11/2	22 800/130# DOINS WELL NA NA 22 800/130# - NA NA 015 860/133# 24/07/2021 NAD	NO NA NA NA	14/12/2019 31/08/2020 - 07/03/2019 24/07/2021	261 8.7 261 8.7 251 8.7 752 25.06666667 752 25.06666667 752 25.06666667
114 A 2019/05/007178	70 M indhrur Muslim 153 57 155 24.35	non healing ulcer on left BM	4 tobacco (40yrs)	No No	NA 0 2.2	left BM	Oral cavity IB	0.8 cT2N1M0	III 25/07/2019	WLE+MINU III TANGALDINY WLE+MINU III TANGALDINY	31 0	MDSCC	MDSCC	Integrand         absetti         proteiniti         absetti         proteiniti         proteinition         proteinition <thp< td=""><td>3 14/10/2019 23/11/2</td><td>115         66Gy/33#         DOING WELL         NA         NA</td><td>NO NA</td><td>06/03/2019 10/10/2022 NA</td><td>122         43.0600000         122         53.06000001         122         50.0000001           1225         40.8333333         1225         40.8333333         1225         40.8333333         1226         40.8333333           203         9.76666667         203         9.76666667         300         10         300         10</td></thp<>	3 14/10/2019 23/11/2	115         66Gy/33#         DOING WELL         NA         NA	NO NA	06/03/2019 10/10/2022 NA	122         43.0600000         122         53.06000001         122         50.0000001           1225         40.8333333         1225         40.8333333         1225         40.8333333         1226         40.8333333           203         9.76666667         203         9.76666667         300         10         300         10
115 SK 2019/07/014072	48 M delhi Hindu 175 57.6 1.67 18.8	pain in right side of mouth non healing ulcer over left side of mouth	4 smoking 4 tobacco and alcohol	No Yes No No	P+C 1 6.7 NA 0 2.8	BOT more lateralised towards it with c/l extension and involving valleculla and epigiottis left BM extending into left upper and lower GBS	Oral cavity UIUUV.V Oral cavity -	1.92 cT3N2cM0 0.5 cT2N0M0	IVA not done II 15/05/2019	NA WLE+bite composite resection+left MRND	NA NA 53 0	MDSCC MDSCC	NA MDSCC				NO NA NA NA	24/04/2019 02/11/2020 - 04/04/2019 29/01/2020 -	293 9.7666666667 293 9.766666667 293 9.7666666667 300 10 300 10 300 10
117 SK 2019/05/003496 3	32 M Jodhpur Muslim 182 61.2 1.75 18.48	swelling in it submandibular region	2 tobacco	No No	NA 0 3.9	rt BM	Oral cavity IB	1.7 cT2N1M0	III 07/04/2019	WLE+rt MRND	50 0	MDSCC fnac-sio 1) Myoepithelioma.	MDSCC	registriet absent         absent         8         pT2N0         no         NA           positive         absent         absent         medicated         pT1N0         yes         3 weekly           positive         absent         present         absent         medicated         pT2N0         no         NA           NA         NA         NA         NA         NA         NA         NA         NA         NA	2 09/05/2019 19/10/2	015 605y/30# DOING WELL NA NA	No NA	20/05/2019 11/07/2022 NA	1267 42.2333333 1267 42.2333333 1267 42.2333333
118 SD 2019/01/022979 4	48         F         Jodhpur         Hindu         149         64.1         1.62         28.48           43         F         Gorakhpur         Hindu         144         56.5         1.5         27.29           44         M         Jalore         Muslim         172         57         1.65         19.26	progressive painless swellingrt parotid region non healing uicer over anterior third tongue with fixed tongue non healing uicer over it lateral horder of tongue	6 no addiction or substance abuse 5 tobacco containing tooth paste 3 beedismolion	No         No           No         Yes           No         No	NA         0         3           Doce+Cis         2         7.3           NA         0         2.8           NA         0         1.6	lower part of superficial lobe of rt parotid gland left lateral border tongue extending III BOT , intrinsic mackle influxation rt side undersufface of tongue extending to FOM	Parotid - Oral cavity - Oral cavity - Supragiottis UI			rt adequate parotidectomy NA WLE+rt SOHND+SLNB	6 0 NA NA 42 1 NA NA	fnac-sio 1) Myoepithelioma. 2) Myoepithelial cell rich Pleomorphic Adenoma MDSCC misco	Basal cell adenocarcinoma NA mideo	positive absent present absent mentioned pT2ND no NA NA NA NA NA NA NA NA yes weekly negative present absent absent 8 pT2N1 no NA NA NA NA NA NA NA NA NA yes weekly	NA 17/06/2019 31/07/2 4 27/05/2019 23/07/2 NA 12/11/2014 2010	016         60gY/30#         DCING WELL         29/01/20         residual lesion local           115         700y/35#         dead         02/10/2020         locoregional disease           25         500/98#         dead         02/10/2020         locoregional disease	29/01/20 local residual d 02/10/2020 local recurre No NA	sease 31/01/2019 20/10/2022 NA	1358         45.26966667         364         12         182         6.066666667           22         447         14.9         331         11         202         6.73333333           0         19         10.63333333         319         10.63333333         10         6.63333333           1040         34.86666687         1040         34.86666687         1040         34.86666687
		non healing ulcer over it lateral border of fongue hoarseness of voice UPG over left RMT	3 beed smoking     chilam smoking     no addiction or substance abuse (HO tooth     removal 2 months agp)			In sole of intersol make or intergole essentiality of Orokin left glottis and supragriduts left RMT blottism glateral border of tongue				MLE*110UPMUV3UND NA 04/02/2019		WDSCC mdscc	mdscc NA mdscc	NA NA NA NA NA NA NA NA ves weeky negative absent present absent 8 n72M1 nn NA	3 19/02/202 04/04/2 NA 15/07/2010 06/04/2	International control         Internateonternateonteonternational contrelation control <th< td=""><td>No         NA           No         NA           12/09/2019         progressi</td><td>01/07/2020 11/12/2022 NA 21/02/2019 20/03/20 04/06/20</td><td>1040 34.66666667 1040 34.66666667 22 409 13.6333333 291 10 96 3.2</td></th<>	No         NA           No         NA           12/09/2019         progressi	01/07/2020 11/12/2022 NA 21/02/2019 20/03/20 04/06/20	1040 34.66666667 1040 34.66666667 22 409 13.6333333 291 10 96 3.2
123 SD 2019/03/003356 6 124 S 2019/01/021445 6	b/         M         Ballmer         Hindu         163         45.6         1.43         1.7.2           39         F         Jalone         Hindu         157         50.3         1.48         20.44           96         F         Joshpur         Hindu         156         46.6         1.42         19.17           89         M         Joshpur         Hindu         159         63.8         1.67         26.25	pain in left facial region with four smelling nasal discharge pain at post on site (kinin Ca of BM post on pT2N) post BT in 2014.)	2 not available 1 tobacco chewing	No No HTN and DM No	NA 0 1.5 NA 0 NA 0 3.4 NA 0 1.66	left maxiliary sinus causing erosion ofilateral and mediatwall of sinus left lower alweolus, adjacent GBS and lower BM	Maxilary sinus Oral cavity	- cT1N0M0 - cT4aN0M0	24/04/2019 NA 11/07/2019	left maxilectomy + orbital exenteration WLE+HM+SOHND	92 1 0 0 32 1	MDBCC	Instact Install untillementated cardinaria / Seramana spagmous cell cardinaria, non-keratristing. PDSCC with spindle cell component	row         row         row         row         row         yea         weezer/ weezer/ negative           negative         absent         8         pr2N1         no         NA           positive         present         NA         NA         yes         weekly           negative         absent/sec         4         p14aN2aMk         no         NA	4 06/11/2019 29/07/2 NA 30/12/2019 21/02/2	119 669Y/33# DEAD NA NA 202 649Y/32# DEAD NA NA	NA NA NA	20/03/2019 29/07/2019 12/05/20 17/10/2019 21/02/20 15/04/20	1040         34.80000001         1040         34.80000001         1040         34.80000001           22         400         13.6333333         291         10         96         3.2           19         260         8.666666667         260         8.666666667         260         8.666666667           21         161         6.03333333         181         6.03333333         181         6.033333333
125 SL 2019/08/014065 6 126 S 2018/10/013238	65 M Jpdhpur Hindu 181 99.8 2.24 30.51 38 F Barmer Hindu 151 50.1 1.44 22.26	painful ulcer over lower gingiva left preauticular swelling	4 smoker     12 No     5 no addiction (HC) share tooth inition)	HTN, DM No No No HTN & DM No	NA 0 1.66 NA 0 4.4 NA 0 2	left lower GBS deep lobe of left parotid pland with extension into left jupular foramen	Oral cavity - Parotid -	- cT1N0M0 - cT4aN0M0	I 10/04/2019 IVA not done I/Vio intracranial extensio	WLE on NA	0 0 NA NA	WDSCC paragangioma	MDSCC NA	positive absent negative absent 4 pT4aND yes weekly	3 18/11/2019 01/03/2	220 66Gy/33# DOING WELL NA NA	19/08/2021 local disea no NA No NA		746         24.86666667         707         24         594         10.8           1112         37.06666667         1112         37.06666667         1112         37.06666667           28         90.2         29.7333333         802         29.7333333         892         29.7333333           261         8.7         256         9         9         9.3333333         333
127 8 2018/06/016422 8 128 8 2020/04/000357 6 129 SR 2020/01/030178 5	83         F         Jodhpur         Hindu         140         66.8         1.61         34.08           82         F         Jodhpur         Hindu         150         68         1.68         30.22           58         F         Barmer         Hindu         164         50.7         1.51         18.91           50         M         IODHPUR         HINDU         163         40.22         1.34         15.16	uloer lateral border of tongue non healing ulcer in oral cavity not available	E tobacco chaulos	HTN& DM         No           No         No           hype 2 DM on OHA         Yes         2 cycle TP1           No         No         No	NA         0         2           NA         0         2.4           PF fb 2 cycle cisplatin fb 1 cycle P+C         5         3.7           NA         0         2.1	rt PFS involving rt AE fold, rt side of PPW	Oral cavity IP	- cT1N0M0 1.6 cT2N1M0 1.6 cT4aN1M0 0.4 cT3N0M0	30.06/2020	y) NA composite resection+WLE+mandibulectomy NA	NA NA 18 3 NA NA	WDSCC MDSCC MDSCC	NA MDSCC NA	NA         NA<	NA 20/05/2019 07/08/2 5 08/07/2020 30/09/2 NA 03/11/2020 25/04/2	11 000/11.32# DEAD NA NA 22 66g//33# NA NA 22 66g//33# doing.well 04/02/2021 NAD	No         NA           30/12/20         cutaneous n           No         NA           No         NA	23/04/2019 13/08/2020 10/01/20 ets 18/04/2020 01/04/2021 - 30/01/20 04/02/2021 NA	12         892         29.7333333         892         29.7333333         892         29.7333333           261         8.7         256         9         91         3.033333333           428         14.2666667         428         14.2666667         428         14.2666667           19         18.3         6.1         183         6.1         183         6.1
130 SS 2019/04/011664 6 131 SKP 2015/07/005705 4	B0         M         JODHPUR         HINDU         163         40.2         1.34         15.16           45         M         Jodhpur         Hindu         167         80         1.92         28.67	burning sensation in throat ulcerative lesion rt BM non healing ulcer on rt lateral border thoue			NA 0	let PFS with involvement of left A-E fold epigiotis on left side left Glossoepigiottic fold and left FVC				NA COMMANDO WLE-MRND	NA NA 33 0 37 0 47 9		NA WDSCC	NA NA NA NA NA NA NA yes weekly negative absent present absent 10 p12N0 no NA	4 06/07/2019 25/07/2 NA 08/02/2019 25/09/2	019         66Gy/33#         DEAD         NA         NA           019         60gY/30#         DOINGI WELL         27/08/2021         locally advanced disease           20000000         20000000         200000000         1000000000000000000000000000000000000	No NA 27/08/2021 locally advanced	18/04/2019 25/07/2019 18/10/20 disease 27/03/2019 27/08/2021 NA	10         183         6.1         183         6.1           184         29.40606067         184         29         701         25.36660607           94         3.1333333         94         3.13333333         4         3.13333333           22         839         27.36666667         839         27.36666667         25.9
132 PS 2019/10/016905 4 133 SV 2019/01/020496 5	00         in         Journ-orc         initial         is.ite           45         M. Jodhpur         Hindu         167         30         1.92         28.67           44         F. Gonal/pur         Hindu         152         60.7         1.6         26.27           59         F. Jodhpur         Hindu         149         68.2         1.68         30.31	non healing ulcer on rt lateral border trigue non healing ulcer over left lateral border tongue	36 no addiction 4 gutikha	No No No No DM & hypothyroidism No	NA 0 1 NA 0 3.7	it oral tongue with intrinsic muscle infiltration left lateral border of tongue , left side indistinct fat plane with mylohyoid	Oral cavity II Oral cavity VJBJIJV	0.8 cT4aN1M0 1.3 cT2N2cM0	04/10/2019 IVA 11/07/2019 IVA 24/05/2019	WLE+MRND left adequate glossectomy+left ND	3/ 0 47 9	MDSCC	MDSCC MDSCC	NA NA NA NA NA NA VA vés velety negative absert present absert 10 p123/0 no NA negative absert absert 10 p123/0 no NA negative present present 13 p13/00Mx ves 3 weekly	NA 19/12/2019 02/04/2 2 07/05/2019 31/08/2	AA NA NA NA 119 66Gy/33# DEAD NA NA	ND NA NA NA	11/02/2019 02/04/2020 NA 14/02/2019 31/08/2019 06/02/20	94 3.13333333 94 3.13333333 94 3.13333333 94 3.13333333 2 839 27.56666667 839 27.56666667 839 27.96666667