SOFT MARKERS IN 2nd TRIMESTER SONOGRAPHY IN LOW RISK PREGNANT WOMEN AND THEIR ASSOCIATION WITH ANEUPLOIDY & INVASIVE PRENATAL TESTING

THESIS

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JULY, 2020 **DR. SHREYA DAS**

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DECLARATION

I hereby declare that the thesis titled **"Soft markers in 2nd trimester sonography in low risk pregnant women and their association with aneuploidy & invasive prenatal testing"** embodies the original work carried out by the undersigned in All India Institute of Medical Sciences, Jodhpur.

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LIST OF ABBREVIATIONS	
AFP	Alpha Feto Protein
AHNB	Absent/ Hypoplastic Nasal Bone
ARSA	Aberrant Right Subclavian Artery
β-hCG	Beta -human Chorionic Gonadotropin
cff-DNA	Cell free fetal De-oxy-ribo Nucleic Acid
CMA	Chromosomal Microarray
CNV	Copy Number Variants
CPC	Choroid Plexus Cyst
CVS	Chorionic Villous Sampling
DNA	De-oxy-ribo Nucleic Acid
DV	Ductus Venosus
EB	Echogenic Bowel
EIF	Echogenic Intracardiac Focus/ foci
IEC	Information, Education, Communication
G_xP_{abcd}	Gravida Parity (term, preterm, abortion, living issue)
HDP	Hypertensive Disorders of Pregnancy
LR	Likelihood Ratio
NF	Nuchal Fold
NIPT	Non- Invasive Prenatal Testing

NT	Nuchal Translucency
PAPP-A	Pregnancy Associated Plasma Protein-A
QUAD Test	Quadruple marker Test
SPSS	Statistical Package of the Social Sciences
SUA	Single Umbilical Artery
TR	Tricuspid Regurgitation
UE3	Unconjugated Estriol
USG	Ultrasonography
VM	Ventriculomegaly

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SUMMARY

Background:

A second-trimester ultrasound scan is usually done at 18 to 22 weeks. Two types of sonographic markers suggestive of aneuploidy can be observed in the second trimester. Major fetal structural abnormalities comprise the first type. There are many other, less-defined features that have been given less significance as "possible markers" of aneuploidy, and these are collectively called "soft markers" (SM) of aneuploidy. Normally in a low risk patient, the prior risk may be so low that presence of one marker will not qualify a patient for amniocentesis. However, presence of more than one soft markers will significantly increase the risk of aneuploidy. Detection of these soft markers in a second trimester ultrasound is often a cause of anxiety among expectant parents & it is imperative that they are counselled properly about the available diagnostic choices & outcomes based on the risk ratio.

Aim & objectives:

The aim of our study was to estimate the prevalence of soft markers in second trimester sonography in low risk antenatal women and their association with aneuploidy and invasive prenatal diagnostic procedures.

Materials and methods:

This was a prospective observational study conducted in the Department of Obstetrics & Gynecology from March 2021 to October 2022. All low risk pregnant women (aneuploidy screening risk <1:250), aged 18-35 years, with singleton pregnancy in their 15^{th}- 24^{th} weeks POG were included. USG was done & soft markers, recorded. Likelihood ratios were calculated, apriori risk of aneuploidy was modified. Women were subjected to genetic counselling and invasive testing if risk was >1:250, & counselled for follow-up if risk was <1:250. Uptake of invasive procedures was noted.

Results:

Out of approximately 4051 females who underwent anomaly scan, 207 (5.1%) had Soft markers (SM) positive. 3.7% (n=153) had isolated SM, 1.06% (n=43) had multiple SM while 0.2% (n=11) had SM with structural abnormalities. The most common marker, renal pyelectasis, was found in isolation in 0.96 % (n=39/4051), followed by echogenic intracardiac foci (0.91% (n=37/4051). All associations were estimated as Fisher's Exact Test between the markers and aneuploidy. The incidence of invasive tests increased about 25% (34/153) in pregnancies with an isolated marker. In cases with multiple markers, the corresponding increase was 55

% (24/43). There were total seven aneuploidies. The prevalence of aneuploidy came out to be 3.38% in low risk cases with soft markers. Trisomy 21 was detected in 5 cases, Trisomy 18 was detected in 1 case, Trisomy 22 was detected in 1 case. There is a significant association of short femur in isolation with aneuploidy (p = 0.026).

Our study also observed a statistically significant association between multiple soft markers and aneuploidy (p = 0.039). Majority of the participants admitted that they were anxious on hearing about the soft markers and were worried about the well-being of their baby.

Conclusion:

The prevalence of soft markers in our low risk study population was found to be 5.1 %. There was a significant association between the presence of multiple soft markers and aneuploidy (P= 0.003). Aneuploidy was found in 3.38 % (7/207). The study concludes that in low risk couples, presence of soft markers in isolation leads to unnecessary invasive testing and anxiety of the couple. Hence, appropriate genetic counselling is essential on the identification of soft markers and invasive testing for confirmation of aneuploidies must be offered if more than one soft marker is detected on ultrasonography.

INTRODUCTION

BACKGROUND

A euploid human cell contains 46 chromosomes. The various kinds of chromosomal abnormalities may include absent or additional whole chromosomes, as well as deletions, duplications, and translocations of varying sizes. These abnormalities have been seen to occur in 0.1% to 0.2% of live births.

Aneuploidy is defined as having extra or missing whole chromosomes. Microdeletions and duplications are loss or gain of a small portion of a chromosome, and these are known as copy number variants (CNV).

Although chromosomal abnormalities occur in approximately 1 in 150 live births, the prevalence of chromosomal abnormalities is greater earlier in gestation. This is because aneuploidy accounts for a large proportion of early pregnancy loss. The incidence of fetal chromosomal abnormalities increases as a woman ages, but it can affect any woman regardless of age . It is unrelated to race or ethnicity. Other factors which are known to increase the risk of fetal aneuploidy include a history of a prior aneuploid fetus and the presence of fetal anomalies.

Autosomal trisomies are the most common aneuploidies that are not related to sex chromosome disorders. Down syndrome (Trisomy 21) is the most common of these (1 per 800 live births). It has been found to be one of the leading causes of mental retardation. (1)

The most common sex chromosome aneuploidy is Klinefelter syndrome (47, XXY), which has a prevalence of 1 in 500 males. The only viable monosomy is Turner syndrome (45, X).

DOWN SYNDROME

Almost 95% of cases of Down syndrome are a result of **non-disjunction** of chromosome 21. Other remaining cases may result from **translocations or somatic mosaicism.** (2)

Although the clinical presentation of Down syndrome is variable, its most common associations include characteristic facial features, learning disabilities, congenital heart defects (eg, atrioventricular canal defects), intestinal atresia, seizures, childhood leukemia,

and early-onset Alzheimer disease. The fetuses which are affected with Down syndrome often do not survive up to term; between the first trimester and full term, an estimated 43% of pregnancies end in miscarriage or stillbirth (3). In economically developed countries the median survival of individuals with Down syndrome is now almost 60 years (4)

Factors associated with an increased risk of Down syndrome include

a. Higher maternal age,
b. A parental translocation involving chromosome 21,
c. A previous child with a trisomy,
d. Significant ultrasonographic findings, and
e. A positive screening test result.

TRISOMY 18

It is the second most common autosomal trisomy syndrome. It is also known as *Edwards syndrome*, and is a common autosomal chromosomal disorder due to the presence of an extra chromosome 18. The first reported infants were described in 1960 by Edwards and Smith.

Features of Trisomy 18 (Edward Syndrome)

The syndrome complex encompasses a recognizable pattern of major and minor anomalies, an increased risk of neonatal and infant mortality, and significant psycho-motor as well as cognitive disability. The main clinical features are very crisp, and are vital clues for the diagnosis in the perinatal period. These include

a. prenatal growth deficiency,
b. characteristic cranio-facial features,
c. distinctive hand posture,
d. overriding fingers,
e. nail hypoplasia,
f. short hallux,
g. short sternum,
h. agenesis of the corpus callosum,
i. meningomyelocele,
j. ventriculomegaly, choroid plexus cysts, posterior fossa anomalies, cleft lip and palate, micrognathia, low-set ears, microphtalmia, hypertelorism, short radial ray, clenched

hands with overriding index fingers, omphalocele, club or rocker bottom feet, diaphragmatic hernia, renal anomalies, cardiac defects, SUA, polyhydramnios, nuchal thickening or hygroma and cryptorchidism and major malformations .The clinical diagnosis is confirmed if an extra chromosome 18, or less commonly a partial trisomy of the long arm of chromosome 18 is detected on the standard G-banded karyotype. (5)

Trisomy 18 pregnancies have a significantly increased risk of fetal loss and stillbirth (6). The probability of survival to term has been found to increase with the increase of gestational age; 28% at 12 weeks, 35% at 18 weeks and 41% at 20 weeks respectively. (7)

TRISOMY 13 or Patau syndrome,

This has a prevalence of 1 per 6500 births. Most fetuses with trisomy 13 will either die in utero or are stillborn. Of those fetuses who are alive at birth, only 20% will survive the first month of life and only 5% will survive the first six months. Trisomy 13 fetuses may showa plethora of cranial anomalies that may include holoprosencephaly – this sometimes enables the diagnosis to be made at 12 weeks of pregnancy – all or not with midfacial hypoplasia (cyclopia and proboscis), enlarged cistern magna ,ventriculomegaly, microcephaly, agenesis of the corpus callosum, cleft lip and palate, microphthalmia, hypotelorism, nuchal thickening or hydropichygroma, neural tube defects (NTD), omphalocele, kidney and urogenital anomalies, hyperechogenic bowel, cardiac echogenic foci, cardiac defects, single umbilical artery (SUA), radial aplasia, polydactyly and flexion deformity of the fingers. (8)

In cases of **TRIPLOIDY**, where the extra set of chromosomes is paternally derived, have been found to be is associated with a molar placenta .Such pregnancies rarely persist beyond 20 weeks. When the extra set of chromosomes are maternally derived, the pregnancy may thrive as far as into the third trimester. The placentas in such pregnancies are of normal consistency but thin and the fetus is usually found to have severe asymmetrical growth restriction. Conventional findings include mild ventriculomegaly, micrognathia, myelomeningocele, cardiac abnormalities, syndactyly, and ‘hitch-hiker’ toe deformity.

TURNER SYNDROME is linked with large nuchal cystic hygromas, generalized edema, mild pleural effusions and ascites, cardiac abnormalities, and horseshoe kidneys. Cognate USG abnormalities include appearance of bilateral mild hydronephrosis.

SCREENING FOR FETAL ANEUPLOIDY

Methods

a. **Biochemical screening**
b. **Ultrasonographic Screening-**
   i) **First trimester** — Soft Markers
   ii) **Second trimester** — Structural malformations

Aneuploidy screening or diagnostic testing should be discussed and offered to all women early on in pregnancy. The ideal time is at the first prenatal visit. The choice of whether to perform screening or diagnostic testing for aneuploidy is based on the woman's goals and her solicitation for informational accuracy.

The process of aneuploidy screening categorizes two groups of patients:

1) Those with a positive screening test result who have an increased risk of having

a fetus with an aneuploidy (High risk Patients) and

2) Those with a negative screening test result who have a lower post-test probability of the evaluated aneuploidies.

Women diagnosed with a positive screening test result should be counselled regarding their **higher risk of aneuploidy**, educated about the choices and options of diagnostic testing. Those who have a negative test result should be counselled regarding their **lower adjusted risk** and their lower residual risk.

Women who have a negative screening test result should not be offered additional screening tests for aneuploidy because this will increase their potential for over-diagnosis or a false-positive test result. Even though a woman has a negative test result, she may be offered diagnostic testing later in pregnancy, especially if additional findings become conspicuous (eg, fetal anomalies or markers of aneuploidy identified on follow-up ultrasonography).

SCREENING IN FIRST TRIMESTER

In addition to NT, other highly sensitive and specific first-trimester sonographic markers of trisomy 21 comprise absence of the nasal bone, increased impedance to flow in the ductus venosus and tricuspid regurgitation.

Absence of the nasal bone, a-wave reversal in the ductus venosus and tricuspid regurgitation are observed in about 60, 66 and 55% of fetuses with trisomy 21 and in 2.5, 3.0 and 1.0%, respectively, of euploid fetuses. Computation of these ultrasound markers can be incorporated into first-trimester combined screening by maternal age, fetal NT and serum free β-hCG and PAPP-A .This could consequently result in improvement of the performance of screening with an increase in detection rate to 93 to 96% and a decrease in false-positive rate to 2.5% (9)

Alternatively, *first-trimester contingent screening policy* consists of maternal serum biochemistry in all pregnancies. This is then followed by fetal NT selectively in those with an intermediate risk ensuing biochemical testing.

Biochemical testing as a first-stage policy is often advantageous because of its apparent simplicity. But , interpretation of biochemical results needs accurate ultrasonographic measurement of fetal CRL . Thus, an ultrasound examination cannot be avoided. (10)

Therefore, combined screening in the first trimester is now the accepted standard of practice to decide whether the patient is at high, low or intermediate risk for aneuploidy.

SCREENING IN SECOND TRIMESTER

USG Screening

In the second trimester scan, each chromosomal defect manifests its own specific syndromal pattern of detectable abnormalities. When the second-trimester scan shows major abnormalities, fetal karyotyping should be rendered as an option, even if these abnormalities appear to be isolated. Minor fetal abnormalities or soft markers are quite frequent and they are not usually associated with any handicap, unless there is an inherent chromosomal defect. Routine karyotyping of all pregnancies with these markers often involve major implications, both in terms of miscarriage and in economic costs. Thus it is advisable to base counseling on an individual estimated risk for a chromosomal defect, and not on the arbitrary advice that invasive testing is recommended because of ‘high’ risk . It has been estimated that the second-trimester scan can modify the detection rate of trisomy 21 achieved by first-trimester combined screening by about 6% for an additional 1.2% false positive rate. (11)

Biochemical Screening

Biochemical screening can be done by **QUADRUPLE** markers testing which includes serum free beta human chorionic gonadotrophin (free β-hCG), unconjugated estriol (uE3), Inhibin, Alpha feto protein (AFP).

FIRST-TRIMESTER SCREENING FOLLOWED BY SECOND-TRIMESTER BIOCHEMICAL TESTING

There are three mathematical models which have been proposed for the additional use of second-trimester biochemical testing. These aim at enhancing the efficacy of first-trimester combined screening.

In the ***integrated test***, all patients have first-trimester NT and PAPP-A and second trimester AFP, uE3, free β-hCG and inhibin. The combined results are given once this process is completed. This ensures that only high-risk patients have second-trimester amniocentesis.

For *step-wise* ***sequential screening***, all patients have first-trimester NT and serum PAPP-A and free β-hCG. High-risk patients are offered chorionic villous sampling (CVS), whereas low- or intermediate risk patients have second-trimester AFP, uE3, free β-hCG and inhibin. It is only if the combined risk from first and second-trimester testing becomes high, that the patients have second-trimester amniocentesis.

Contingent screening, is almost similar to step-wise sequential screening, except that in this policy second-trimester biochemical testing is performed only in those with an intermediate risk after first-trimester screening.

The estimated performance of the three approaches is almost similar, having a detection rate of 90 to 94% at a false positive rate of 5%.

The advantages of the contingent approach are that firstly, second trimester testing is avoided in 75 to 80% of patients and secondly, the diagnosis of about 60% of fetuses with aneuploidies is made in the first trimester. (12,13)

SOFT MARKERS

A second-trimester ultrasound scan is done usually at 18 to 22 weeks. Two types of sonographic markers suggestive of aneuploidy can be observed in the second trimester.

Major fetal structural abnormalities comprise the first type. There are many other, less-defined features that have been given less significance as "possible markers" of aneuploidy, and these are collectively called "***Soft markers***" of aneuploidy (14). These soft markers are not pathologic themselves. However, they have been used to screen for, or adjust the risk for, Down syndrome and other aneuploidies. Soft markers may also be seen in the normal fetus but they have an increased incidence in infants with chromosomal abnormalities. These markers are nonspecific, often transient, and can be readily detected during the second-trimester ultrasound. Thus, prenatal ultrasonography during the second trimester is akin to a "genetic sonogram" that is used to identify morphologic features of fetal Down syndrome. (15,16)

Various soft markers which are taken into consideration as a cause of concern in screening for aneuploidies include thickened nuchal fold (NF), absent/hypoplastic nasal bone, ventriculomegaly (VM), pyelectasis, echogenic bowel, intracardiac echogenic focus (IEF), choroid plexus cyst (CPC), single umbilical artery (SUA) and aberrant right subclavian artery (ARSA). (17)

Individual soft markers vary in their degree of association with fetal aneuploidy .This is calculated in terms of likelihood ratio (LR) by which the 'apriori' background risk calculated on the basis of maternal age or combined screening or second trimester biochemical screening (QUAD Test) is altered. (18)

If the patient is low-risk, the prior risk may be so low that presence of one marker will not necessitate amniocentesis. However, in the event of detection of multiple soft markers the significance of the finding increases ,as compared with seeing the same marker in isolation.

The incidence of each marker in aneuploid fetus when divided by the incidence in normal pregnancy will give a likelihood ratio. The pre-test odds derived from maternal age, second trimester serum biochemical testing or first trimester combined screening is multiplied by the LR+ of each marker found to be present and the LR- of each marker looked for but not found, to get an overall likelihood ratio. This likelihood ratio further is used to calculate the modified risk of aneuploidy which if ≥1:250 is considered as high risk and if less than this as low risk. (9) Table 1 shows the list of system wise major structural abnormalities and soft markers.

TABLE 1: Major and soft markers of aneuploidy

System	Major	Soft markers
CNS	Ventriculomegaly, Holoprosencephaly, Microcephaly, Abnormal posterior fossa, dandy walker complex	Choroid plexus cyst
Musculoskeletal	Hand and feet anomalies – syndactyly, clinodactyly, clenched hand, radial ray aplasia, Clubfoot, a sandal gap, rocker-bottom foot	Short long bones
Face	Cleft palate and lips micrognathia, macroglossia, hypo- and hypertelorism, low set ears, small ear	-
Neck	Cystic hygroma	Nuchal fold thickening
Cardiac	Endocardial cushion defect, ventricular septal defect, hypoplastic left heart syndrome, tetralogy of Fallot, and other complex cardiac anomalies Echogenic focus	Echogenic focus
Gastrointestinal tract	Esophageal and duodenal atresia, small bowel obstruction, diaphragmatic hernia and Omphalocele	Echogenic bowel
Genitourinary tract	Moderate to severe hydronephrosis, dysplastic renal disease, and renal agenesis	Mild pyelectasis
Other	Symmetrical IUGR	Single umbilical artery

**Reproduced from a study by Khairy et al (2012)* (19), *Middle East Fertility Society Journal, June 2012.*

Effect on Invasive Testing

When soft markers are detected during a second trimester ultrasound, the finding often raises new questions about invasive diagnostic testing. This may be a cause of concern both for women who did not have a first trimester combined screening test as well as for those who had a low-risk for Down's syndrome following the Combined ultrasonic & biochemical test. (20)

The presence of soft markers has increased the incidence of invasive procedures substantially.

Therefore, if we are to provide an accurate assessment of fetal genetic risk, we must have the ability to integrate known factors. This ensures that the patients can make an informed choice about proceeding with invasive diagnostic testing. Parents should be educated in depth about the nature of the screening choices that are laid out before them. (21)

Second trimester amniocentesis is the most commonly done prenatal invasive diagnostic procedure. A subset of patients who opt out of amniocentesis may be willing for Non-Invasive Prenatal Testing (NIPT). The limitations of the NIPT include a lack of feasibility in 5 % of cases , as consequence of insufficient concentration of placental DNA in the maternal plasma, as well as discordant findings between NIPT and genetic analysis by placental mosaicism. (22)

MANAGEMENT AND FOLLOW UP OF PATIENTS WITH SOFT MARKERS

All women with soft markers do not require invasive testing. Some of them just need follow up and post-natal evaluation. Table 2 summarizes the antenatal management and follow up of all soft markers as given by the Society of Maternal Fetal Medicine

Table 2: Isolated soft markers: Recommended management and follow up*

Soft marker	Aneuploidy evaluation	Antenatal management	Follow-up imaging
Echogenic intracardiac focus	cfDNA or serum screen negative: none No previous screening: counselling for non-invasive testing for aneuploidy	Routine care	N/A
Echogenic bowel	cfDNA or serum screen negative: none No previous screening: counselling for non-invasive testing for aneuploidy	Evaluation for cystic fibrosis, congenital viral infection, intra-amniotic bleeding.	Third-trimester ultrasound examination for reassessment and evaluation of growth
Choroid plexus cyst	cfDNA or serum screen negative: none No previous screening: counselling for non-invasive testing for aneuploidy	Routine care	N/A
Single umbilical artery	cfDNA or serum screen negative or no previous screening: none	Consideration for weekly antenatal surveillance beginning at 36 0/7 week of gestation	Third-trimester ultrasound examination for evaluation of growth
Urinary tract dilation	cfDNA or serum screen negative: none No previous screening: counselling for non-invasive testing for aneuploidy	Evaluation for persistence, with frequency of evaluation dependent on initial findings	Third-trimester ultrasound examination to determine whether postnatal pediatric urology or nephrology follow-up is needed

Soft marker	Aneuploidy evaluation	Antenatal management	Follow-up imaging
Shortened humerus, femur, or both	cfDNA or serum screen negative: none No previous screening: counselling for non-invasive testing for aneuploidy	Evaluation for skeletal dysplasias	Third-trimester ultrasound examination for reassessment and evaluation of growth
Thickened nuchal fold	***cfDNA negative:*** none ***Serum screen negative***: counselling for no further testing vs non-invasive vs invasive testing for aneuploidy ***No previous screening***: counselling for non-invasive vs invasive testing for aneuploidy	Routine care	N/A
Absent or hypoplastic nasal bone	***cfDNA negative***: none ***Serum screen negative***: counselling for no further testing vs non-invasive vs invasive testing for aneuploidy ***No previous screening***: counselling for non-invasive vs invasive testing for aneuploidy	Routine care	N/A

**Reproduced from The Society for Maternal-Fetal Medicine. SMFM Consult Series #57*[(23)]

Soft markers and anxiety

Presence of soft markers may also cause harm to the patients by creating anxiety related to false positive diagnosis, prompting unnecessary interventions, or falsely reassuring the women at high risk or dissuading the high-risk women from undergoing diagnostic procedures. So, a balance must be created as to how to counsel the patients and how to follow the patients.

This study is therefore planned to know the prevalence of soft markers in our population and their association with aneuploidy and to help women make informed choice after proper risk stratification for detection of aneuploidies.

This study is therefore planned to know the prevalence of soft markers in our population and their association with aneuploidy and also to help women make informed choice after proper risk stratification for detection of aneuploidies.

AIM AND OBJECTIVES

AIM OF STUDY:

To describe the prevalence of soft markers in second trimester sonography in low risk antenatal women and their relation with aneuploidy and invasive prenatal diagnostic procedures.

OBJECTIVES:

PRIMARY OBJECTIVE:

To estimate the prevalence of soft markers in second trimester sonography in low risk antenatal women attending the ANC clinic.

SECONDARY OBJECTIVE:

1. To estimate the association between presence of soft markers and aneuploidies as well as with other structural and congenital malformations.
2. To estimate the association between presence of soft markers and the number of prenatal invasive tests performed.
3. To explore the couple's experiences when isolated soft markers were discovered during routine USG screening.

REVIEW OF LITERATURE

Prevalence

Ahman A *et al* (2014) (20) conducted a prospective observational study in which second trimester ultrasound was performed on 10,710 fetuses. Markers were detected in 5.9% of fetuses. 5.1% were isolated, 0.7% were multiple and 0.1% were combined with an anomaly.

Hurt *et al* (2016) (24) Conducted a prospective record-linked cohort study of 30 078 pregnant women who had second trimester anomaly scans. In their study, the highest prevalence of markers was that of for cardiac echogenic foci [95% confidence interval (CI): 38.8, 51.1] . Additionally, Multiple markers were associated with an increased risk of congenital anomalies (RR 5.00, 95% CI: 1.35, 18.40) and preterm birth (RR 3.38, 95% CI 1.20, 9.53).

Likelihood Ratio of Aneuploidy in context of Soft Markers

Agathokleous M *et al* (2013) (18) conducted a meta-analysis of 48 studies, that provided data on the incidence of sonographic markers in trisomy 21 and euploid fetuses at 14–24 weeks' gestation. Likelihood ratios (LR) of markers were calculated. They showed the following overall likelihood ratio for an isolated marker (derived by multiplying LR+ for the given marker by LR- of each of all other markers.

Marker	**LR+ for T21**	**LR- for T21**	**Overall Likelihood ratio**
Intracardiac echogenic focus	5.83	0.8	0.95
Mild hydronephrosis	7.63	0.92	1.08
Short femur	3.72	0.8	0.61
Echogenic bowel	11.44	0.9	1.65
Increased nuchal fold	23.3	0.8	3.79
Aberrant right subclavian artery	21.48	0.71	3.94
Absent or hypoplastic nasal bone	23.27	0.46	6.58
Ventriculomegaly	27.52	0.94	3.81
Choroid Plexus Cyst			No increase
Single umbilical artery			No increase

They concluded that the presence of sonographic markers increases, and absence of such markers decreases, the risk for trisomy 21.

Nicolaides K. *et al*(2005) (9) under Fetal Medicine Foundation explained in a simplified way how to modify the risk on the basis of sonologic markers. Eg: If the background risk for Trisomy 21 is 1 in 500, the risk is reduced by 500 X 7.7. The new risk is 1 in 3850. Thus, in a 25 year old woman undergoing an ultrasound scan at 20 weeks of gestation the apriori risk is about 1 in 1,000. If the scan demonstrates an intracardiac echogenic focus, but the nuchal fold is not increased, the humerus and femur are not short and there is no hydronephrosis, hyperechogenic bowel or major defect, the combined likelihood ratio should be 1.1 (6.41X 0.67X 0.68X 0.62X 0.85X 0.87X 0.79) and consequently her risk remains at about 1 in 1,000. In contrast, if the fetus is found to have both an intracardiac echogenic focus and mild hydronephrosis but no other abnormalities the combined likelihood ratio should be 8.42 (6.41X 6.77X 0.67X 0.68X 0.62 X0.87 X 0.79) and consequently the risk is increased from 1 in 1,000 to 1 in 119.)

Absent Nasal bone

Prasad *et al* (2020) (16) conducted an observational study involving a total of 142 pregnant women whose fetuses were identified with AHNB by ultrasonography. These women were offered aneuploidy screening/non-invasive prenatal testing (NIPT) or direct invasive testing either alone or in combination. Out of 12758 scans done during the study period, 1.11% were identified with AHNB. 56% opted for the biochemical screening test, 3.5% opted for NIPT while 42.9%opted for invasive testing. 14.8% had an abnormal karyotype. They concluded that isolated AHNB with low risk in biochemical screening is rarely associated with aneuploidy. In contrast, a significant no of fetuses yielded abnormal chromosome results when AHNB was associated with high risk in biochemical screening, additional aneuploidy markers or associated anomalies.

Wegrzyn P. *et al.* (2016) (25) in their retrospective, cross-sectional, descriptive, non-interventional study did ultrasound scan with NB evaluation in 5814 fetuses during routine screening for chromosomal defects at 11 to 13 + 6 weeks of gestation .They found 71 cases of trisomy 21 and 35 cases of other chromosomal defects. NB was absent in 46 (64.8%) cases and present in 25 (35.3%) cases of trisomy 21, comparing to present NB in 5463 (95.7%) and absent in 245 (4.3%) of normal cases.

Dash P *et al* (2015) (16) conducted a cohort study with 92 pregnant women, and observed that isolated absent/ hypoplastic nasal bone was associated with chromosomal disease in 10 - 12 % of cases.

Ting *et al*. (2011) (26) conducted a retrospective cohort study of cases of absent or hypoplastic nasal bone and all the ultrasound findings including structural abnormalities and soft markers for Down syndrome and fetal karyotype were reviewed. The cases were categorized into a study group with isolated absent or hypoplastic nasal bone and a comparison group with additional ultrasound findings. The incidence of Down syndrome confirmed by karyotyping was compared between the two groups. Among 14 fetuses with absent or hypoplastic nasal bone identified, six (42.9%) had Down syndrome and eight (57.1%) were normal. All (100%) of the six fetuses with isolated absent or hypoplastic nasal bone (Study Group) had normal karyotype, while six (75%) of the other eight fetuses with additional ultrasound findings (Comparison Group) had Down syndrome. They concluded that the use of isolated absent or hypoplastic nasal bone in the second trimester ultrasound scan for Down syndrome screening may not be effective. Amniocentesis, however, is indicated for fetuses with structural abnormality or additional soft marker.

Du *et al* (2017) (27) conducted a retrospective study of 56707 women with fetuses with hypoplastic nasal bone. Fetal karyotyping was performed and pregnancy outcomes were followed. The relationship between hypoplastic nasal bone with abnormal karyotype was evaluated; stratified by whether other ultrasound soft markers or structural abnormalities were also observed. A total of 65(1.15%) fetuses with hypoplastic nasal bone were included in the analyses, among which 8 (12.31%) were determined to have chromosomal abnormalities. Hypoplasia of nasal bone in association with other structural abnormalities had a higher rate of abnormal karyotypes compared with cases associated with other ultrasound soft markers.

Naraphut *et al* (2006) (28) conducted a prospective study involving 407 pregnant women undergoing amniocentesis due to increased risk of aneuploidy. The optimal nasal bone threshold associated with trisomy 21 was found to be a Bi-Parietal Diameter/Nasal Bone Length (BPD/NBL) ratio of 10 or greater with a sensitivity of 80%, specificity of 86% for detection of trisomy 21.

Renal Pyelectasis

Orzechowski *et al* (2013) (29) conducted a meta- analysis to examine the performance of second-trimester (14-24 weeks' gestation) isolated fetal pyelectasis as a marker for trisomy 21 and to calculate its associated weighted pooled likelihood ratios. Ten observational studies were included (2148 cases of isolated pyelectasis). The detection of isolated fetal pyelectasis on mid-trimester ultrasound was found to be associated with an increased likelihood of trisomy 21. They concluded that if isolated fetal pyelectasis is found, a positive likelihood ratio of 2.78 should be used in the calculation.

Pereira *et al* (2016) (30) conducted a prospective longitudinal study was conducted on 62 fetuses with mild bilateral pyelectasis. Ultrasounds were performed every 3 weeks to assess whether the mild bilateral pyelectasis regressed, remained unchanged or progressed .

They concluded that the initial renal pelvis diameter and the diameter in week 31 or 35 were valuable parameters for identifying cases that would eventually need specific postnatal procedures.

Echogenic bowel

Amico *et al* (2020) (31) in their systematic review and meta-analysis of twenty-five studies comprising 12 971 fetuses with singleton pregnancies with isolated EB and no associated major structural anomalies, observed that Chromosomal anomalies were present in 3.3% of the fetuses, mainly Trisomy 21 and aneuploidies involving the sex chromosomes. Cystic fibrosis occurred in 2.2%. Congenital infections affected 2.2%, mainly congenital Cytomegalovirus (CMV) infection.

Short long bones

Hoffman *et al* (2022) (32) in their descriptive retrospective analysis with 1373 singleton pregnancies with a femoral length < 5th percentile , showed that (5.5%) of the fetuses showed chromosomal aberrations of which Trisomy 13, 18 and 21 .

Weisz *et al* (2008) (33) in their retrospective cohort study of 1262 women, concluded that isolated short femur in the mid-trimester fetus is associated with fetal growth restriction and SGA.

Ambrosio *et al* (2019) (34) conducted a systematic review and meta-analysis of 6 studies including 3078 cases of isolated short femur length (study group) and 2,22, 303 normal femur length (control group). They concluded that there is a significant association between isolated short femur length and intrauterine growth restriction or small-for-gestational-age and poor perinatal outcome.

Increased Nuchal Fold thickness

Bromley B et al (2014) (35) conducted a retrospective cohort study. There were 42 fetuses (0.4%) with trisomy 21 identified in the study cohort of 9692 patients. Trisomy 21 was suspected at the NT scan in 28 fetuses (67%) and at the second trimester anatomic survey in 14 (33%). In fetuses first suspected of having trisomy 21 in the second trimester, 9 0f 14 had normal anatomic survey results, and 5 of 14 had congenital malformations. All 14 fetuses had soft markers for aneuploidy. A thickened nuchal fold was identified in 5 of 9 fetuses with trisomy 21.

Intracardiac echogenic foci

Wrede E *et al* (2019) (23) conducted a study on 1,04,001 patients. An intracardiac echogenic focus was found in 4416 of 1,02,847 euploid fetuses (4.29%) and in 64 of 557 cases with trisomy 21 (11.49%) giving a positive LR of 2.68.

Wei *et al* (2018) (36) studied the relationship between the intracardiac echogenic foci and the abnormal chromosome and the changes of Cardiac function. A total of 2645 cases with the gestational age between 14 to 22 weeks were tested. The risk of chromosomal abnormality in the fetus of isolated left intracardiac echogenic focus is lower. Non-invasive DNA examination has a high reliability that could be an important reference before an invasive antenatal diagnosis. A higher rate of fetal malformation was found when the foci located in the right or double ventricle.

Single umbilical artery

Li *et al* (2020) (31) conducted a retrospective analysis of 781 pregnant women carrying singleton fetuses diagnosed with SUA . The highest incidence of malformation was found in the urinary system, followed by the cardiovascular system and digestive system.

Ebbing *et al* (2020) (37) conducted a population-based study of 918 933 singleton pregnancies of > 16 weeks' gestation with SUA in fetuses. There was a particularly strong association between SUA and gastrointestinal atresia or stenosis in the neonate.

Aberrant right subclavian artery

Song *et al* (2017) (38) conducted a prospective observational study of 7,547 fetuses. ARSA was found in 28 fetuses (0.4%). 27 of these 28 fetuses were euploid (96.4%). Trisomy 18 was the only chromosomal anomaly (3.6%) found in the study sample. ARSA was an isolated finding in 23 of the 28 cases (82.1%). In 10.7% cases ARSA was accompanied with extracardiac anomalies. Other cardiac defects were reported in three cases .

Cai M *et al* (2022) (39) in their retrospective study included 112 pregnant females whose fetuses were diagnosed with ARSA. They concluded that Fetuses with isolated ARSA have a low probability of being diagnosed with pathogenic CNV. However, when ARSA is complicated with other ultrasound abnormalities, the risk of pathogenic CNV remarkably increases.

Erzincan *et al* (2017) (40) in their prospective observational study assessed the incidence ARSA among an unselected population during second-trimester sonography and reviewed the importance of this conotruncal variant as a marker of Down syndrome. They concluded that in an unselected population, an ARSA is seen less frequently than in a high-risk population .An isolated ARSA is not a sufficient indication for karyotype analysis. It can be managed with non-invasive prenatal testing rather than invasive testing.

Lourenco *et al* (2021) (41) in their retrospective study of 22 fetuses with a prenatal diagnosis of ARSA saw that , ARSA was an isolated finding in 18 out of 22 cases (82%). In 1 case, a chromosomal abnormality was detected (mos 45,X [13]/46,X,e(X) (p22.1q22.1)).

Screening protocols & Pre- natal Genetic Testing

Sadlecki P *et al* (2018) (21) in their analysis included 177 patients with singleton pregnancy, whose personalized risk score for trisomy 21 calculated on the basis of the combined test exceeded 1:300. Diagnostic amniocentesis was performed in 125 patients from this subset, since the remaining 52 women declined invasive prenatal testing.

Sahota *et al* (2010) (10) assessed the relative performance of a multi-stage first-trimester screening protocol for fetal Down syndrome. Data from 10,767 women who underwent

combined ultrasound and serum biochemistry screening in the first trimester were re-analysed using a contingent model approach. Of the 10,854 fetuses with known outcome, 32 had Down syndrome, 232 had other abnormalities and 10,590 were unaffected. They concluded that first-trimester contingent screening provides detection and false-positive rates comparable to those achieved using combined screening, but could be used to significantly reduce the number of scans performed.

Soft Markers and Cell free DNA

Winter *et al* (2018) (42) concluded that the era of ultrasound markers as a screen for fetal aneuploidy is coming to a close. The detection of these markers on an ultrasound examination should simply serve as a reminder to ensure that the patient was offered cell-free DNA screening or conventional analyte screening. Cell-free DNA testing is revolutionizing screening. If the results of a cell-free DNA test are normal, many isolated soft markers—such as CPCs, EIF, mild rhizomelic limb shortening, and mild pyelectasis— are irrelevant from a genetic standpoint.

MATERIALS AND METHODS

Study Setting: The study was conducted in the Department of Obstetrics and Gynecology & the Department of Diagnostic and Interventional radiology, AIIMS Jodhpur.

Study Design: Longitudinal Observational study

Study Period: Recruitment started from March 2021 till October 2022

Ethical Justification:

This study was undertaken after obtaining ethical clearance from the Institute's Ethics committee vide letter no. AIIMS/IEC/2021/3483. Patients were enrolled after obtaining their informed consent.

Sample Size:

This was a time-bound study, which included all pregnant females meeting the inclusion and exclusion criteria over 20 months.

Inclusion Criteria:

1. All women with singleton pregnancies in their 15^{th}-24^{th} week of period of gestation, who visited the antenatal out-patient department (OPD) and were scanned or reviewed for second trimester anomaly scan.
2. Age 18-35 years
3. Females who are low risk on aneuploidy screening, either first or second trimester (Risk <1:250)
4. Women consenting to participate in the study and willing to follow up in the same institute.

Exclusion Criteria:

Women beyond 24 weeks period of gestation and those who missed the 2nd-trimester scan.

Eligible women after informed consent were counselled (Pre-test counselling) for a detailed anomaly scan in the department of Obstetrics and Gynecology and sent for detailed sonography (Level II scan). Those who had soft markers were entered in the data set in the sonography room and sent back to the ANC OPD for enrolment in the study, risk modification and further follow-up. All scans were done on an ultrasonography machine, Model- Phillips Epiq Elite (Figure 1) by an experienced radiologist fulfilling all Pre-

Conception and Pre-Natal Diagnostic Techniques (PCPNDT) formalities, using a trans-abdominal probe with frequency 3.5-5 MHz, following ISUOG (International society of Ultrasound in Obstetrics & Gynaecology) 20+2 planes systematic anatomical survey guidelines.

Figure 1: Ultrasonography machine 'Phillips Epiq Elite' used in our study

Low-risk population was defined as the one with age at the time of delivery <35 years and or low risk on combined first-trimester screening or second-trimester screening (<1:250).

High-risk population was the one with age >35 years and/or high risk on first trimester combined screening or second-trimester quadruple screening.

The USG markers were considered **isolated** when not associated with other markers or structural anomalies. (11)

Study variables- 'soft markers'

The following definitions were used for defining the soft markers (15)

Ventriculomegaly (VM)

Fetal VM is defined as a dilatation of the lateral ventricle atrium to a width of 10 mm or more. Measurement was performed on a trans-ventricular axial plane, using the cavum septi pellucidi and the choroid plexus as the anterior and posterior landmarks, respectively. (40,41)

A measurement of 10–12 mm is commonly referred to as mild VM, while measurements of 12–15 and >15 mm are defined as moderate and severe VM. VM has been associated with normal variant, aneuploidy, genetic syndromes, primary brain abnormalities, congenital infection such as cytomegalovirus (CMV) and toxoplasma, cerebrovascular accidents and intracranial haemorrhage.

Choroid plexus cyst (CPC)

CPC is a small sonographically discrete **fluid-filled space ≥5 mm** within the choroid plexus and is seen as black echo-free areas. CPC is found in approximately 2 to 4% of fetuses at 16 to 24 weeks of gestation usually as an isolated finding in otherwise normal low-risk pregnancy. CPC typically regresses by 23 weeks regardless of karyotype. There is an association between CPCs and chromosomal defects, particularly trisomy 18.However, CPC is not considered a structural nor functional brain abnormality.

Imaging of the choroid plexus is performed in the transverse plane of the fetal head at the same level that the lateral cerebral ventricle is evaluated (42). The choroid plexus is to be inspected bilaterally for the presence of cysts.

Ninety percent of CPC usually disappear by third trimester (28 weeks) and rarely persist post-natally. (43)

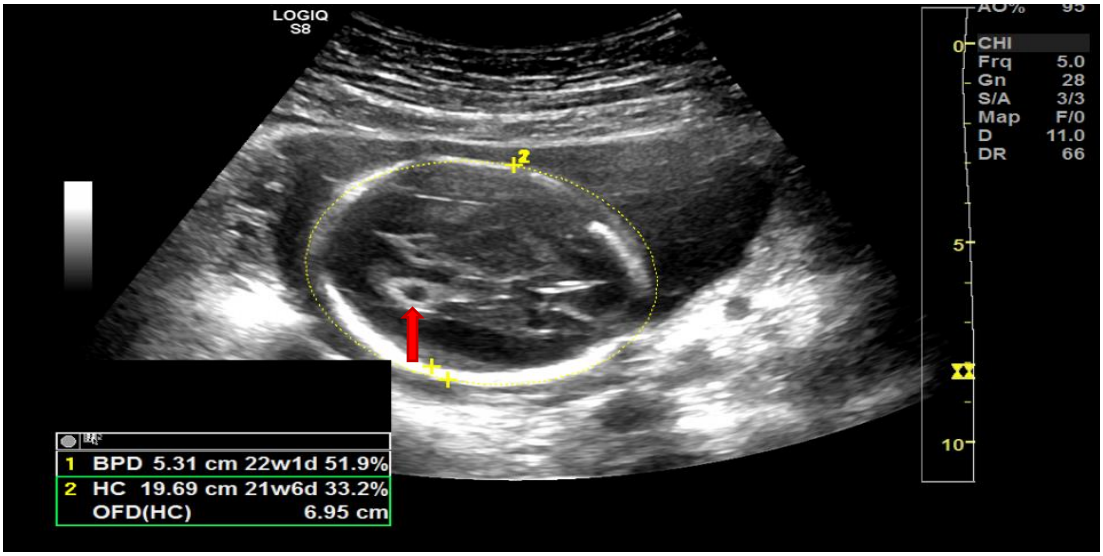

Figure 2: Axial view in transthalamic plane of the fetal head shows a choroid plexus cyst.

Absent or hypoplastic nasal bone

Absent or hypoplastic nasal bone, is defined by a nasal bone that is not visible in second trimester or with a length of less than 2.5 mm in the mid-sagittal section of the fetal profile in second trimester. (15)

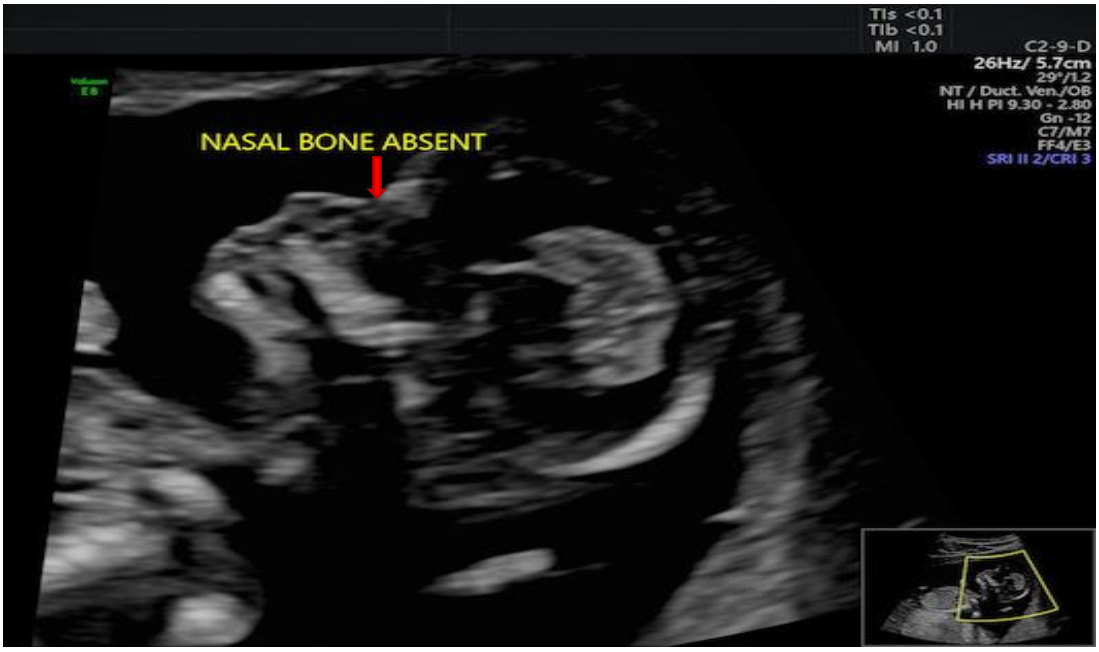

Figure 3: Mid-sagittal section showing Absent Nasal bone

Thickened nuchal fold (NF)

Thickened NF is defined as, thickening of the skin and the subcutaneous tissues on the posterior aspect of the fetal neck measuring 6 mm or greater before 20+6 weeks gestation. A nuchal fold measurement is obtained in a transverse section of the fetal head at the level of the cavum septum pellucidum and thalami directed posteriorly to the cerebellum (44).The measurement is taken from the outer edge of the occiput to the outer skin in the midline. However, a thickened nuchal fold should be distinguished from cystic hygroma, in which the skin in this area has fluid-filled Cysts. A thickened nuchal fold differs from nuchal translucency, which is a specific measurement of fluid in the posterior aspect of the neck at 11–14 weeks' gestation (45)

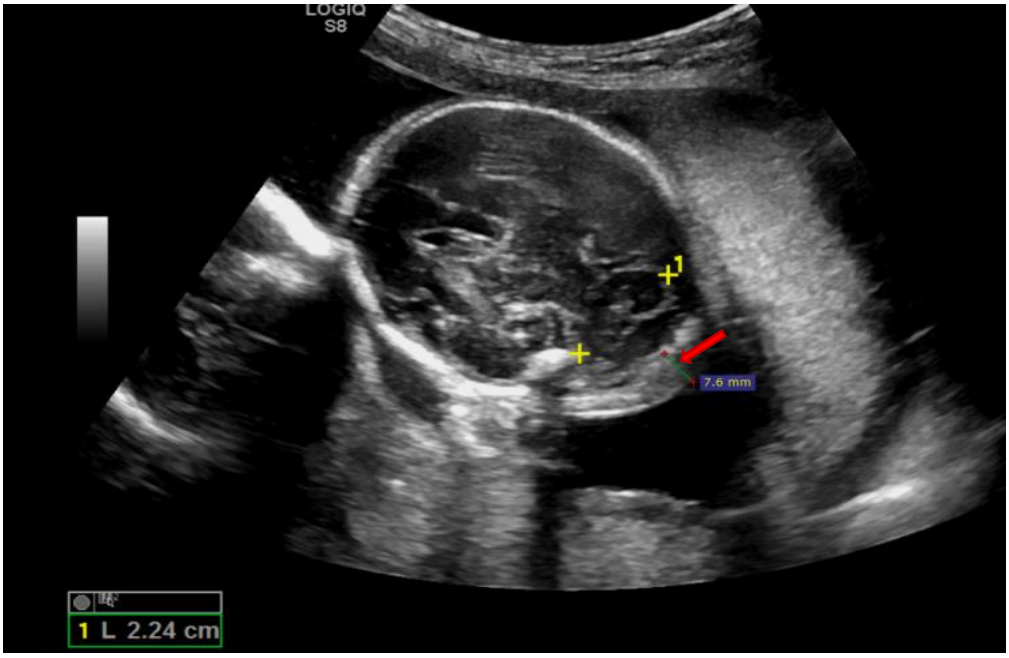

Figure 4 : Axial image of the fetal head shows thickening of nuchal fold.

Intracardiac echogenic focus (IEF)

IEF is defined as an echogenic small spot inside the heart in either of the ventricles, having brightness equivalent to that of the bone in the region of the papillary muscle in either or both ventricles of the fetal heart. Eighty eight percent are only in the left ventricle, 5% are only in the right, and 7% are biventricular (15).The association between isolated EICF and fetal aneuploidy has been described in both retrospective and prospective studies. The evidence is best for left or biventricular EICF, but this is likely due to the greater frequency that foci are found in these locations (21)

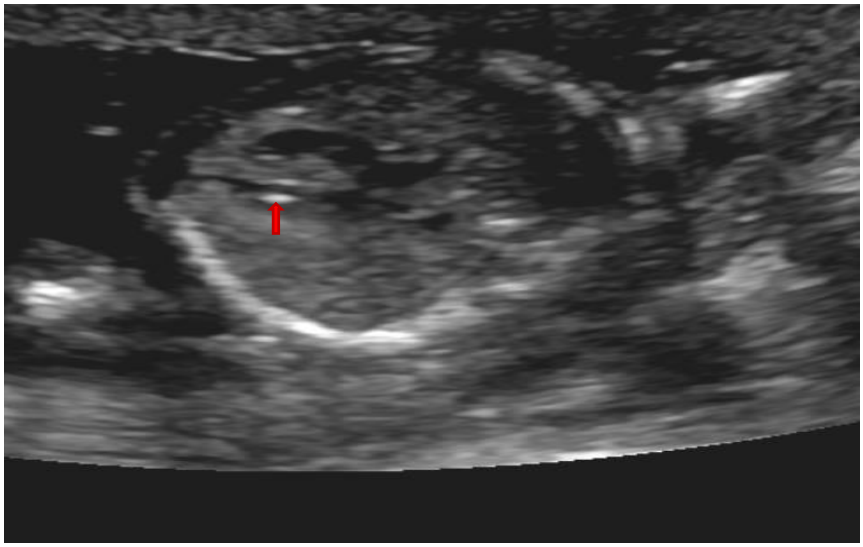

Figure 5: Four-chamber view of the heart showing a single EIF on left ventricle.

Echogenic bowel

Echogenic bowel is defined as fetal bowel of similar or greater echogenicity than the surrounding bone or fetal liver. Echogenic bowel has been described as normal variant, but may be associated with congenital viral infections (particularly CMV), aneuploidy, intra-amniotic bleeding, severe uteroplacental insufficiency, meconium peritonitis, cystic fibrosis, anemia, and fetal growth restriction (FGR).

The echogenicity has been classified as either focal or multifocal. Echogenic bowel is diagnosed in 0.2–1.4% of all second-trimester ultrasounds (46)

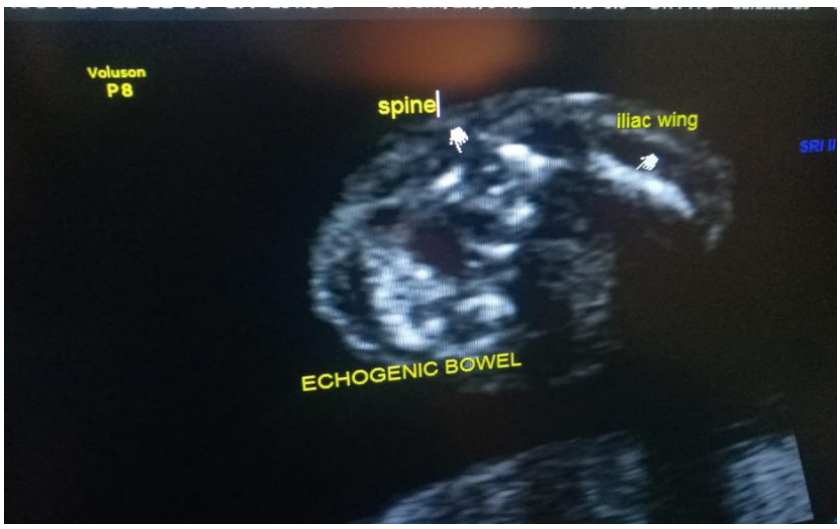

Figure 6: Echogenic Bowel

Shortened humerus length and femur length

Shortened humerus and femur are defined as bone length below the 5th percentile for gestational age.

Individuals with Down's syndrome usually have abnormally short long bones. Fetal biometry has been used as a marker for aneuploidy, and it is recognized that the femur and humerus of fetuses with Down's syndrome have a tendency to be slightly shorter compared with normal controls. The most common method for determination of a shortened humerus or femur is comparing the actual measurement with the expected measurement. The femur is considered shortened when the measured to expected ratio is ≤ 0.91; the humerus is considered shortened when the measured to expected ratio is ≥0.89 (47).Some studies have also found that a shortened humerus is more predictive than a shortened femur (48,49)

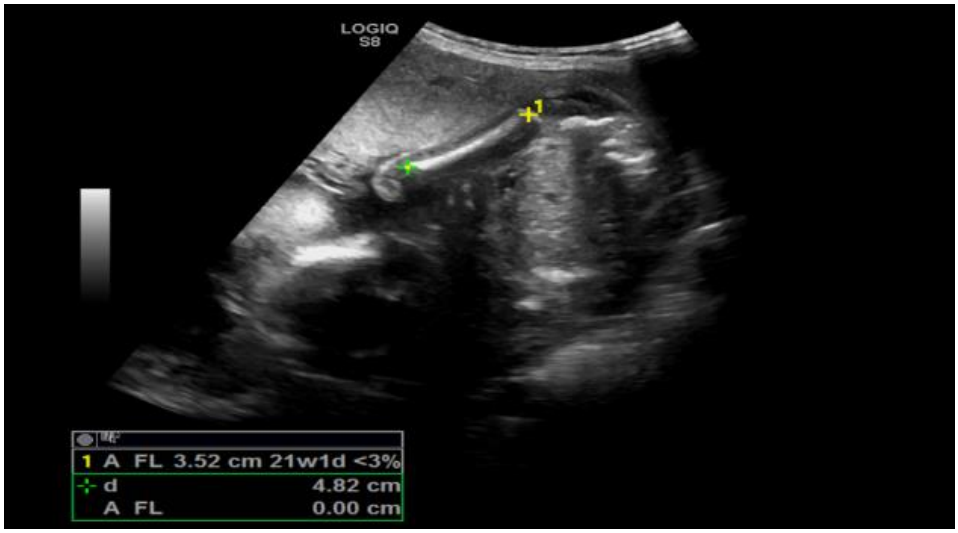

Figure 7: Short femur

Fetal pyelectasis

Fetal pyelectasis is defined as an anteroposterior measurement of pelvis in a transverse plane of 4 mm or larger in second trimester and/or 7 mm or larger in third trimester, whereas pelvic anteroposterior diameter 10 mm or larger is criteria for hydronephrosis.

Mild pyelectasis is an isolated finding in fetal Down's syndrome of approximately 2%. In the absence of other risk factors, the chance of Down's syndrome in the presence of isolated mild pyelectasis remains small and does not justify an invasive diagnostic procedure (50)

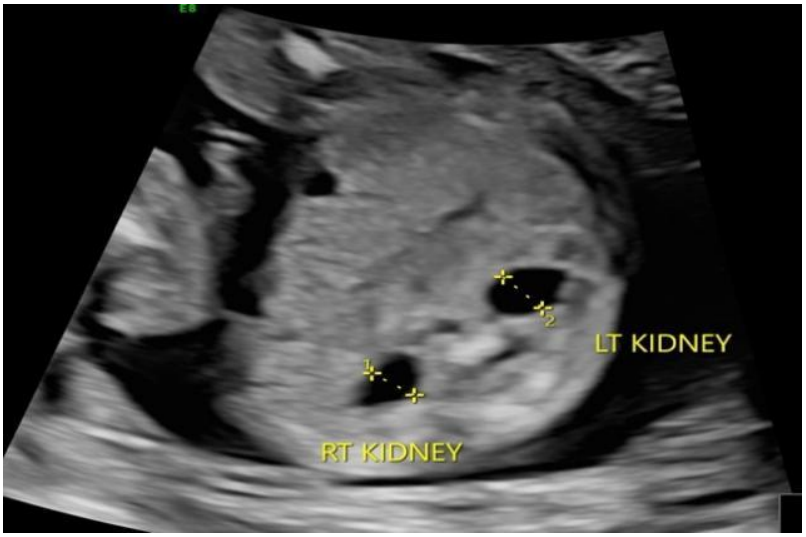

Figure 8 : Axial images of fetus at the level of the renal pelvis show mild pyelectasis.

Single umbilical artery (SUA)

SUA is characterized by absence of one of umbilical arteries and it occurs in 0.5 to 5% of pregnancies. There is an association between aneuploidy, small for gestational age (SGA), preterm birth and isolated SUA.

Assessment of the umbilical arteries can be made from the cord itself in either transverse or longitudinal sections. The umbilical arteries can also be assessed at the cord insertion site into the fetal abdomen and on either side of the fetal bladder as the vessels originate from the iliac arteries (29). If needed, the assessment can be enhanced with color flow Doppler.

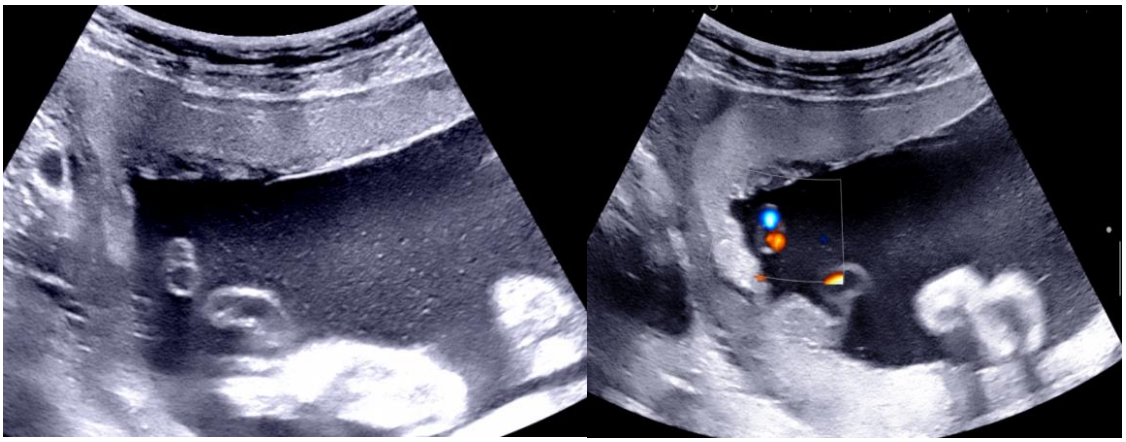

Figure 9: Single umbilical artery

Aberrant Right Subclavian artery

During fetal echocardiography, the course of the right subclavian artery was observed after the assessment of the 4-chamber view, outflow tracts, and the 3-vessel and tracheal view. In addition to the B-mode segmental view approach, color Doppler ultrasonography was used for visualizing the transverse 3-vessel and tracheal view.(51) The normal right subclavian artery in the axial plane appears as an S-shaped vessel passing anterior to the trachea at the clavicle level ARSA arises as the last vessel before the aortic isthmus and takes a retro-tracheal course behind the trachea to the right arm . The course of ARSA is straight, without an S-shape proximal concavity surrounding the trachea anteriorly. In order to assess ARSA, we obtained a coronal view of the fetal thorax, posterior to the trachea and anterior to the spine, until we see the thoracic descending aorta.

On color Doppler ultrasonography ARSA appears as a vessel arising from the descending aorta at the level of the aortic isthmus (35). ARSA then follows an oblique course towards the right clavicle and shoulder.

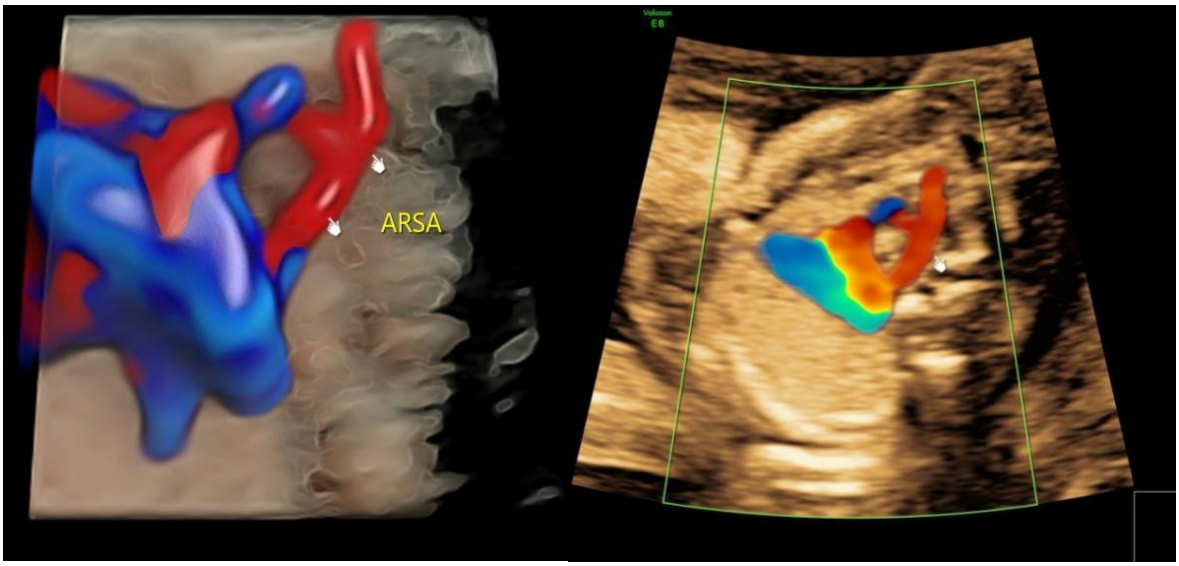

Figure 10 : Aberrant Right Subclavian Artery

Methodology (Figure 11)

STEP 1 – When a soft marker is identified at the anomaly scan, we searched for other soft markers and structural abnormalities in the fetus, including the fetal cardia.

STEP 2 – Modified Risk of aneuploidy was calculated by filling the details as 'soft markers present', 'absent' or 'don't know' in the online calculator validated and freely available at (https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1002/uog.12364) (18) against a background risk based on maternal age alone (derived from online calculator available at http://perinatology.com/calculators/ama.htm) or in combination with first trimester screening (Nuchal translucency + maternal serum biochemistry), or second trimester maternal serum screening (quadruple test). According to the modified risk based on likelihood ratios, couple was classified as high risk for aneuploidy (risk ≥1:250) or low risk (risk <1:250).

STEP 3 –

a. Pretest Genetic Counseling was done in collaboration with the department of Pediatrics and Medical Genetics by a genetic counseler. The Counselling was non-directive so as to help the patient in decision making for proceeding for invasive testing without bias.
b. The option for fetal karyotyping was open to either risk group, as the above protocol was a screening protocol and was not diagnostic, however meticulous the scan has been performed.
c. Those opting for amniocentesis were directed for the test as per the standard protocol. Post test genetic counselling was also done.
d. At the same time, a small questionnaire was given to the couple after three weeks when they came for follow up scan or came to show the karyotype report, to know about their expectations and attitude on knowing the results of sonography.

STEP 4: Pregnancy was followed till delivery and discharge of the patient, to see the effect of the presence of these soft markers on foetal and neonatal outcome in terms of presence of aneuploidies in the foetus, FGR, Preterm labour, Intrauterine death, Still Birth, Pre-eclampsia or normal course of Pregnancy.

STEP 5: Follow up of Baby

At birth the cord blood/peripheral blood was collected and stored for karyotyping and relevant genetic tests according to the clinical follow up. Babies were followed till max 3 months and minimum till discharge from the hospital.

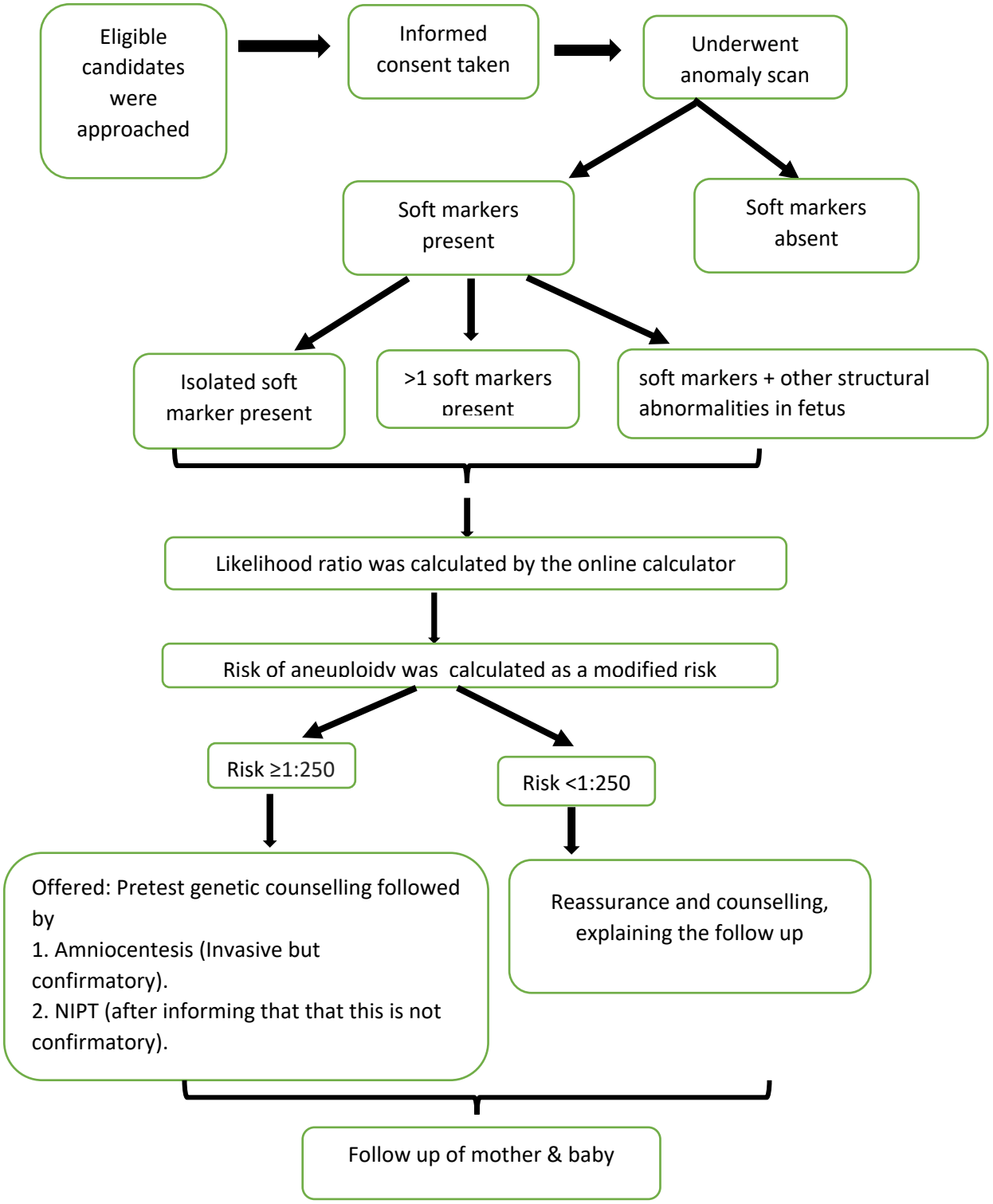

Figure 11: Work Flowchart

Invasive Testing (Amniocentesis)

Proper written and informed consent was taken, the couple was well informed about the risk-benefit and complications of amniocentesis. All procedures were performed under ultrasound guidance (Mindray ultrasonographic machine) in sterile conditions. (Figure 12) Prior to the procedure, ultrasound was performed to report the number of foetuses, the viability of the fetus, localisation of the placenta, gestational age, site of cord insertion and any noticeable foetal malformation. A sterile plastic cover (camera cover) was placed over the ultrasound cable and probe was covered with a glove to maintain sterility. The gel was placed on the inner surface under the gloves because it aids in the transmission of waves of ultrasound.

A 20–22-G spinal needle, 9 cm for average built women and 13 cm for obese women (usually with a black hub) was inserted trans-abdominally under continuous ultrasound guidance.
Once the needle reached the amniotic cavity, the inner stylet was removed and 15–20 mL fluid (depending on the indication) was aspirated, equally distributed in two vials and sent to the lab for karyotyping and quantitative fluorescent polymerase chain reaction or any other relevant test.

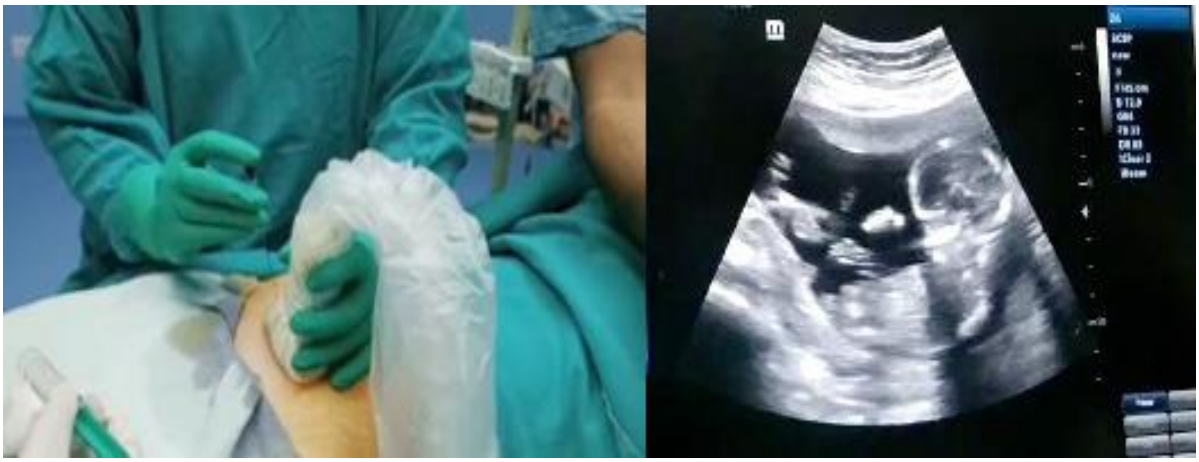

Figure 12: Procedure of Amniocentesis

Karyotyping

Figure 13, 14 Show the final report of electrophoretogram (qFPCR) and Karyotype on fetal cells in amniotic fluid respectively.

Figure 13: Electrophoretogram (on Amniotic fluid) of a case with Trisomy 21

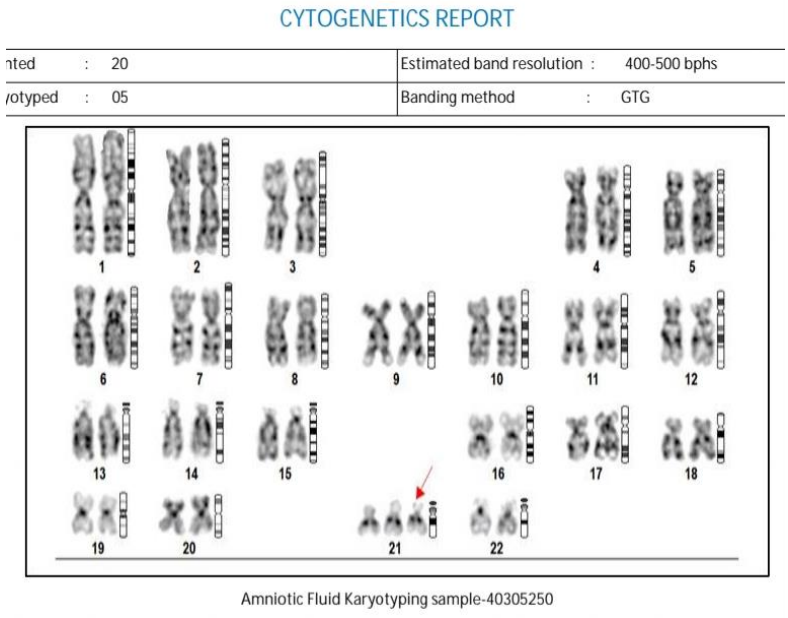

Figure 14: Cytogenetics on amniotic fluid (Karyotype report of a case with Trisomy 21)

Post-natal karyotype confirmation

This was done via courtesy of NIDAN KENDRA, supported by Department of Biotechnology (DBT). Cord blood samples of the babies were collected and sent for in-house karyotyping wherever indicated and feasible. Figures 15 and 16 show the unstained and stained views of the chromosomes in metaphase and the karyogram.

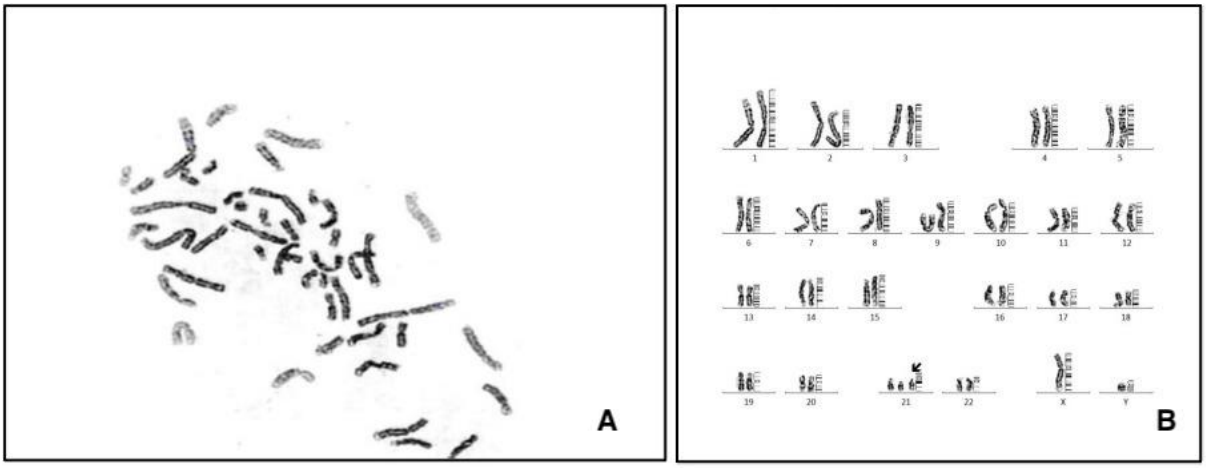

Figure 15: (A) Chromosomes at 100 X under oil emulsion; (B) Karyogram on Metafer Software

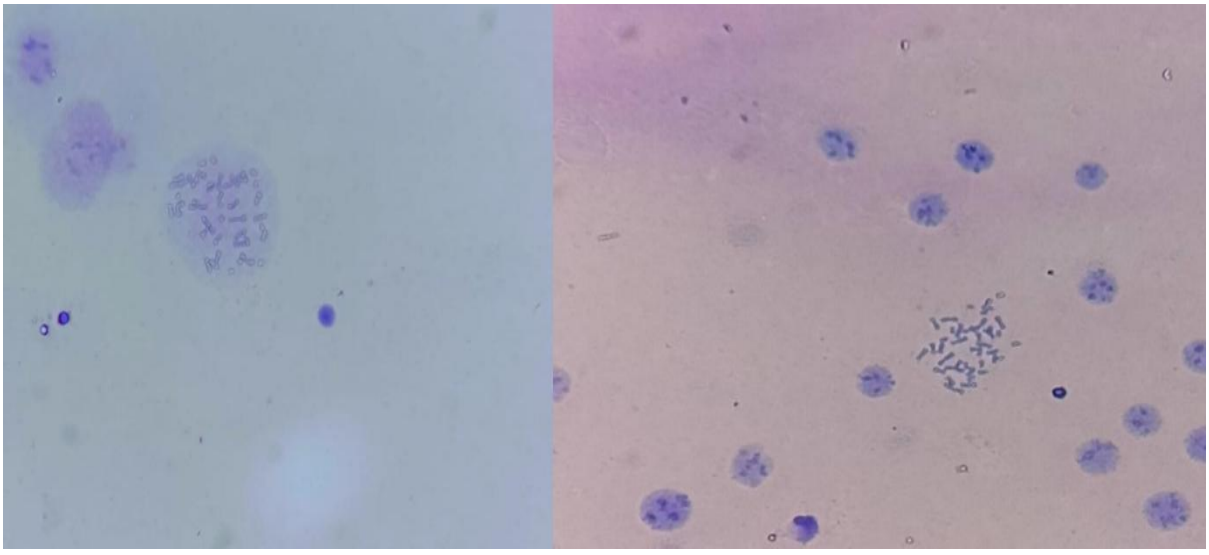

Figure 16: Image of Metaphase stage with metaphase spread at 100 X under compound microscope

RESULTS

During the study period from March 2021 to October 2022, a total of 4051 women underwent Level -II Ultrasonography at our Institute. After considering the inclusion and exclusion criteria, 207 eligible pregnant women were recruited in the study. Figure shows the overview of the recruited patients.

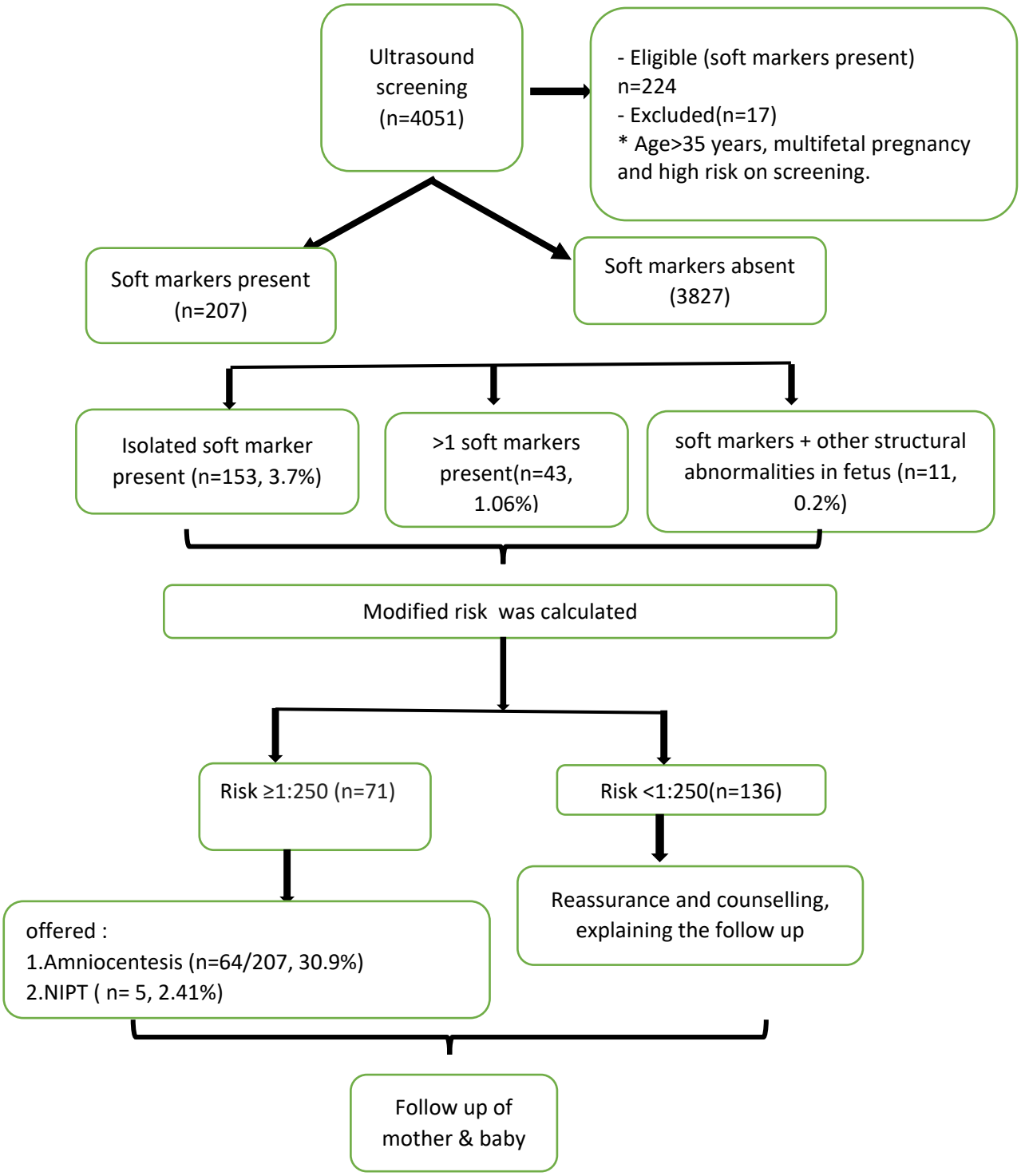

Figure 17: Overview of recruited participants

1. DEMOGRAPHIC VARIABLES

1.1 Age Distribution

The age of the subjects ranged from 18-35 years. Largest proportion of patients belonged in the 21-30 years age group. The mean age was 26.38 years, ± 3.59 years(SD) .

Table 3: Age distribution of study subjects

Age group (years)	N=207	(%)
18-20 years	7	3.38
21-30 years	176	85.02
31-35 years	24	11.59
Total	207	100

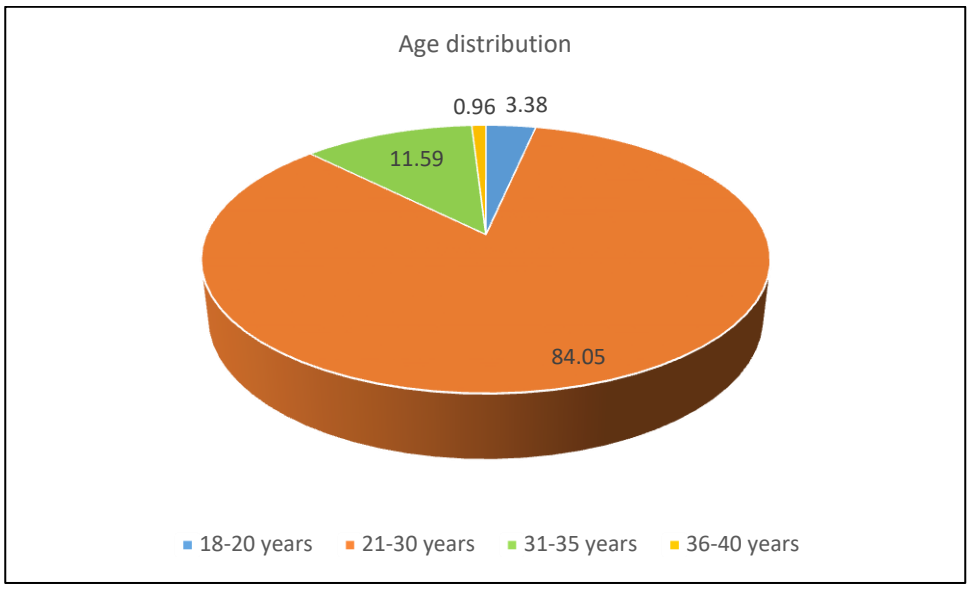

Figure 18: Age Distribution of study subjects

Table 3 & Figure 18 shows that most of the patients were in the age group 21-30 years, accounting for 85.02 % (n=176)

1.2 Occupation of the patient

Table 4: Distribution of study population on the basis of occupation of patient

Occupation	N=207	%
Home-maker	201	97.10
Professional	6	2.89
Total	207	100

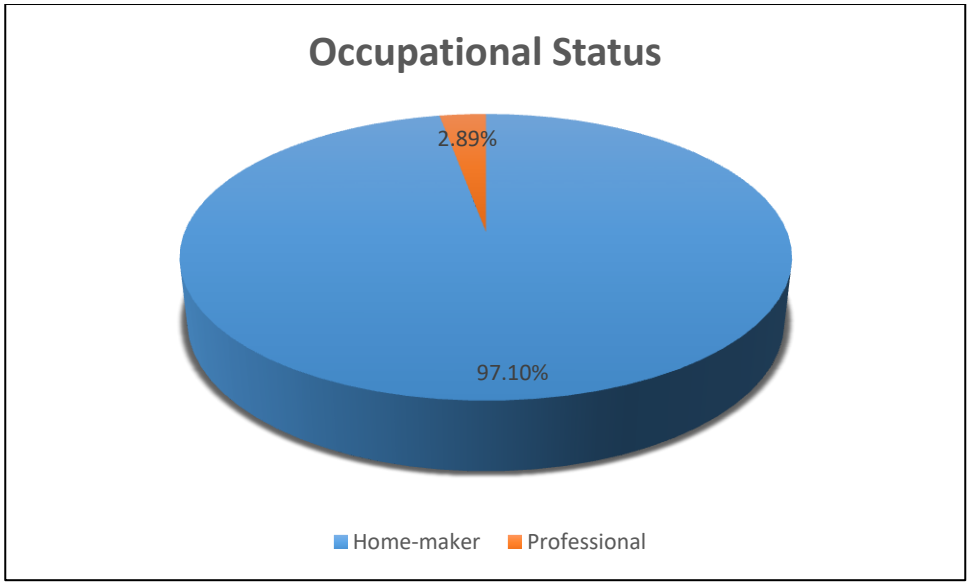

Figure 19: Occupation of patient

As per Table 4 , and figure 19, majority of the participants in the study population were home makers, accounting for 97.1 % (n=201).

1.3 Socio- economic status:

Table 5: Distribution of study population on the basis of Socio- economic status

Socio-economic status	N=207	%
Upper	24	15.59
Upper middle	105	50.72
Upper lower	17	8.21
Lower middle	61	29.4
Lower	0	0
Total	207	100

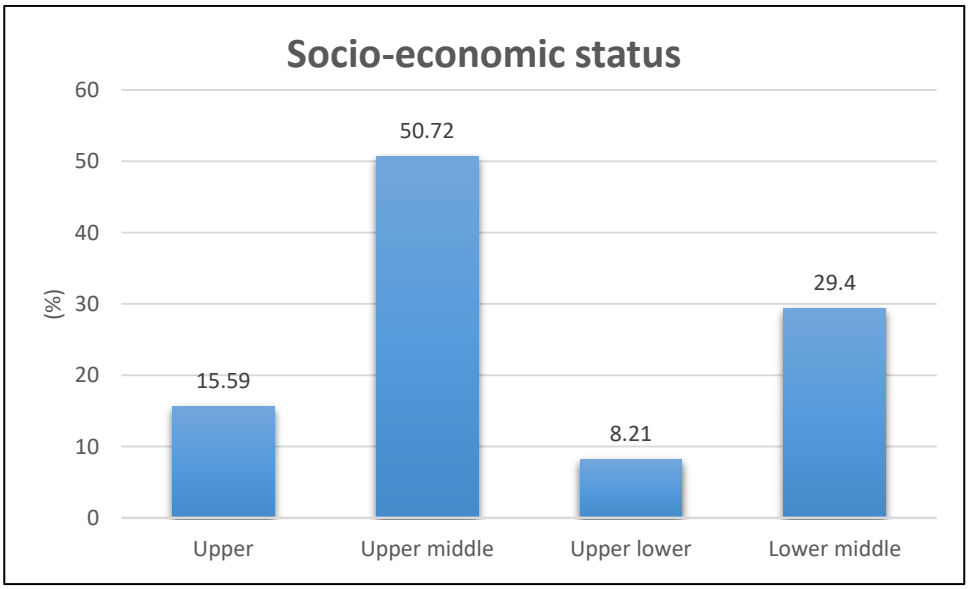

Figure 20: **Distribution of study population on the basis of Socio- economic status**

According to modified Kuppuswamy's scale 50.72% of the subjects belonged to upper middle class (n=105). Lower middle class participants constituted 29.4 % (n=61%). Upper class and upper lower class constituted 15.59% (n=24) and 8.21% (n=17) respectively.

1.4 Education status:

Table 6: Distribution of study population on the basis of education of patient

Education status of patient	N=207	%
Primary	10	4.8
Middle	36	17.39
Senior Secondary	36	17.39
Graduate	121	58.45
Post graduate & above	4	1.9
Total	207	100

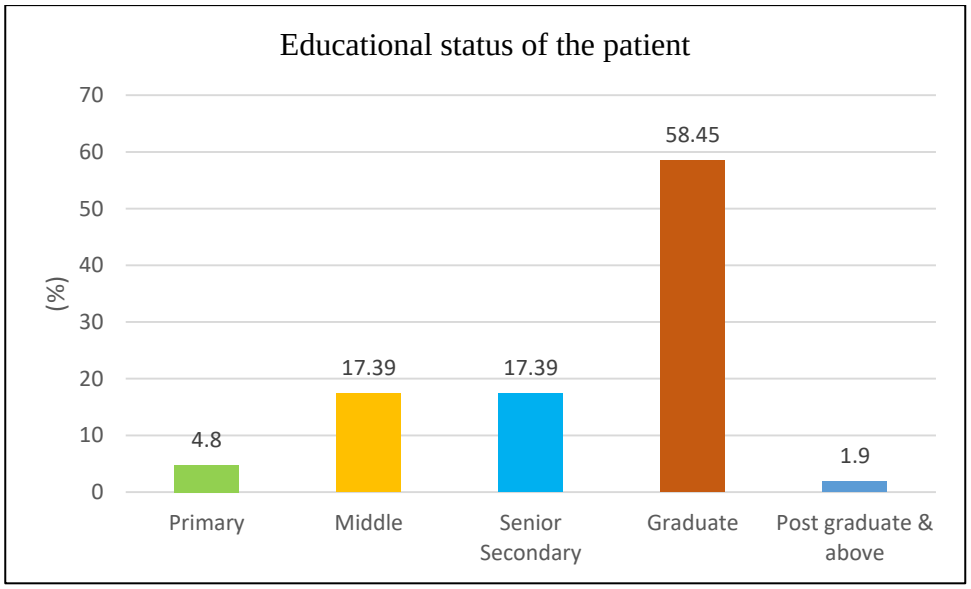

Figure 21: Distribution of study population on the basis of education of patient

Table 6 and figure 21 show that 58.45% of the patients were graduates (n=121). The percentage of participants educated upto middle school and senior secondary were almost equal.

Table 7: Distribution of study population on the basis of Education status of husband

Education status of Husband	N=207	%
Primary	8	3.86
Middle	31	14.97
Senior Secondary	41	19.80
Graduate	121	58.4
Postgraduate & above	6	2.8
Total	207	100

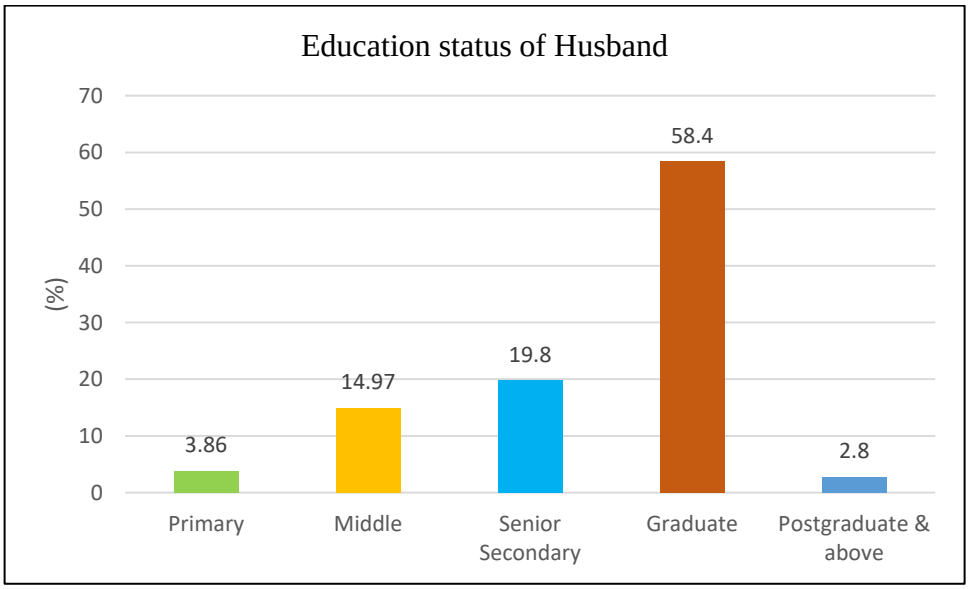

Figure 22: Distribution of study population on the basis of Education status of husband

Table 7 and figure 22 show that 58.4% (n=121) of the spouses were graduates. The percentage of spouses educated up-to middle school and senior secondary were almost equal. 3.86 % patients had primary level of education.

1.5 Residential status

Table 8: Distribution of study population on the basis of residential status of patients

Residence	N=207	%
Rural	42	20.28
Semi urban	35	16.90
Urban	130	62.80
Total	207	100

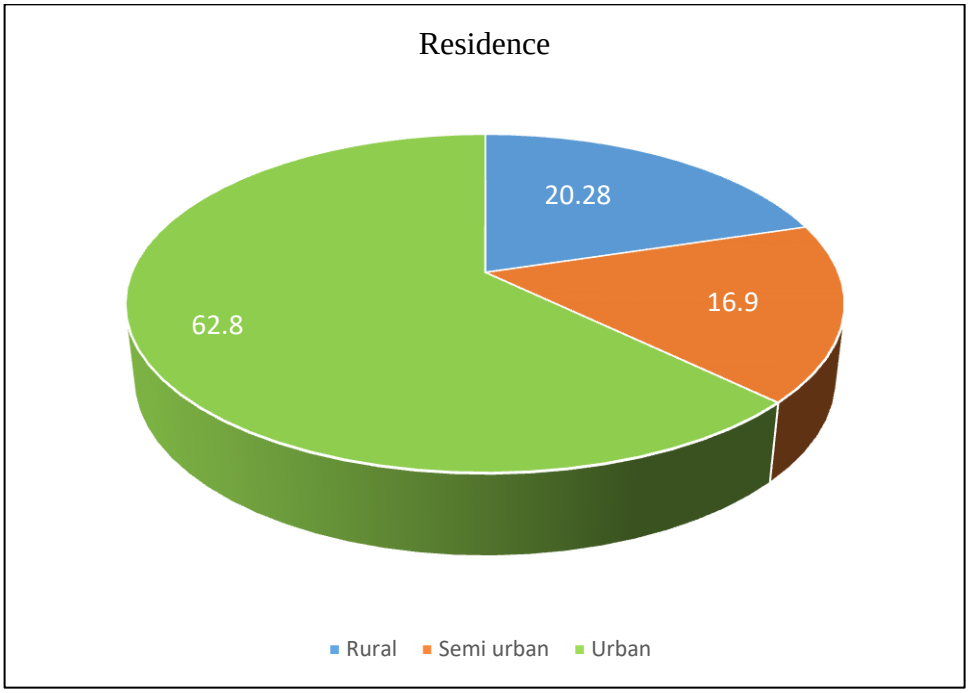

Figure 23: Distribution of study population on the basis of residential status of patients

Table 8 and figure 23, show that the majority of the subjects were from urban background 62.8 % (n=130). Patients belonging to semi-urban background were 16.90 % (n=35) of the population. Those coming from a rural background comprised 20.28% (n=42).

1.6 Booking status at time of recruitment

Table 9: Distribution of study population on the basis of Booking status of patients

Booking Status	N=207	%
Referred	135	65.21
Booked at institution	72	34.7
Total	207	100

Majority of the patients (65.21%) were referred to our institute from private/ government hospitals mostly in and around Jodhpur, while 72 patients (34.7%) were booked at our institute. The reasons for their referral were need for invasive testing and genetic counselling.

1.7 Age at marriage

Table 10 : Distribution of study population on the basis of Age at marriage

Age at marriage in years			
Min-Max	**Median**	**Mean**	**2SD**
17-32	23	23.16	3.15

As seen in the table 10, the mean maternal age at marriage was 23.16 ±3.15years, with a median of 23 years.

1.8 Consanguinity in marriage

Table 11: Distribution of study population on the basis of Consanguinity

Consanguinity	N=207	%
Yes	6	2.89
No	201	97.10
Total	207	100

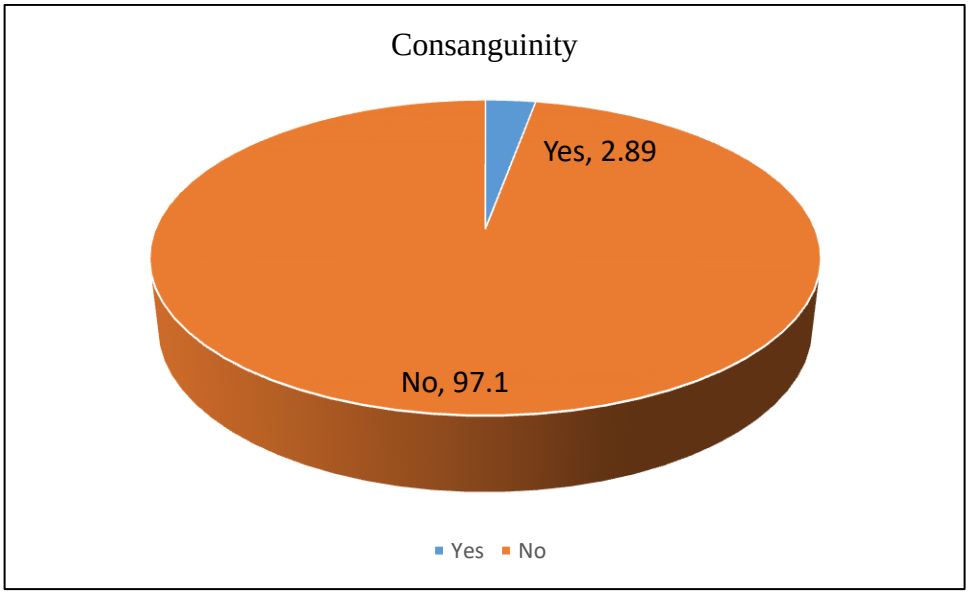

Figure 24: Distribution of study population on the basis of Consanguinity

As elucidated in table 11 and figure 24, 97.10% of the patients had a non-consanguineous marriage, and only 6 cases (2.89%) had a consanguineous marriage.

1.9 Gestational age at Ultrasonographic (USG) diagnosis of soft markers

Table 12: Gestational age at USG diagnosis of soft markers

POG (weeks) at the time USG diagnosis			
Min-Max	**Median**	**Mean**	**2SD**
16-23.5	19.30	19.54	2.89

As observed in table 12, the mean gestational age at diagnosis of soft markers on USG in our study population was 19.54 weeks.

1.10 Gravida/ Parity

Table 13: Distribution of study population on the basis of parity

Gravida	N=207	%
Primigravida	117	56.52
Second gravida	52	25.12
Third gravida	23	11.11
More than three	15	7.24
Total	207	100

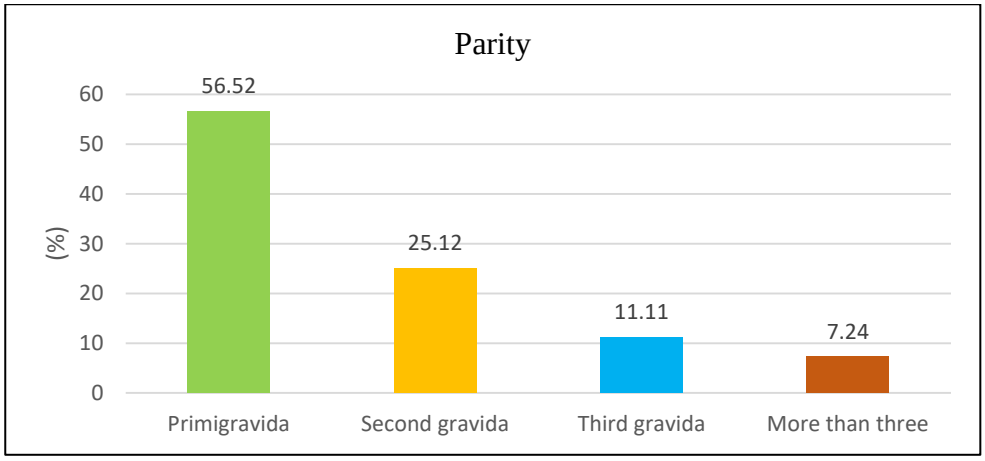

Figure 25: **Distribution of study population on the basis of parity**

As evidenced from table 13 and figure 25, most of the participants were primigravidas (56.52%), while multigravida patients contributed to 43.48% of the study population.

1.11 Additional abnormalities in previous pregnancies

Table 14: Frequency of Additional abnormalities in previous pregnancies

Co- existent abnormalities in previous pregnancies	N=207	%
None	201	97.06
Ante- partum IUD in previous pregnancies	2	0.98
Single gene disorders in previous babies*	3	1.47
Multiple anomalies in fetus in previous pregnancy	1	0.49
Total	207	100

***single gene disorders included epidermolysis bullosa ,Tay Sach's disease, Duchenne Muscular dystrophy in previous babies.*

Majority of the cases did not report any abnormalities in the antecedent pregnancies. 1.47% of the study population had history of single gene disorders in the previous pregnancies.

2. PRIMARY OUTCOME

2.1 Prevalence of soft markers

A total of 4051 women underwent anomaly scans at our institute during the study period and soft markers were detected in 224 women. After excluding 17 patients who did not meet the inclusion criteria, the total number of study participants were 207. The prevalence of soft markers in the study population came out to be (207/4051=) 5.1 %

The prevalence of soft markers in isolation was 3.7%. However, 1.06% of the study population had multiple soft markers (>1 soft marker) while in 0.2% of the population the soft markers were found in relation with a structural anomaly. (Figure 26)

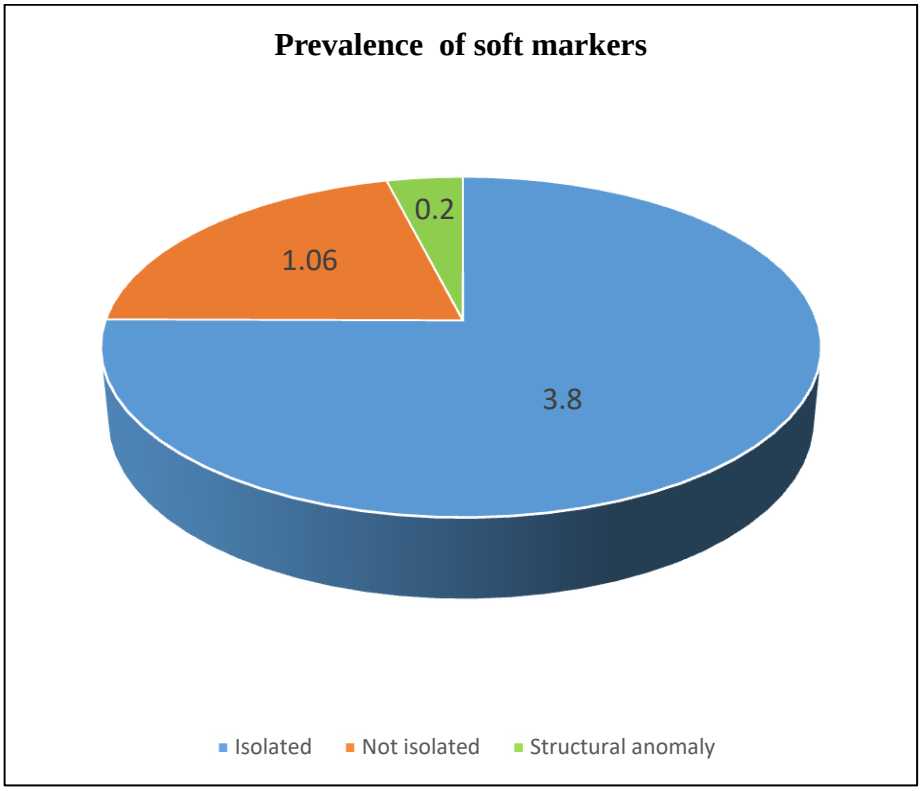

Figure 26: Prevalence of Soft Markers

2.2 Type of soft markers

Our study took into consideration 10 soft markers, and aimed at finding the isolated or associated frequencies of each soft marker in a low risk population.

Table 15: Comparison of frequencies of various soft markers and their prevalence in study population

Type of soft markers	Isolated		Associated with other SM/anomalies		Total (N=207)		Overall prevalence in population (N=4051)
	N	%	N	%	N	%	%
Intra cardiac echogenic foci	37	17.87	26	12.56	63	30.43	1.5
Mild hydronephrosis/ pyelectasis	39	18.84	27	13.04	66	31.88	1.6
Short femur	2	0.97	3	1.45	5	2.42	0.12
Echogenic bowel	2	0.97	5	2.42	7	3.38	0.17
Increased Nuchal fold	12	5.80	3	1.45	15	7.25	0.37
Aberrant Right Subclavian Artery	7	3.38	1	0.48	8	3.86	0.19
Absent Hypoplastic Nasal Bone	18	8.70	9	4.35	27	13.04	0.66
Ventriculomegaly	6	2.90	4	1.93	10	4.83	0.24
Choroid Plexus Cyst	25	12.08	19	9.18	44	21.26	1.08
Single Umbilical Artery	6	2.90	9	4.35	15	7.25	0.37
Other structural anomalies	0	0.00	11	5.31	11	5.31	0.27

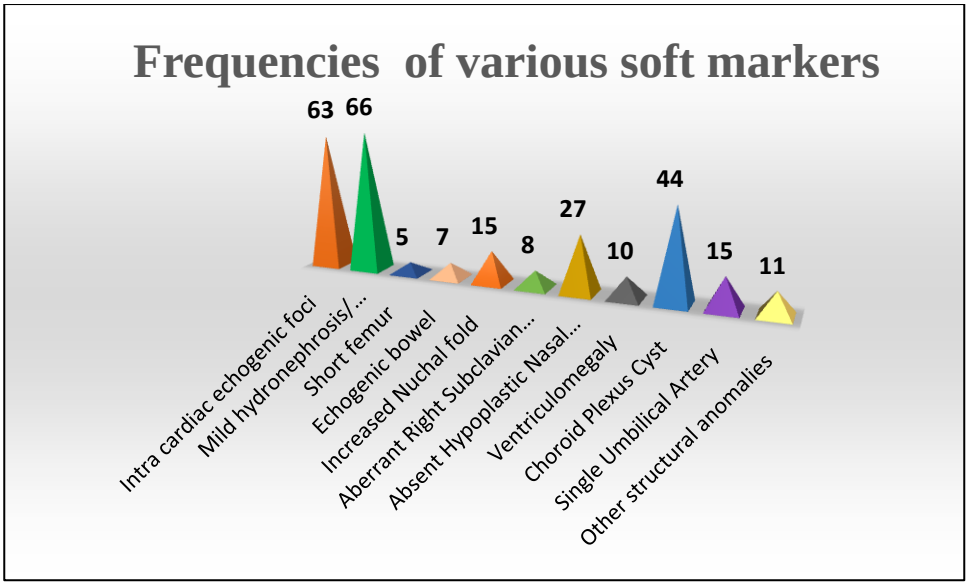

Figure 27: Frequencies of various soft markers in study population

Table 15 & figure 27 showed that the highest frequency among all soft markers was that of pyelectasis (31.88%; 66/207) followed by intracardiac echogenic foci (30.43%; 63/207). Short femur had the least frequency (2.42%; 5/207). The overall prevalence in population for pyelectasis was 1.6% followed by IEF in 1.5%.

2.3 Combined First trimester screening (CFTS) / 2nd trimester biochemical screening results

Table 16: Frequency of study participants who had prior screening

Name of screening test	N =207	%
Combined screening	73	35.2
Quadruple markers	21	10.1
None	113	54.54
Total	207	100

Overall, 45.3 % (n=94) of the study participants had a prior screening test done for aneuploidy. However, majority of the participants were screening naïve.

2.4 Prenatal Diagnostic testing (Invasive/Non invasive)

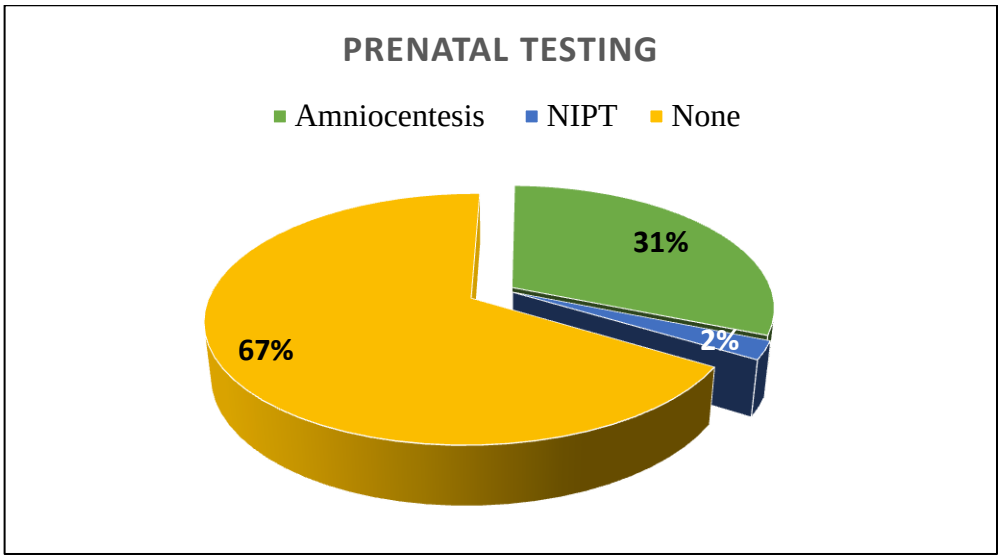

Figure 28: Distribution of cases who opted for Prenatal invasive/ Non-invasive testing

The pie chart shows that 64 patients (30.9 %) opted for invasive testing procedures such as amniocentesis. Non -invasive prenatal testing was opted for by 5 cases (2.41%), while watchful follow-up was done in 66.66% (138) patients. All cases were followed up as per the mentioned protocol.

Table17: Cases of Amniocentesis done with respect to number of soft markers/ structural anomalies

Isolated/multiple soft marker	Amniocentesis				Total	
	Done		Not done			
	N	%	N	%	N	%
Isolated	34	53.13	119	83.22	153	74.27
Multiple	24	37.50	19	13.29	43	20.87
Associated with structural anomalies	6	9.38	5	3.50	11	5.34
Total	64	100.00	143	100.00	207	100.49

Table 17 shows that of the 64 cases who opted for amniocentesis, 53.13% (n=34) were done in those with isolated markers. 37.5 % (n=24) cases were in those with multiple soft markers, while 9.38% (n=6) cases were done in those with soft markers and associated structural anomalies. Overall, there was an increase in invasive procedures by 25% (34/153) in low risk cases with isolated soft markers while the increase was around 55 times (24/43) in those who had multiple markers.

3. Secondary Outcomes

3.1 Outcome of Invasive /Non-invasive testing

Table 18: Results of Genetic testing in modified high risk cases

Amniocentesis /NIPT report	N	%
Euploid	62 [57 +5 (NIPT)]	89.85
Aneuploidy	7	10.1
Total	69	100

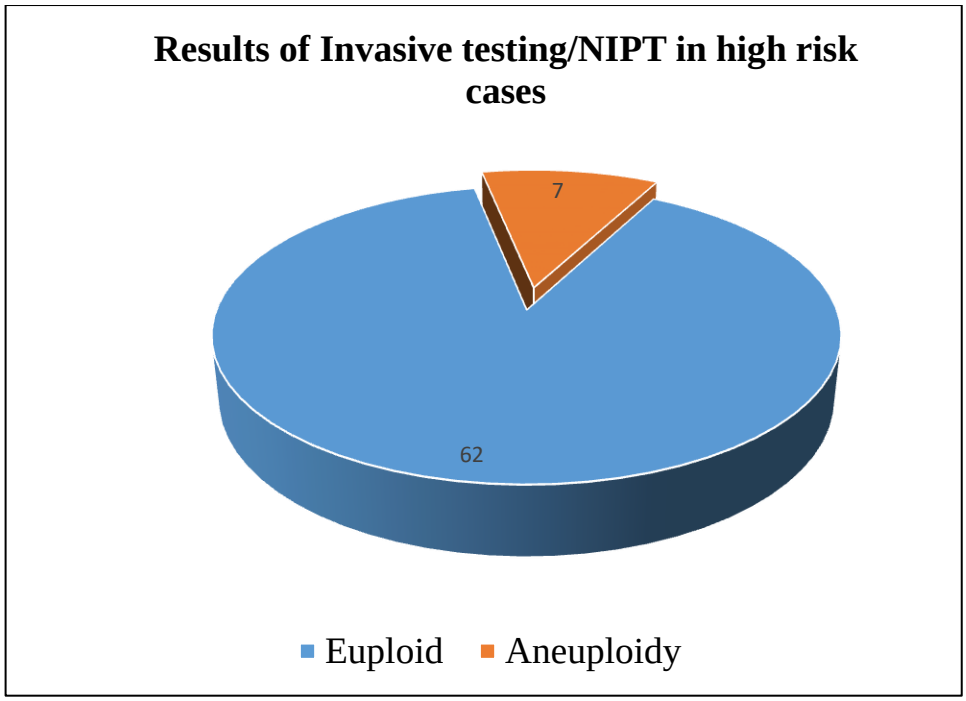

Figure 29: Results of Invasive testing/NIPT in high risk cases

Of the 64 cases that underwent amniocentesis, Trisomy 21 was detected in 5 cases, Trisomy 18 was detected in 1 case and Trisomy 22 was detected in 1 case.

3.2 Association of soft markers with aneuploidy

3.2.1 Isolated soft markers and aneuploidy

Table 19: Association of isolated soft markers with aneuploidy

Type of soft isolated markers N=153		Aneuploidy				p^{*}- value
		Absent		Present		
		N	%	N	%	
Intra cardiac echogenic foci	**Absent**	114	75.5%	2	100.0%	-
	Present	37	24.5%	0	0.0%	
Mild hydronephrosis/pyelectasis	**Absent**	112	74.2%	2	100.0%	-
	Present	39	25.8%	0	0.0%	
Short femur	**Absent**	150	99.3%	1	50.0%	**0.026**
	Present	1	0.7%	1	50.0%	
Echogenic bowel	**Absent**	149	98.7%	2	100.0%	-
	Present	2	1.3%	0	0.0%	
Increased Nuchal fold	**Absent**	140	92.7%	2	100.0%	-
	Present	11	7.3%	0	0.0%	
Aberrant Right Subclavian Artery	**Absent**	144	95.4%	2	100.0%	-
	Present	7	4.6%	0	0.0%	
Absent Hypoplastic Nasal Bone	**Absent**	134	88.7%	1	50.0%	0.222
	Present	17	11.3%	1	50.0%	
Ventriculomegaly	**Absent**	145	96.0%	2	100.0%	-
	Present	6	4.0%	0	0.0%	
Choroid Plexus Cyst	**Absent**	126	83.4%	2	100.0%	-
	Present	25	16.6%	0	0.0%	
Single Umbilical Artery	**Absent**	145	96.0%	2	100.0%	-
	Present	6	4.0%	0	0.0%	

* Fisher's exact test; $p < 0.05$ Statistically Significant

Table 19 shows that there is a significant association of short femur with aneuploidy. When Fisher's exact test was applied to the data set, the *p*- value was 0.026. No significant association was found when the same test was applied to the other soft markers in isolation.

3.2.2 Association of multiple soft markers with aneuploidy

Table 20: Association of individual soft markers with aneuploidy when present in combination with other markers

Type of multiple soft markers N=43		Aneuploidy				p^{*} value
		Absent		Present		
		N	%	N	%	
Intra cardiac echogenic foci	**Absent**	18	45.0%	2	66.7%	0.589
	Present	22	55.0%	1	33.3%	
Mild hydronephrosis/pyelectasis	**Absent**	17	42.5%	1	33.3%	1.000
	Present	23	57.5%	2	66.7%	
Short femur	**Absent**	38	95.0%	2	66.7%	0.199
	Present	2	5.0%	1	33.3%	
Echogenic bowel	**Absent**	36	90.0%	2	66.7%	0.316
	Present	4	10.0%	1	33.3%	
Increased Nuchal fold	**Absent**	37	92.5%	2	66.7%	0.259
	Present	3	7.5%	1	33.3%	
Aberrant Right Subclavian Artery	**Absent**	39	97.5%	3	100.0%	-
	Present	1	2.5%	0	0.0%	
Absent Hypoplastic Nasal Bone	**Absent**	35	87.5%	3	100.0%	-
	Present	5	12.5%	0	0.0%	
Ventriculomegaly	**Absent**	37	92.5%	3	100.0%	-
	Present	3	7.5%	0	0.0%	
Choroid Plexus Cyst	**Absent**	24	60.0%	2	66.7%	-
	Present	16	40.0%	1	33.3%	
Single Umbilical Artery	**Absent**	35	87.5%	3	100.0%	-
	Present	5	12.5%	0	0.0%	

* Fisher's exact test; p <0.05 Statistically Significant

Table 20 shows that no significant association was found between the presence of multiple soft markers and aneuploidy, when each soft marker was consider individually. Fisher's exact test applied to the data was statistically insignificant.

Table 21: Association between multiple soft markers and aneuploidy (case details given in Table 22)

Isolated/multiple soft marker	Aneuploidy				Total		*P** value
	Yes (n=6)		No (n=200)				
	N	%	N	%	N	%	
Isolated	2	33.33	151	75.50	153	74.27	**0.039**
Multiple#	4	66.67	49	24.50	53	25.73	
Total	6	100.00	200	100.00	206	100.00	

* Fisher's exact test; P<0.05 Statistically Significant

Out of the 4 cases with multiple soft markers, 3 were exclusively with multiple markers, 1 case had additional structural anomaly also. One case of aneuploidy had only one marker but had structural abnormality

Table 21 shows that there is a significant association between soft markers and aneuploidy when more than one marker is present. Fisher's exact test applied to the data set yielded a *p* value of 0.039 .

Overall, there were two cases with structural abnormality that turned out to be aneuploid fetuses.

3.3 Details of the cases with aneuploidy

Table 22: Details of the cases with aneuploidy

Case No.	Age (yrs)	Parity	Soft marker	Prior aneuploidy screening tests	Invasive/ NIPT results	Outcome
Case 1 SN 191	22	G1 (18.1 weeks)	Increased NF, EB	Not done	QFPCR, Karyotyping- POSITIVE for ***Trisomy 21***	IUD at 7 months
Case 2 SN 42	25	G3P2002 (19.3 weeks)	IEF, B/L Pyelectasis	Not done	FISH, Karyotyping- POSITIVE for ***Trisomy 21***	MTP
Case 3 SN 144	23	G2P1001 (18.2 weeks)	Pyelectasis ,CPC. Short Femur	Not done	QF-PCR , Karyotyping- POSITIVE for ***Trisomy 21***	MTP
Case 4 SN 206	34	G1 (22 weeks)	Short femur	Not done	QF PCR, Karyotyping- POSITIVE for ***Trisomy 21***	MTP
Case 5 SN 205	21	G1 (19.2 weeks)	AHNB	Not done	QF PCR, Karyotyping- POSITIVE for ***Trisomy 21***	MTP
Case 6 SN 112	24	G3P2002 (19.3 weeks)	AHNB, CPC, SUA,Short femur, Co-arctation of aorta	Not done	CMA POSITIVE for Edward Syndrome (***Trisomy 18***)	Spontaneous Abortion at 4th month POG
Case 7 SN 146	29	G1 (18.2 weeks)	IEF, Multicystic dysplastic kidney	CFTS low risk.	QF-PCR, Karyotyping, Clinical Exome sequencing - ***Trisomy 22*** with deletion 13q	MTP

SN denotes serial number in the master chart.

3.4 Details of patients diagnosed with other genetic abnormalities apart from aneuploidy on follow up

Table 23: Details of patients diagnosed with other genetic abnormalities apart from aneuploidy

Case No.	Age (yrs)	Parity	Soft marker	Prior aneuploidy screening tests	Invasive /NIPT results	Outcome
Case 1 SN 24	27	G1 (17.6 weeks)	Bilateral pyelectasis, hydronephrosi, dilated bladder and key hole sign (19.6 weeks)	Low risk	Refused	MTP (Posterior urethral valve on fetal autopsy)
Case 2 SN 175	33	G1 (15.2 weeks)	SUA , coarctation of aorta.	Not done	Not done	Preterm CS at 30 weeks, Girl/1200g/, Ano-vestibular fistula, sacral dimpling, absent first metacarpal of right hand. **Whole exome sequencing**: VUOS in Exon 11, c.1391G>A (p.Arg464Gln) Cardio-facio-cutaneous syndrome-1;Noonan syndrome
Case 3 SN 176	33	G2P1001 (18.6 weeks)	VM, IEF, Banana shaped cerebellum, Lemon sign.	CFTS low risk, modified risk- 1:22	QF-PCR/ CMA normal	MTP-Arnold Chiari Malformation- Open NTD
Case 4 SN 33	29	G1 (20.1 weeks)	ARSA	Not done	FISH, Karyotyping- Normal	Boy/TVD/3094gm/ incidentally diagnosed with Neuroblastoma at Day 25 of life, expired at 6th month of life.
Case 5 SN 203	26	G1 (17.6 weeks)	Ventriculomegaly, , corpus callosum agenesis	CFTS low risk	MTP	WES showed LZTR1 NM_006767.4 mutation, Positive for Noonan's syndrome .

IUD= intra uterine death; CS- Caeserean Section; TVD- term Vaginal Delivery; NTD-Neural tube Defect

SN denotes serial number in the master chart.

3.5 Details of cases who developed non immune Hydrops Fetalis (NIHF)

NIHF was seen in four cases.

Table 24: Details of cases with NIHF

Associated soft marker	Outcome
Short long bones	Amniocentesis- (*T21 Positive*) MTP
Absent nasal bone	Developed NIHF at 34 weeks, Delivered preterm, baby is currently doing fine. *(Clinical Exome Normal)*
Ventriculomegaly	Amniocentesis- *(Euploid)* Preterm IUD at 31 weeks
Echogenic bowel	Amniocentesis done- Preterm delivery; Early neonatal death, WES showed *Aicardi-Goutieres syndrome; (Euploid)*

Table 24 shows the details of the cases that developed NIHF as an incidental finding.

3.6 Cases with Absent nasal bone

Table 25: Detailed follow up of cases with Absent Nasal Bone

Case	Age (Yrs)	USG findings and follow up after birth	Pre -natal testing	Outcome
SN 67 (G3)	24	AHNB and CPC, dysmorphic face and cranium (18.2 weeks)	QF-PCR, Karyotyping-normal	MTP
SN 119 (G3)	25	AHNB, (16.2 weeks)	FISH, karyotyping normal.	MTP
SN 206 (G1)	21	AHNB, (19.2 weeks)	T21 positive on QF-PCR and Karyotyping .	MTP
SN 5 (G1)	33	Isolated AHNB, Quad screen normal (18.3 weeks)	QF-PCR, Karyotyping-normal	Developed NIHF, Preterm delivery at 34 weeks , currently baby is doing fine.
SN 96 (G1)	22	AHNB , megacystitis, double bubble sign, (16 weeks).	CMA Normal	Term delivery
SN 113 (G3)	26	AHNB, Choroid Plexus Cyst, Single Umbilical Artery, Co- arctation of aorta (19.2 weeks) .	QF-PCR karyotyping normal.	Term delivery
SN 168 (G1)	24	AHNB, intracardiac echogenic foci (18.6 weeks).	QF PCR, CMA- normal.	Term delivery
Rest cases	-	Isolated AHNB	QFPCR/ KT/CMA- Normal	Continued pregnancy

SN denotes serial number in the master chart.

3.7 Outcome of patients with soft markers

Table 26: Outcome of patients with soft markers

Outcome	N=207	%
Vaginal Delivery	123	59.4
Caesarean Delivery	67	32.3
Preterm	8	3.86
FGR	6	2.89
Hypertensive disorders of pregnancy (HDP)	14	6.76
Gestational Diabetes Mellitus	16	7.72
Hypothyroidism	11	5.31
Stillbirth	3	1.44
Aneuploidy	7	3.38
Termination	17	8.21

**out of the 14 cases of(HDP), 7 developed pre- eclampsia while 7 had gestational hypertension; HDP=Hypertensive disorders of pregnancy; FGR= Fetal growth restriction*

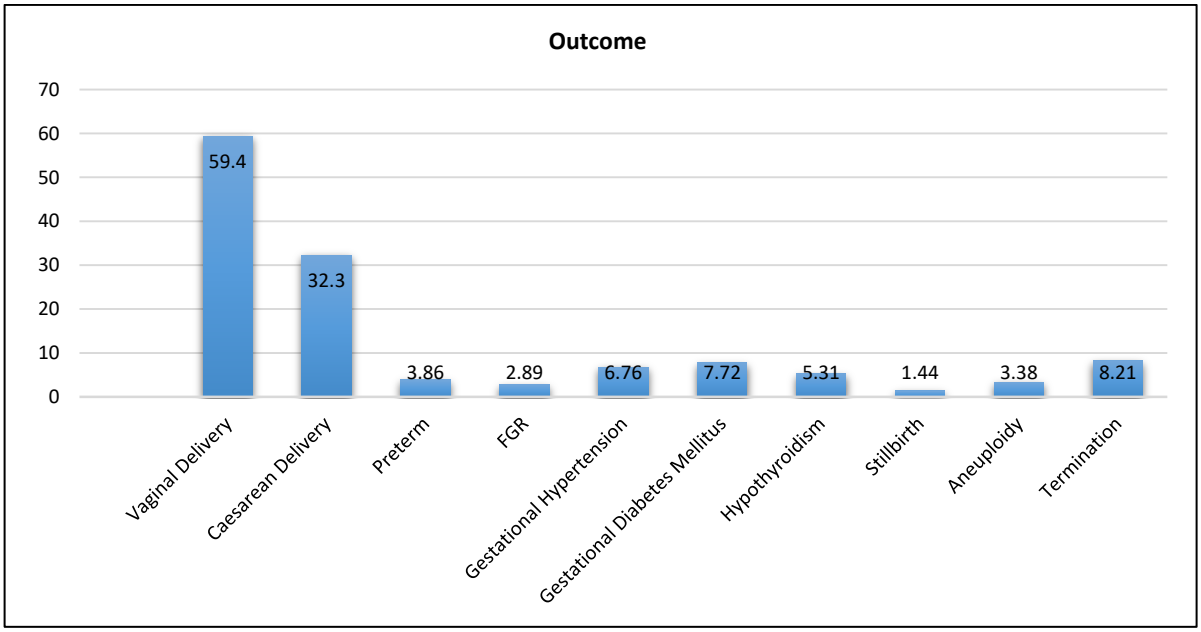

Figure 30: Outcome of patients with soft markers.

Table 26 and figure 30 show that 59.4% patients delivered vaginally, 32.3% had a Caeserean delivery, while 8.21 % of the patients opted for termination. FGR was seen in 2.89 % of the cases.

3.8 Association of Soft markers with adverse outcomes like preterm birth and FGR

Table 27: Association of isolated soft markers with preterm birth

Type of soft markers		Preterm birth				Total		*p**-value
		Yes		No				
		N	%	N	%	N	%	
Intra cardiac echogenic foci	**Present**	3	42.86	60	30.00	63	30.43	0.701
	Absent	5	71.43	139	69.50	144	69.57	
Mild hydronephrosis/pyelectasis	**Present**	2	28.57	64	32.00	66	31.88	1.000
	Absent	6	85.71	135	67.50	141	68.12	
Short femur	**Present**	0	0.00	5	2.50	5	2.42	1.000
	Absent	8	114.29	194	97.00	202	97.58	
Echogenic bowel	**Present**	0	0.00	7	3.50	7	3.38	1.000
	Absent	8	114.29	192	96.00	200	96.62	
Increased Nuchal fold	**Present**	0	0.00	15	7.50	15	7.25	1.000
	Absent	8	114.29	184	92.00	192	92.75	
Aberrant Right Subclavian Artery	**Present**	0	0.00	8	4.00	8	3.86	1.000
	Absent	8	114.29	191	95.50	199	96.14	
Absent Hypoplastic Nasal Bone	**Present**	0	0.00	27	13.50	27	13.04	0.600
	Absent	8	114.29	172	86.00	180	86.96	
Ventriculomegaly	**Present**	1	14.29	9	4.50	10	4.83	0.331
	Absent	7	100.00	190	95.00	197	95.17	
Choroid Plexus Cyst	**Present**	0	0.00	44	22.00	44	21.26	0.207
	Absent	8	114.29	155	77.50	163	78.74	
Single Umbilical Artery	**Present**	3	42.86	12	6.00	15	7.25	**0.014***
	Absent	5	71.43	187	93.50	192	92.75	

* Fisher's exact test; P<0.05 Statistically Significant

There were 8 cases of preterm birth. Table 27 shows that a significant association was found between single umbilical artery and preterm birth. When Fisher's exact test was applied to the data, the p- value was 0.014 for single umbilical artery, which is statistically significant.

Table 28: Association of isolated soft markers with FGR

Type of soft markers		FGR				Total		*p**-value
		Yes		No				
		N	%	N	%	N	%	
Intra cardiac echogenic foci	**Present**	1	16.67	62	30.85	63	30.43	0.669
	Absent	5	83.33	139	69.15	144	69.57	
Mild hydronephrosis/pyelectasis	**Present**	2	33.33	64	31.84	66	31.88	1.000
	Absent	4	66.67	137	68.16	141	68.12	
Short femur	**Present**	0	0.00	5	2.49	5	2.42	1.000
	Absent	6	100.00	196	97.51	202	97.58	
Echogenic bowel	**Present**	0	0.00	7	3.48	7	3.38	1.000
	Absent	6	100.00	194	96.52	200	96.62	
Increased Nuchal fold	**Present**	0	0.00	15	7.46	15	7.25	1.000
	Absent	6	100.00	186	92.54	192	92.75	
Aberrant Right Subclavian Artery	**Present**	1	16.67	7	3.48	8	3.86	0.212
	Absent	5	83.33	194	96.52	199	96.14	
Absent Hypoplastic Nasal Bone	**Present**	2	33.33	25	12.44	27	13.04	0.176
	Absent	4	66.67	176	87.56	180	86.96	
Ventriculomegaly	**Present**	0	0.00	10	4.98	10	4.83	1.000
	Absent	6	100.00	191	95.02	197	95.17	
Choroid Plexus Cyst	**Present**	2	33.33	42	20.90	44	21.26	0.609
	Absent	4	66.67	159	79.10	163	78.74	
Single Umbilical Artery	**Present**	2	33.33	13	6.47	15	7.25	0.062
	Absent	4	66.67	188	93.53	192	92.75	

* Fisher's exact test; P<0.05 Statistically Significant

As elucidated in table 28, of the 6 cases of FGR recorded, no significant association was found between the presence of soft markers and FGR, *p*- values of each of the soft markers was statistically insignificant by Fisher's exact test.

3.9 Follow-up of the baby:

Table 29: Distribution of Birth weight of the babies with soft markers

Birth weight (gm)	N	%
<1000	2	1.05
1000-1500	7	3.68
1500-2500	41	21.57
2500-4000	140	73.68
Total	190*	100

**** 17 cases of MTP removed from 207***

As evidenced from table 29, 73.68% of the babies had a birth weight lying between 2.5-4kg. 17 cases of MTP have been excluded. There were 3 stillbirths.

4. Couples' responses on knowing the soft markers

Table 30: Participant's responses on the experiences of USG findings of soft markers and their willingness to keep the affected baby

How did it affect you?	**Worried**	**Frustrated**	**Both worried and frustrated**	**Total**
	149 (71.9%)	50 (24.1%)	8 (3.86%)	207
How did you experience the information given on post-test counselling?	**Unpleasant**	**Shocking**	**Traumatic**	**Total**
	147 (71.01%)	29 (14%)	31 (14.9)	207
Would you like to keep the child despite Down's syndrome?	**Yes**	**No**	**May Be**	**Total**
	147 (71.01%)	39 (18.84%)	21 (10.14%)	207

Table 30 shows that, when questioned about how their awareness about the soft marker in the baby affected them, 71.9% (n=149) of the patients said that they were worried about the finding. 24.1% (n=50) expressed a stronger form of frustrated response, while 3.86% (n=8) of the patients expressed all of the aforesaid emotions.

As far as post-test genetic counselling is concerned, 71.01% (n=147) of the patients had felt that the information given to them was unpleasant. 14% (n=29) were shocked , while 14.97% (n=31) were traumatised by the information.

Regarding Willingness to keep a child affected with Down's or other Genetic abnormalities, 71.01 % of the patients said that they would like to continue with the pregnancy even if the baby was diagnosed with Down's syndrome post-natally 18.84% were firm with their opinion to terminate the pregnancy should the fetus be found to be positive for Down's syndrome, while 10.14% of the patients were unsure on their stand on the matter.

DISCUSSION

This prospective study of a low-risk population lasted for18 months. Soft markers were found in 5.1% of fetuses during the second trimester ultrasound. In 3.7 %, the markers were isolated. The most common marker, renal pyelectasis, was found in isolation in 0.96 % (n=39/4051), followed by echogenic intracardiac foci (0.91% (n=37/4051).

All associations were estimated as Fisher's Exact Test between the markers and aneuploidy. The incidence of invasive tests increased about 25% (34/153) in pregnancies with an isolated marker. In cases with multiple markers, the corresponding increase was 55 % (24/43).

In our study, 4051 patients participated, out of which 224 patients had soft markers. The mean age of the patients was 26.38 years which is lesser as compared to other studies as shown in table 31.

There is a plethora of literature on high risk patients where the mean age is high as advanced age patients have also been included in those studies but studies on low risk population are sparse.

Table 31: Comparison of various studies in terms of number of study participants and mean age.

Age	**Place of study**	**Number of participants**	**Number of patients with soft markers**	**Mean Age in years**
Ahman *et al* (2014) (20)	Uppsala, Sweden	10,535	635	31
Wright *et al* (2016) (24)	Cardiff , UK	30,078	1583	32
Present study	Rajasthan , India	4051	224	26.38

The mean gestational age at diagnosis in our study was 19.5 weeks while it was lesser (17.5 weeks) in a study by Ahman et al. (20)

Prevalence

The prevalence of soft markers in various populations is variable. In the study conducted by *Sohl et al* (1999), the prevalence of isolated soft markers was 14.6%, multiple soft markers were seen in 2.1%, while soft markers in association with other structural anomalies were seen in 2.7%.

Ahman A et al conducted a prospective observational study in which second trimester ultrasound was performed on 10,710 fetuses. Markers were detected in 5.9% of fetuses. 5.1% were isolated, 0.7% were multiple and 0.1% were combined with an anomaly. Table 32 shows the detailed description of prevalence of soft markers in various studies. The varied prevalence might be due to different criterias for examination, variation in ultrasonography machines and expertise.

Table 32: Comparison of various studies in terms of number of soft markers and percentage of abnormal karyotype.

Prevalence of soft markers	**Place of study**	**Isolated soft marker**	**Multiple soft markers**	**Associated with other structural anomaly**	**% of abnormal karyotype**
Sohl et al (1999) (11)	San Franscisco, USA	14.6%	2.1%	2.7%	3.8%
Ahman *et al (2014)* (20)	Uppsala, Sweden	5.1%	0.7%	0.1%	0.28%
Present study, 2022	Rajasthan , India	3.7%	1.06%	0.2 %	3.38%

When ranked in order of how often different markers occur, results are consistent between the studies. (61-63). But these studies were retrospective and done only in high risk cases or those with diagnosed trisomy 21.

There is a dearth of literature on low risk population.

Prevalence of individual soft markers :

The prevalence of individual soft markers in various studies is elucidated in Table 33.

Table 33: Comparison of prevalence of individual Soft Markers in various studies in low risk population

Name of soft marker	**Ahman et al (2014)** (20)	**Wright et al** (2016) (24)	**Present study**
Intra cardiac echogenic foci	3%	44.9%	1.5
Mild hydronephrosis/pyelectasis	1.6%	10%	1.6
Short femur	-	1.4%	0.12
Echogenic bowel	0.2%	3.8%	0.17
Increased Nuchal fold	0.1%	1.9%	0.37
Aberrant Right Subclavian Artery	-	-	0.19
Absent Hypoplastic Nasal Bone	-	-	0.66
Ventriculomegaly	-	1%	0.24
Choroid Plexus Cyst	2.2%	17.3%	1.08
Single Umbilical Artery	-	-	0.37

Absent nasal bone

An absent nasal bone may occur as an isolated finding in fetuses who are euploid. It is seen in 0.5% of euploid fetuses. [4] However, if associated with other markers, such as a thickened nuchal fold, hyperechoic bowel, craniofacial anomalies, such as frontonasal dysplasia or mid-face hypoplasia, chances of down syndrome are more likely.

In a systematic review and meta-analysis, the incidence of AHNB in first trimester scans was reported to be 0.39% in euploid fetuses while 33.3% in fetuses affected with DS.

In second trimester, an incidence of AHNB in euploid fetuses has been reported to be 0.35% while for those affected with Trisomy 21, the incidence cited is between 26% to 77%, with specificity between 80% and 99%.

Therefore, absence of nasal bone on USG has become an ancillary marker for the diagnosis of Down's Syndrome. (56)

The prevalence of absent nasal bone in low risk population in different studies is as shown in Table 34.

Table 34: Comparison of prevalence of Absent Nasal Bone in various studies in low-risk population

	Place of study	**Prevalence**
Ahman *et al* (2014)(20)	Uppasala , Sweden	Not considered
Wegrzyn p. et al (2016) (25)	Poland	4.3% (in euploid cases) 64.8 % (in cases with Trisomy 21)
***Prasad P. et al (2020)* (16)**	Kerala, India	1.11%
Present study	Rajasthan , India	0.66 %

In our study, we took into account only low risk patients, and our prevalence of absent nasal bone was 0.66%. The other studies have taken into account both high as well as low risk patients which attributed to a higher prevalence.

In the present study, we encountered one case of trisomy 21 with isolated absent nasal bone. In the other case that presented with AHNB along with choroid plexus cyst, single umbilical artery and coarctation of aorta, the fetus turned out to be positive for Edward syndrome.

There was another case with AHNB in which the fetus turned out euploid but developed non-immune hydrops and had a preterm delivery. No other associated cause was found even on whole exome sequencing and chromosomal microarray. This could be co-incidental, but the fact emphasizes that long-term follow-up is required when fetal nasal bone is absent alone or associated with other soft markers. This finding is supported by studies in literature(57,58) .

In addition to its known association with trisomy 21, an absent/hypoplastic nasal bone may be an objective marker of facial dysmorphism associated with clinically relevant copy number variants (CNVs).

Although, in our study, the CMA was normal in all the cases where it was performed but there are studies where significant CNVs (10%) were found on CMA in cases of AHNB (59).

Pyelectasis

While most commonly fetal pyelectasis is a transient physiologic state, it can be a marker for aneuploidy and be a precursor of potential urinary tract pathology.

In the study done by *Ahman et al (2014),* pyelectasis was found in 1.6 % of the cases with soft markers, while in the study done by Wright et al (2016) , the prevalence of pyelectasis was 10% in the low risk population. The prevalence of pyelectasis varies from 0.1 to

2.4% in low-risk populations (60,61) and from 1.2 to 2.2% in high-risk populations (10,22). (62,63) This variation might be because of different cut offs like 3mm or 4 mm for renal pyelectasis. In our study we used the cut off of 4 mm.

We encountered one low risk patient with “renal pyelectasis and EIF” where fetus turned out to be a case of Down syndrome. Although the guidelines say that the positive likelihood ratio

of renal pyelectasis for trisomy 21 is only 0.92 which means that it does not modify the risk of aneuploidy. However, when associated with other markers, the risk might increase depending upon their likelihood ratios. The modified risk in this case was 1: 195. Hence, we followed our protocol of counselling for invasive testing in cases with more than one marker and increased modified risk and were fortunate to pick this case of trisomy 21.

In the rest of the cases, the meticulous follow up was done both antenatally and post natally.

Only one baby required catheterisation for few days after birth and micturating cystourethrogram; rest all babies were fine. Two babies were found to have posterior urethral valve.

Echogenic Bowel

As far as echogenic bowel is considered, the prevalence was low in our study (0.17) as it is seen more with congenital infections and cystic fibrosis, the incidence of which is itself low in the study population.

The low prevalence was also seen in other studies consistent with our study(64,65). Only when it is associated with some other marker, the positive likelihood ratio for trisomy 21 increases.

One case with echogenic bowel and increased nuchal fold (+ LR=48.19; Modified risk =1:11) turned out to be trisomy 21. Another cases with echogenic bowel and ventriculomegaly (euploid) developed NIHF at 26 weeks and was later on diagnosed with Pseudo Torch syndrome (Aicardi Goutieries syndrome) on whole exome sequencing.

Association with Aneuploidy

The prevalence of aneuploidy in our low risk study population came out to be 3.38% (7/207) in cases with soft markers. With the availability and high sensitivity of first trimester combined screening for trisomy 21, many cases which turns out to be high risk get excluded as they undergo termination before we can see the soft markers in second trimester ultrasound. Hence, this prevalence is actually for the low risk couples only.

In our study, seven cases of aneuploidies have been identified. Five with trisomy 21, one with Edward syndrome and one with trisomy 22. All six cases terminated except one who chose to continue but unfortunately had an intrauterine demise.

In our study, we found significant association of short femur in isolation with aneuploidy (p=0.026).

No significant association of aneuploidy was found with any other isolated marker.

However, statistically significant association was observed when more than one marker was present (p=0.039). This finding is consistent with other studies. (20)

Adverse Outcomes

Certain markers are much of concern in terms of adverse pregnancy outcomes like FGR, preterm birth, pre- eclampsia etc.

In our study, single umbilical artery was found to be significantly associated with preterm birth (*p*=0.014). This finding is in line with other studies. (14,38)

Invasive testing:

The presence of markers incite a sense of anxiety and fear of having a baby with abnormality. This ultimately increases the incidence of invasive testing.

In our study, there was an additional increase by 25 fold among the low risk cases with isolated markers and 55 fold among those with multiple markers.

However, if the couple does not want an invasive testing, screening with cell free fetal DNA (cffDNA) can be offered after genetic counseling. But, in that case one must be very particular in counseling that cffDNA has a higher sensitivity and negative predictive value (99.2%) for Trisomy 21 only.

In women at low previous risk for aneuploidy, cfDNA has high sensitivity and specificity and a positive predictive value of **85.7%** for Trisomy 21 and of 74% for trisomies 21, 18, and 13 combined. (66)

The advantage of getting a copy number variation, detailed analysis of other chromosomes, DNA preservation for further testing if need arises and gene sequencing will be missed if NIPT is done. There are studies which are now favouring NIPT in cases of soft markers. (43) This needs further research.

STRENGTH AND LIMITATIONS

STRENGTH

- The biggest strength of the index study is that there are no studies done in India which have been done in a low-risk population.
- Despite COVID pandemic and decreased number of deliveries for a considerable period, a good number of patients were enrolled in the study.
- All cases were reviewed by a single sonologist, thus maintaining uniformity in examination
- Meticulous follow up was done which enabled to pick other abnormalities also.

LIMITATIONS

- The sample size was relatively small
- It was a hospital-based study and majority of the cases were referred. Hence the results cannot be generalized for population.

CONCLUSION

- This was a prospective observational study of soft markers in 2nd trimester sonography in low-risk pregnant women and their association with aneuploidy & invasive prenatal testing
- The study was conducted at All India Institute of Medical Sciences, Jodhpur in the Department of Obstetrics and Gynecology and the Department of Diagnostic and Interventional Radiology from March 2021 to October 2022.
- A total of 4051 women underwent Level -II USG at our Institute out of which 207 eligible pregnant women were recruited in the study.
- The prevalence of soft markers in our low risk study population was found to be 5.1 %. (3.8% were isolated, 1.06% were associated with other soft markers, while 0.2 % were found associated with some structural anomaly).
- The highest frequency of soft markers was that of pyelectasis (31.88 %), followed by intracardiac echogenic foci (30.43%) among the cases found positive for soft markers.
- According to the modified risk, based on positive likelihood ratios for aneuploidy, cases were classified as high risk for aneuploidy (risk ≥1:250) or low risk (risk <1:250).
- Aneuploidy was detected in 7 cases. The prevalence of aneuploidy came out to be 3.38% in low risk population with soft markers. (Trisomy 21 was found in 5 cases, trisomy 18 in 1 case, and trisomy 22 was found in 1 case).
- When appropriate statistical tests were applied to the data set, significant association was found between short femur and aneuploidy (p = 0.026 by Fisher's exact test).
- There was a significant association between the presence of multiple soft markers and aneuploidy (p= 0.039).
- The incidence of amniocentesis rose to 25 fold in low risk couples with isolated soft markers while the increase was 55 fold in cases with multiple markers.
- When detected on an ultrasound, these soft markers serve to up the anxiety quotient of the couple. Appropriate counselling regarding their significance and further implications has to be provided by the healthcare professional so that the patient can take timely decision based on genetic test results.
- We therefore conclude that in low risk couples presence of soft markers in isolation leads to unnecessary invasive testing and anxiety of the couple. A good counselling and appropriate follow up is all what is required. However, in the presence of multiple soft markers, we recommend invasive testing.

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ANNEXURES

ANNEXURE-1

Institutional Ethics Committee Certificate

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

No. AIIMS/IEC/2021/3483 **Date: 12/03/2021**

ETHICAL CLEARANCE CERTIFICATE

Certificate Reference Number: **AIIMS/IEC/2021/3318**

Project title: **"Soft markers in 2nd trimester sonography in low risk pregnant women and their association with aneuploidy & invasive prenatal testing"**

Nature of Project:	**Research Project Submitted for Expedited Review**
Submitted as:	**M.D. Dissertation**
Student Name:	**Dr. Shreya Das**
Guide:	**Dr. Charu Sharma**
Co-Guide:	**Dr. Kuldeep Singh, Dr. Taruna Yadav, Dr. Shashank Shekhar, Dr. Pratibha Singh, Dr. Garima Yadav & Dr. Manisha Jhirwal**

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
AIIMS,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

ANNEXURE-2

PROFORMA FOR DATA COLLECTION

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, JODHPUR

(Department of Obstetrics & Gynecology)

For Soft Markers Thesis (Dr. Shreya Das)

Name of Patient: Husband's Name

Age: Hospital Id:

Occupation: Socioeconomic status

Education wife Education husband

Address: Rural/Urban/Semiurban

Residential place-

Age at marriage: Consangunity:

LMP EDD

POG at the time of USG DATE of USG:

OBSTETRIC HISTORY:

Details of previous pregnancy

Children with previous chromosomal / genetic abnormality

Any CO-MORBID CONDITIONS:

Pedigree-

USG details

Soft Marker	**LR+**	**LR-**	**Overall Likelihood ratio**	**Please tick whichever marker is present**
Intracardiac echogenic focus	5.83	0.8	0.95	
Mild hydronephrosis/ Pyelectasis	7.63	0.92	1.08	
Short femur	3.72	0.8	0.61	
Echogenic bowel	11.44	0.9	1.65	
Increased nuchal fold	23.3	0.8	3.79	
Aberrant right subclavian artery	21.48	0.71	3.94	
Absent or hypoplastic nasal bone	23.27	0.46	6.58	
Ventriculomegaly	27.52	0.94	3.81	
Choroid plexus cyst			No increase	
Single umbilical artery			No increase	

APriori Risk-

Combined screening risk

Quad Screening risk

Modified Risk

Genetic Counselling- Done/Not Done

Opted for Amniocentesis/NIPT

Date of amniocentesis POG at procedure

INTERPRETATION OF TEST:

a. QF-PCR b. KARYOTYPING

c. Other Tests
    1. Chromosomal Microarray
    2. FISH
    3. Clinical Exome
    4. Sanger sequencing
    5. Whole genome analysis

OTHER INVESTIGATIONS WITH DATE:

HB BLOOD GROUP

HIV HBsAg VDRL

NT(mm) NT (mom). PAPPA. Beta HcG

AFP. Estriol. Inhibin A Beta HcG

Final Diagnosis:

Pregnancy Outcome:

Abortion/ Vaginal Delivery/ Caesarean Section/ Preterm/ FGR/Pre eclampsia/ Still birth/ Aneuploidy/ Termination

Condition of Baby at Birth: APGAR. Birth weight

Interview

1. How did it affect you? - anxiety/worry/frustrated/ not affected/ all the above.
2. How did you experience the information given? - Traumatic/ shocking/ unpleasant/ neutral/ all
3. Why did you choose or not choose amniocentesis?
4. Would you like to keep child despite Down syndrome – Yes/No/ Don't Know

Appendix 1

Trisomy 21 is associated with nasal hypoplasia, increased nuchal fold thickness, cardiac defects, intracardiac echogenic foci, duodenal atresia and echogenic bowel, hydronephrosis, shortening of the femur and more so of the humerus, sandal gap and clinodactyly or mid-phalanx hypoplasia of the fifth finger.

Trisomy 18 is associated with strawberry-shaped head, choroid plexus cysts, absent corpus callosum, enlarged cisterna magna, facial cleft, micrognathia, nuchal edema, heart defects, diaphragmatic hernia, esophageal atresia, exomphalos, usually with bowel only in the sac, single umbilical artery, renal abnormalities, echogenic bowel, myelomeningocele, growth restriction and shortening of the limbs, radial aplasia, overlapping fingers and talipes or rocker bottom feet.

Trisomy 13 is associated with holoprosencephaly, microcephaly, facial abnormalities, cardiac abnormalities, enlarged and echogenic kidneys, exomphalos and post axial polydactyly.

Triploidy where the extra set of chromosomes is paternally derived is associated with a molar placenta and the pregnancy rarely persists beyond 20 weeks. When there is a double maternal chromosome contribution, the pregnancy may persist into the third trimester. The placenta is of normal consistency but thin and the fetus demonstrates severe asymmetrical growth restriction. Commonly there is mild ventriculomegaly, micrognathia, cardiac abnormalities, myelomeningocele, syndactyly, and 'hitch-hiker' toe deformity.

Turner syndrome is associated with large nuchal cystic hygromas, generalised edema, mild pleural effusions and ascites, cardiac abnormalities and horseshoe kidneys, which are suspected by the ultrasonographic appearance of bilateral mild hydronephrosis.

Annexure-3

All India Institute of Medical Sciences

Jodhpur, Rajasthan

Informed Consent Form

Title of Thesis/Dissertation: "**Prevalence of Soft Markers in 2nd Trimester sonography in low-risk pregnant women and their association with aneuploidy & invasive prenatal testing"**

Name of PG Student :Dr. Shreya Das Tel. No. 9932050140

Patient/Volunteer Identification No.:_____

I, _____ S/o or D/o _____

R/o_____

give my full, free, voluntary consent to be a part of the study "**Prevalence of Soft Markers in 2nd Trimester sonography in low-risk pregnant women and their association with aneuploidy & invasive prenatal testing"**

the procedure and nature of which has been explained to me in my own language to my full satisfaction. I confirm that I have had the opportunity to ask questions. I understand that my participation is voluntary and am aware of my right to opt out of the study at any time without giving any reason.

I understand that the information collected about me and any of my medical records may be looked at by responsible individual from **AIIMS Jodhpur** or from regulatory authorities. I give permission for these individuals to have access to my records.

Date : _____ _____

Place : _____ Signature/Left thumb impression

This to certify that the above consent has been obtained in my presence.

Date : _____ _____

Place : _____ Signature of PG Student

1. Witness 1 2. Witness 2

_____ _____

Signature Signature

Name: _____ Name: _____

Address : _____ Address : _____

_____ _____

Annexure-4

अखिल भारतीय आयुर्विज्ञान संस्थान

जोधपुर राजस्थान

सूचित सहमति पत्र

शोध का शीर्षक: 'कम जोखिम वाली गर्भवती महिलाओं में द्वितीय त्रैमासिक सोनोग्राफी में सॉफ़्ट मार्करों की व्यापकता और गुणसूत्र सम्बंधित बीमारियों (क्रोमोसोमल ऐनुप्लोईडी) और इनवेसिव प्रीनेटल परीक्षण के साथ उनका संबंध'

प्रधान अन्वेषक का नाम: डॉक्टर श्रेया दास

दूरभाष।संख्या: +**91-** 9932050140

रोगी / स्वयंसेवक पहचान संख्या: _____

मैं, _____ पत्नी/ पुत्री _____ निवासी _____

अध्ययन "कम जोखिम वाली गर्भवती महिलाओं में द्वितीय त्रैमासिक सोनोग्राफी में सॉफ़्ट मार्करों की व्यापकता और गुणसूत्र सम्बंधित बीमारियों (क्रोमोसोमल ऐनुप्लोईडी) और इनवेसिव प्रीनेटल परीक्षण के साथ उनका संबंध' का एक भाग बनने के लिए मेरी पूर्ण, स्वतंत्र सहमति देती हूँ, जिसकी प्रक्रिया और प्रकृति मुझे अपनी पूरी संतुष्टि के लिए अपनी भाषा में समझाई गई है।मै पुष्टि करती हूं कि मुझे प्रश्न पूछने का अवसर मिला है। मैं समझती हूं कि मेरी भागीदारी स्वैच्छिक है और मुझे किसी भी कारण दिए बिना किसी भी समय अध्ययन से बाहर निकलने के मेरे अधिकार की जानकारी है।मैं समझती हूं कि मेरे और मेरे मेडिकल रिकॉर्ड के बारे में एकत्रित की गई जानकारी को अखिल भारतीय आयुर्विज्ञान संस्थान या विनियामक प्राधिकरणों से जिम्मेदार व्यक्ति द्वारा देखा जा सकता है। मैं इन लोगों के लिए मेरे रिकॉर्डों तक पहुंचने की अनुमति देती हूं

तारीख : _____ _____

जगह: _____ हस्ताक्षर / बाएं अंगूठे का छाप

यह प्रमाणित किया जाता है कि उपरोक्त सहमति मेरी उपस्थिति में प्राप्त की गई है**I**

तारीख : _____ _____

जगह: _____ प्रधान अन्वेषक के हस्ताक्षर

1. गवाह **2.** गवाह

_____ _____

हस्ताक्षर हस्ताक्षर

नाम _____ नाम _____

पता _____ पता _____

Annexure-5

Patient Information Sheet

Part-1

You are invited to take part in this study entitled "**Prevalence of Soft Markers in 2nd Trimester sonography in low-risk pregnant women and their association with aneuploidy & invasive prenatal testing**"

It is informed that it is entirely voluntary, and you may refuse to take part or discontinue at any time without losing your right to adequate clinical care.

This research is aimed at studying the prevalence of soft markers in 2nd trimester sonography and to find its effect on chromosomal aneuploidies. If found positive, risk will be modified and if the risk is high you will be directed for amniocentesis for confirmation. This is a special test for which the charges will be borne by the patient.

The expected duration of your participation in this study is till the completion of procedure.

All the records will be kept confidential.

You have the right to ask for any further information that you require.

In case of any doubt regarding the study you are welcome to contact the undersigned personally or telephonically.

Part-2

Investigator's statement

I have explained the purpose, procedures, benefits and harms of the study in detail to the patient/ patient's relative.

All information regarding the study has been disclosed.

Enough Time and Opportunity for asking questions regarding the study was given to the patient/ patient's relative.

Investigator signature: -

Witness signature: -

Phone no.- 9932050140

Annexure-6

रोगी सूचना पत्र

आपको इस अध्ययन में भाग लेने के लिए आमंत्रित किया गया है "कम जोखिम वाली गर्भवती महिलाओं में द्वितीय त्रैमासिक सोनोग्राफी में सॉफ़्ट मार्करों की व्यापकता और गुणसूत्र सम्बंधित बीमारियों (क्रोमोसोमल ऐनुप्लोईडी) और इनवेसिव प्रीनेटल परीक्षण के साथ उनका संबंध"

यह सूचित किया जाता है कि यह पूरी तरह से ऐच्छिक है और आप देखभाल के अपने अधिकार को खोए बिना किसी भी समय हिस्सा ले सकते हैं या बाहर निकल सकते हैं।

इस शोध का उद्देश्य यह जानना है कि दूसरी तिमाही के दौरान अल्ट्रसाउंड में सॉफ़्ट मारकर्स की क्या व्यापकता है और उनका गुणसूत्र सम्बंधित बीमारियों (क्रोमोसोमल ऐनुप्लोईडी) के साथ कितना सम्बंध है। साथ ही यदि होने वाले शिशु में इस बीमारी के होने की सम्भावना अधिक पायी जाएगी तो जन्म से पहले ही इस बीमारी की जाँच के लिए आपकी सहमति के बाद ऐम्नीओसेंटीसिस किया जाएगा।

इस जाँच का भुगतान रोगी को स्वयं करना होगा। अध्ययन के कारण कोई विशिष्ट परेशानी नहीं आयेगी।अगर आप इस अध्ययन में भाग लेने से इनकार करते हैं तो जांच और उचित उपचार नियमित प्रोटोकॉल के रूप में किया जाएगा।

इस अध्ययन में आपकी भागीदारी की अपेक्षित अवधि केवल आपकी डिलीवरी तथा उसके बाद अस्पताल से छुट्टी तक ही है। अध्ययन के कारण कोई विशिष्ट नुकसान नहीं है।

सभी रिकॉर्ड गोपनीय रखें जायेंगे।आपके पास किसी भी प्रकार की अधिक जानकारी लेने का अधिकार है ।

अध्ययन के बारे में किसी भी संदेह की स्थिति में आपका व्यक्तिगत रूप से या टेलीफ़ोनिक रूप से से संपर्क करने के लिए स्वागत है ।

जांचकर्ता का बयान

मैंने अध्ययन के उद्देश्य, प्रक्रियाओं, लाभ और हानि को रोगी / रोगी के रिश्तेदार को विस्तार से समझाया है।

अध्ययन के बारे में सभी जानकारी का खुलासा किया गया है।

अध्ययन के संबंध में प्रश्न पूछने के लिए पर्याप्त समय और अवसर रोगी / रोगी के रिश्तेदार को दिया गया था।

जांचकर्ता हस्ताक्षर: - साक्षी हस्ताक्षर:

फोन नंबर-9932050140

Annexure-7

Key to Master Chart & Master Chart

VARIABLES	CODE
Occupation	-
Housewife	1
Others	2
Socio-economic status	-
Upper	1
Upper middle	2
Lower middle	3
Upper lower	4
Lower	5
Education status of patient / husband	-
Primary	1
Middle School	2
Senior secondary	3
Graduate	4
Higher	5
Address	-
Rural	1
Urban	2
Semi-urban	3
Referred/booked at institution	-
Referred	1
Booked	2
Consanguinity	-
Yes	1
No	2
Obstetric formula	-
Primigravida	1
Second gravida	2
Third gravida	3
>3	4
Number of soft markers	-
Isolated	1
Multiple	2
Associated with structural anomaly	3
Children with previous chromosomal /genetic abnormality	-
Present	1
Absent	0
Name of soft marker	-
Intracardiac Echogenic foci	1
Mild hydronephrosis/ Pyelectasis	2

Short femur	3
Echogenic Bowel	4
Increased Nuchal Fold	5
Aberrant Right Subclavian Artery	6
Absent or Hypoplastic Nasal Bone	7
Ventriculomegaly	8
Choroid Plexus Cyst	9
Single Umbilical Artery	10
Other structural anomaly	11
High/Low risk(modified)	-
high risk	1
low risk	2
Soft marker	-
Present	1
Absent	0
Genetic Counselling	-
Done	1
Not done	2
Opted for	-
Amniocentesis	1
NIPT	2
None	3
Amniocentesis reports	-
Normal	1
Aneuploidy/ other genetic abnormality	2
Outcome of pregnancy	-
Abortion	1
Vaginal delivery	2
Caeserean delivery	3
Preterm	4
FGR	5
Pre eclampsia	6
Stillbirth	7
Aneuploidy	8
Termination	9

Serial No.	AGE	Occupation	Socio-economic status	Education-status of patient	Education-status of patient	address	referred_or_booked	Age at marriage	Consanguinity	POG at time of USG(weeks)	Parity/Gravida	Children with previous chromosomal /genetic abnormality	Any co-morbid conditions	Number of Soft Markers	Name of soft marker	intracardiac_echogenic_foci	mild_pyelectasis	short_femur	echogenic_bowel	increased_nuchal_fold	ARSA	AHNB	VENTRICULOMEGALY	CPC	SUA	STRUCTURAL ANOMALY	USG Details
1	29	1	2	4	4	3	1	28	2	22.2	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Bilateral renal pelvis are dilated, 6.6 mm on right side and 6.0 mm on left side.
2	23	1	2	2	2	3	1	19	2	19.5	3	1	1	1	8	0	0	0	0	0	0	0	1	0	0	0	Bilateral lateral ventricles appear prominent (9mm diameter at the level of atrium).
3	24	1	2	2	2	1	1	18	2	22.2	>3	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	RIGHT - 4.2 MM, LEFT- 4.3 MM
4	27	1	2	4	4	3	1	26	2	18.3	Primigravida	1	GHTN	1	1	1	0	0	0	0	0	0	0	0	0	0	SINGLE INTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRICLE
5	33	1	2	4	4	3	1	26	2	19	3	1	HTN	1	7	0	0	0	0	0	0	1	0	0	0	0	HYPOPLASTIC NB - 4MM
6	34	1	2	4	4	3	1	25	2	20.2	2	1	PRECLAMPSIA	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	B/L SMALL CPC- R: 11 X 6 MM, L- 9X6 MM, SOLITARYT INTRACARDIAC ECHOGENIC FOCI IN LV
7	27	1	2	3	3	3	1	21	2	18.3	2	1	1	3	7, 11	0	0	0	0	0	0	1	0	0	0	1	HYPOPLASTIC NB, CLENCHED FIST
8	29	1	2	4	4	3	2	26	2	22	Primigravida	1	OVERT HYPOTHYROIDISM	1	1	1	0	0	0	0	0	0	0	0	0	0	SOLITARY INTRACARDIAC FOCI IN LEFT VENTRICLE
9	29	1	2	4	4	3	2	27	2	18.5	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	HYPOPLASTIC NB
10	33	1	4	2	2	2	1	20	2	16.1	3	1	GDM	1	9	0	0	0	0	0	0	0	0	1	0	0	choroid plexus cyst around right lateral ventricle
11	27	1	2	3	3	2	1	23	2	18.2	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	B/L choroid plexus cysts seen 5 x 4mm, & 5x3mm,
12	28	1	2	4	4	3	1	24	2	18.3	Primigravida	1	GHTN	1	2	0	1	0	0	0	0	0	0	0	0	0	Right renal Pelvicalyceal system APD- 4.0 mm. Left renal Pelvicalyceal system APD 3.0 mm.
13	27	1	2	2	2	3	1	25	2	19.1	Primigravida	1	GHTN	1	1	1	0	0	0	0	0	0	0	0	0	0	GCA(Detailed)Solitary intracardiac echogenic focus seen in left ventricle part
14	27	1	2	4	4	3	1	27	2	19.5	3	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Bilateral kidneys seen with mildly prominent renal pelvis bilaterally (right APD – 4.8 mm, left APD – 3.5 mm)
15	25	1	1	4	4	2	2	21	2	22	2	1	ANA POSITIVE	1	1	1	0	0	0	0	0	0	0	0	0	0	SOLITARY INTRACARDIAC FOCI IN LEFT VENTRICLE
16	27	1	3	2	2	3	1	24	2	17.3	Primigravida	1	1	2	2, 7	0	1	0	0	0	0	1	0	0	0	0	Bilateral pylectasis in fetal kidney, AHNB,
17	25	2	2	4	4	3	2	19	2	22.5	>3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SOLITARY INTRACARDIAC FOCI IN LEFT VENTRICLE
18	23	1	4	2	2	3	1	21	2	21	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SOLITARY INTRACARDIAC FOCI IN LEFT VENTRICLE
19	28	1	2	4	4	3	1	22	2	19.3	2	1	1	2	2, 9	0	1	0	0	0	0	0	0	1	0	0	19W- SMALL B/L CPC, 33 W- NO E/O CPC, MILD PYELECTASIS... SLIUF at 33+1 weeks POG b/l mild renal pyelectasis (7.5 and 7.3 mm), no e/o choroid plexus cyst, SLIUF at 36+4 weeks , mildprominence of right renal pelvis- 8 mm, left renal pelvis- 6 mm.
20	25	1	4	3	3	3	1	23	1	13	2	ACH'S DISEASE (NOT GENETICALLY CONFI	1	2	4, 7	0	0	0	1	0	0	1	0	0	0	0	ABSENT NB, ECHOGENIC BOWEL
21	30	1	2	4	4	2	1	28	2	20.1	Primigravida	1	1	1	6	0	0	0	0	0	1	0	0	0	0	0	ARSA
22	26	1	2	4	4	3	1	22	2	19	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	suggestive of pre-placental hemorrhage.
23	25	1	2	2	2	1	1	18	2	22.4	Primigravida	1	1	1	8	0	0	0	0	0	0	0	1	0	0	0	Left lateral ventricle is mildly prominent measuring 9mm--> at 30n weeks left lateral ventricle mildly prominly prominent , - 8 mm at trigone
24	27	2	2	4	4	3	1	27	2	17.6	Primigravida	1	1	3	2,11	0	1	0	0	0	0	0	0	0	0	1	Left renal pelvis is mildly prominent measuring ~ 3.5 mm in AP dimeter.
25	25	1	2	4	4	3	2	19	2	19.3	2	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	IEF, PYELECTASIS
26	31	1	1	4	4	3	2	25	2	18.5	2	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	horoids plexus cyst, measuring 3.0 mm in diameter on right side
27	26	1	4	4	4	3	2	21	2	18.6	3	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	mall bilateral choroid plexus cysts are seen, largest measuring 4.5 mm in diameter on the right side
28	27	1	2	3	3	3	1	23	2	19.3	>3	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	SOLITARY ENTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRCLE, MILD B/L RENAL PYELECTASIS F/U USG ON 28/5/2021- NO E/O ANY SOFT MARKER
29	23	1	2	4	4	3	2	22	2	13.2	Primigravida	1	BP	2	2, 9	0	1	0	0	0	0	0	0	1	0	0	and left fetal renal pelvis ~ 5 mm.NO E/O CPC
30	26	1	4	4	4	3	1	24	2	13.2	2	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	HYPOPLASTIC NB, INTERMEDIATE RISK OF DOWNS
31	22	1	2	1	1	3	2	20	1	17.6	2	1	1	2	1, 4	1	0	0	1	0	0	0	0	0	0	0	SOLITARY ENTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRCLE, ECHOGENIC BOWEL
32	23	1	2	4	4	3	1	22	2	19.5	Primigravida	1	GDM on MNT	1	1	1	0	0	0	0	0	0	0	0	0	0	SOLITARY ENTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRCLE
33	29	1	4	2	2	3	1	20	2	20.1	>3	1	1	1	6	0	0	0	0	0	1	0	0	0	0	0	ARSA
34	31	1	2	4	4	3	2	30	2	19.1	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	5/3/2021-Left fetal renal pelvis is prominent measuring ~ 6.0 mm 7/6/2021-Fetal left renal pelvis is dilated, measuring upto 11 mm in AP diameter. Fetal right renal pelvis is prominent, measuring upto 7 mm in AP diameter.
35	27	1	2	4	4	3	2	24	2	19.2	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	Bilateral choroid plexus cysts are seen measuring ~ 4.0 X 4.0 mm on right side and 6.0 x 5.0 mm on left side. No E/O CPC 26 weeks onwards
36	20	1	2	3	3		2	19.4	2	19.4	2	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	7/4/2021-choroid plexus cyst measuring ~7.8 X 4.7 mm on left side. 25/5/2021-No e/o choroid plexus cyst in the lateral ventricle in the present scan.
37	30	1	2	4	4	3	2	27	2	18.4	3	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Bilateral kidneys seen with bilateral prominent renal pelvis measuring ~ 4.3 mm on left side and 4.2 on right side.
38	26	1	2	4	4	3	2	25	2	18.4	Primigravida	1	1	2	2, 9	0	1	0	0	0	0	0	0	1	0	0	R- CPC 6X7 MM, B/L PYELECTASIS- 6X 6 MM
39	29	1	2	4	4	3	1	21	2	12	2	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	NB not ossified--> resolved at 6th month POG
40	25	1	1	4	4	3	2	22	2	17.4	2	1	1	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	SMALL CPC IN LEFT VENTRICLE 3X 4 MM, ECHOGENIC FOCI IN LEFT VENTRICLE
41	26	1	2	4	4	1	2	20	2	21.4	2	1	OVERT HYPOTHYROIDISM	1	2	0	1	0	0	0	0	0	0	0	0	0	B/L MILD HYDRONEPHROSIS
42	25	1	2	1	1	1	1	17	2	19.3	3	Preterm IUD	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	IEF + B/L PYELECTASIS
43	24	1	4	1	1	1	2	22	2	18.4	Primigravida	1	SEVERE MS/ MILD AF/ RHD	1	6	0	0	0	0	0	1	0	0	0	0	0	SLIUF WITH ARSA
44	27	1	4	4	4	3	2	26	2	18.4	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	12/2/2021- B/L MINIMAL PYELECTASIS (<4MM) IN 18 WEEK SCAN. RESOLVED IN 22 WEEKS SCAN.
45	23	1	2	4	4	2	2	20	2	19.5	Primigravida	1	GDM ON MNT	1	9	0	0	0	0	0	0	0	0	1	0	0	B/L CPC- RIGHT: 6.4 X2.7 MM, LEFT- 6 X 3.1 MM RESOLVED IN 32 WEEKS SCAN
46	25	1	2	4	4	1	2	23	2	22.1	Primigravida	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	NUCHAL FOLD THICKNESS -9.2 MM
47	32	1	4	3	3	1	1	18	2	18.4	Primigravida	1	1	1	4	0	0	0	1	0	0	0	0	0	0	0	GRADE II ECHOGENIC BOWEL
48	24	1	2	3	3	3	1	20	2	19	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	INTRACRDIAC ECHOGENIC FOCI OF 2.3 MM IN THE LEFT VENTRICLE
49	25	1	2	4	4	3	1	20	2	20.3	2	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	RIGHT KIDNEY - 4.5MM, LEFT- 4.1 MM
50	21	1	4	4	4	3	2	20	2	26	Primigravida	1	GDM on MNT	1	10	0	0	0	0	0	0	0	0	0	1	0	SUA
51	27	1	2	4	4	3	1	24	2	20.1	2	1 PRE TERM IUD	1	1	1	1	0	0	0	0	0	0	0	0	0	0	ISOLATED INTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRICLE OF THE HEART
52	21	1	4	2	2	1	1	19	2	19.6	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	intrauterine live fetus corresponding to 19 Weeks 6 days of gestation with echogenic cardiac focus.
53	24	1	4	2	2	3	1	22	2	24.1	3	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	prominence of right renal pelvis- 11 mm
54	30	1	2	4	4	3	1	29	2	19.5	Primigravida	1	GDM ON MNT, GESTATIONAL HYPERTENSION, BETA THALASSEMIA TRAIT IN PATIENT, HUSBAND'S HPLC 1T DONE	2	2, 9	0	1	0	0	0	0	0	0	1	0	0	SLIUF AT 19.5 WEEKS, WITH B/L CPC , MILD HYDRONEPHROSIS
55	28	1	4	2	2	3	1	25	2	18	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	13 WEEK USG- NB NOT SEEN. 18 W USG- NB IS HYPOPLASTIC
56	29	1	4	2	2	1	1	18	1	19	>3	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	SINGLE INTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRICLE . B/L RENAL PYELECTASIS. RIGHT-4.5 MM, LEFT 4.4 MM
57	24	1	2	3	3	3	1	22	2	18.6	Primigravida	1	1	1	10	0	0	0	0	0	0	0	0	0	1	0	SLIUF AT 18+6 WEEKS, WITH WITH SUA
58	22	1	2	3	3	3	2	20	2	15	Primigravida	1	PRE ECLAMPSIA WITHOUT SEVERE FEATURES	1	7	0	0	0	0	0	0	1	0	0	0	0	SLIUF at 14+6 week POG, placenta- anterior, NT= 1.2 mm, NB absent, Liq- adequate,
59	22	1	2	3	3	3	2	19	2	18	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF IN LEFT VENTRICLE
60	32	1	2	4	4	3	2	22	2	15	2	1	GESTATIONAL HYPERTENSION	1	7	0	0	0	0	0	0	1	0	0	0	0	T21- >1: 50, T13/18: 1: 1088 SLIUF at 13 weeks POG , ABSENT NB
61	23	1	2	4	4	3	2	23	2	16.5	2	1	1	2	1, 2, 10	1	1	0	0	0	0	0	0	0	1	0	B/L fetal renal pelvis , fetal right sided pleural effusion with single umbilical artery, Diaphragmatic hernia right sided pleural effusion with single umbilical artery SLIUF at 31+1 weeks , placenta anterior , B/L hydronephrosis , Echogenic intracardiac foci in heart , 2 vessel cord and congenital diaphragmatic hernia , normal fetal echo , liquor normal
62	25	1	1	4	4	3	2	23	2	18	Primigravida	1	1	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	SLIUF at 18+4 weeks POG , small echogenicintracardiac focus, left choroid plexus cyst liquor – adequate.
63	27	1	2	4	4	2	2	25	2	18.4	Primigravida	1	GDM, GESTATIONAL HTN	1	1	1	0	0	0	0	0	0	0	0	0	0	,Left ventricle intracardiac echogenic foci bright focus
64	28	1	2	4	4	3	2	27	2	16.5	Primigravida	1	GDM	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	SLIUF at 16+5 week POG , placenta posterior, small choroid plexus cyst 3 mm in right ventricle, tiny echogenic intracardiac foci in left ventricle.
65	30	1	2	4	4	3	2	23	2	20	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF in left ventricle
66	24	1	4	3	3	1	2	18	2	25.1	3	1	GDM ON MNT	1	2	0	1	0	0	0	0	0	0	0	0	0	MILD PYELONEPHROSIS (L~7MM)
67	24	1	3	3	3	1	2	18	2	13.2	>3	DERMOLYSIS BULLOSA IN PREVIOUS 2 BAB	1	3	7,9, 11	0	0	0	0	0	0	1	0	1	0	1	SLIUF at 13+1 week POG with dysmorphic fetal face and cranium ? Holoprosencephaly complex , Midline defect in hard palate Cranial bone poor mineralisation with B/L dilated ventricle , fuse thalamic and dysmorphic choroid plexus . . Nasal bone absent- HYDRANCEPHALY WITH ? SYNDROMIC ASSOCIATION
68	30	1	3	1	1	1	2	28	2	32.3	>3	1	PLACENTA ACCRETA	1	2	0	1	0	0	0	0	0	0	0	0	0	Right fetal kidney – dilated calyces and renal pelvis S/O ? PUJ obstruction , left fetal kidney normal
69	24	1	1	4	4	3	2	22	2	19.5	2	1	1	1	10	0	0	0	0	0	0	0	0	0	1	0	Single umbilical artery(2vessel cord noted),
70	33	1	2	3	3	3	2	30	2	18.2	2	1	GDM ON MNT	1	9	0	0	0	0	0	0	0	0	1	0	0	B/L CPC ~6X6MM on each side
71	25	1	2	3	3	3	1	23	2	24.5	3	1	RAISED BP	1	2	0	1	0	0	0	0	0	0	0	0	0	bilateral renal pyelectasis is seen (right – 6.1 mm, left – 6.3 mm)
72	26	1	2	2	2	3	1	25	2	21.3	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Fetal right side renal PCS appear grossly dilated with dilated renal pelvis AP diameter 1.2 cm, however ureter is not dilated. Fetal left side renal PCS appear grossly dilated with dilated renal pelvis AP diameter 9.0 mm, however ureter is not dilated.
73	27	1	2	2	2	3	1	25	2	19.4	Primigravida	1	PRE ECLAMPSIA WITH SEVERE FEATURES WITH HYPOTHYROIDISM	1	2	0	1	0	0	0	0	0	0	0	0	0	Left fetal renal pelvis measures 4.5 mm (mildly prominent)
74	29	1	4	4	4	2	2	25	2	18.6	2	1	1	1	8	0	0	0	0	0	0	0	1	0	0	0	Ventricular system appear mildly prominent-->Bilateral lateral ventricle are normal in size. AP diameter at atria measures~ 7 mm on both sides.No e/o ventriculomegaly.
75	24	1	4	3	3	2	2	23	2	17.5	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Left fetal renal pelvis measuring ~ 4.0 mm in AP diameter. Right fetal renal pelvis appears normal.
76	22	1	2	4	4	3	2	20	2	19.1	Primigravida	1	GDM ON MNT (CONTROLLED)	1	2	0	1	0	0	0	0	0	0	0	0	0	Bilateral fetal renal pelvis are prominent. (Measuring ~4.0 mm)
77	24	1	2	3	3	1	2	22	2	18	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	Note is made of choroid plexus cyst of size 3.5 mm on both side.
78	29	1	2	4	4	3	1	28	2	18.6	Primigravida	1	GESTATIONAL HYPERTENSION	1	1	1	0	0	0	0	0	0	0	0	0	0	Echogenic focus is seen in left ventricle
79	33	2	1	4	4	3	1	29	2	18.3	Primigravida	1	OVERT HYPOTHYROIDISM WITH GDM ON OHA	1	7	0	0	0	0	0	0	1	0	0	0	0	ABSENT NB
80	35	2	1	4	4	3	1	24	2	17	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF in LEFT VENTRICLE
81	21	1	2	4	4	1	1	20	2	22.4	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	ABSENT NB
82	20	1	2	3	3	1	1	19	2	18.1	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	RIGHT-7.7 MM, LEFT- 7 MM
83	25	1	1	4	4	3	1	25	2	20.3	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	, Choroid plexus cyst on right side 13 x 6 cm
84	24	1	4	2	2	1	1	18	2	17.2	2	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	B/L CPC , LARGER ON LEFT SIDE 8X3 MM
85	26	1	2	2	2	3	1	25	2	20.4	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF IN LEFT VENTRICLE
86	23	1	2	4	4	3	1	21	2	19.1	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF IN LV
87	29	1	2	4	4	3	1	21	2	19.5	2	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	B/L Mild pyelectasis (APD-8 mm & 10 mm)
88	36	1	2	2	2	2	1	32	2	18.6	2	1	GESTATIONAL HTN, HYPOTHYROIDISM	1	1	1	0	0	0	0	0	0	0	0	0	0	SINGLE IEF IN LV
89	31	1	2	4	4	3	1	28	2	23.6	3	1	1	1	6	0	0	0	0	0	1	0	0	0	0	0	SLIUF at 22+6 week POG , breech,aberrant right sunclavian artery, AF-normal , EFW-548gm, Placenta–anterior
90	27	1	2	4	4	3	1	25	2	17.4	3	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	INCREASED NUHCHAL FOLD ~3.2MM
91	23	1	2	2	2	1	2	20	2	18.6	2	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Bilateral kidneys seen. Bilateral kidneys showing mild pyelectasis (left 4.1 mm, right 4.0 mm)
92	28	1	2	3	3	2	1	25	2	19.3	Primigravida	1	1	2	1, 2, 8	1	1	0	0	0	0	0	1	0	0	0	Hypoplastic left nasal bone. Bilateral renal pyelectasis. Echogenic focus in left ventricle.
93	29	1	2	4	4	3	1	27	2	19.4	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF IN LV
94	25	1	2	4	4	3	1	20	2	20.1	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SINGLE IEF IN LV
95	27	1	2	4	4	3	1	25	2	12.6	Primigravida	1	IVF CONCEPTION	2	4, 7	0	0	0	1	0	0	1	0	0	0	0	SLIUF at 12+6 weeks POG, placenta-posterior, NT- normal, NB-hypoplastic, echogenic bowel,
96	22	1	2	4	4	3	1	20	2	12	Primigravida	1	1	3	7, 11	0	0	0	0	0	0	1	0	0	0	1	, NB absent, megacystis, Double bubble sign+ , T21 ~ 1:870 , T18/13- 1:10,
97	32	1	2	4	4	3	1	25	2	19.2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	IEF IN LV
98	20	1	2	4	4	1	1	18	2	18.4	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	MILD HYDRONEPHROSIS ON IN LEFT KIDNEY
99	19	1	2	2	2	1	1	18	2	22.4	Primigravida	1	1	1	8	0	0	0	0	0	0	0	1	0	0	0	INTERMEDIATE RISK OF DOWN'S SYNDROME(1:374), LEFT LATERAL VENTRICLE MEASURING 10MM, U/L LEFT MILD VENTRICULOMEGALY
100	34	1	2	4	4	3	1	30	2	19.3	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SINGLE IEF IN LV
101	30	1	2	4	4	1	2	27	2	19.5	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	Bilateral choroid plexus cysts, largest measuring ~ 5.0 x 3.0 mm.
102	24	2	2	4	4	3	2	22	2	19.2	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	Echogenic Intracardiac focus noted in left ventricle.
103	25	1	1	4	4	3	2	23	2	19.3	3	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Bilateral Fetal pyelectasis seen APD on right side 5 mm and APD on left side 5.5mm.
104	28	1	2	4	4	3	2	25	2	19	Primigravida	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	Focal small intracardiac echogenic focus in left ventricle. Right renal pelvis appears dilated with AP diameter 6mm and left fetal renal pelvis is normal measuring 3mm in AP diameter.
105	26	1	2	4	4	1	1	25	2	19.6	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	An echogenic intra cardiac focus of size 2.4mm is noted in the left ventricle.
106	24	1	4	4	4	2	2	21	2	20.2	Primigravida	1	1	2	1, 7	1	0	0	0	0	0	1	0	0	0	0	, hypoplastic nasal bone, Echogenic cardiac focus in left ventricle,
107	33	1	1	4	4	3	1	30	2	19.5	Primigravida	1	HYPOTHYROIDISM	1	1	1	0	0	0	0	0	0	0	0	0	0	SINGLE IEF IN LEFT VENTRICLE
108	27	1	2	4	4	1	1	21	2	19.6	>3	1	HYPOTHYROIDISM	2	9, 10	0	0	0	0	0	0	0	0	1	1	0	B/L CPC, SINGLE UMBILICAL ARTERY
109	18	1	2	4	4	1	2	18	2	20.1	Primigravida	1	1	2	2, 10	0	1	0	0	0	0	0	0	0	1	0	MILD HYDRONEPHROSIS , RIGHT-6.1MM, LEFT- 7.3 MM. B/L CPC- RIGHTY: 2.9 MM, LEFT- 7.3MM
110	22	1	2	4	4	3	1	21	2	19.1	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SINGLE IEF IN LEFT VENTRICLE
111	28	1	2	4	4	3	1	26	2	23	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	The left renal pelvis measures 4.1mm suggestive of mild pyelectasis. Right renal pelvis is measuring 3.3mm (within normal limits).
112	26	1	2	3	3	1	1	26	2	19.3	3	1	HYPOTHYROIDISM	3	7, 9, 10, 11	0	0	0	0	0	0	1	0	1	1	1	SLIUF at 24+1 week POG , EFW~465+/- 46 gm (<3 rd centile) , Placenta-posterior , Liquor-polyhydramnios, FHR-141 BPM , NB-4.3 mm (Hypoplastic) , B/L Choroidal plexus cyst 15 x 7 mm , Early onset FGR , Hypo plastic nasal bone with increased frontal sloping , Stomach Normal , Single umbilical artery , Fetal cardiac screening reveals evidence of loss of AV valve offset with overriding of aorta with small transverse aortic arch with narrow isthmus.(Coarctation of aorta)
113	26	1	2	4	4	3	1	21	2	22.4	3	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	Nuchal fold thickness – 8 mm.
114	30	1	2	4	4	3	1	28	2	20.5	Primigravida	1	1	2	2, 5	0	1	0	0	1	0	0	0	0	0	0	SLIUF at 20+5 week POG, Increased nuchal fold thickness (6.3 mm), F left renal pelvis dilated(5.6 mm) ,
115	30	1	4	4	4	2	2	21	2	19.4	>3	1	CHRONIC HYPERTENSION	1	2	0	1	0	0	0	0	0	0	0	0	0	MILD DILATATION OF FETAL RENAL PELVIS APD 6MM
116	27	1	4	4	4	2	1	25	2	20	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	BILATERAL RENAL PELVIS ARE MILDLY DILATED (APD MEASURING 6.0 MM ON THE RIGHT SIDE AND 5 MM ON THE LEFT SIDE)
117	30	1	4	4	4	2	1	25	2	19	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	ECHOGENIC INTRACARDIAC FOCUS NOTED IN THE LEFT VENTRICLE
118	21	1	4	2	2	3	2	18	2	22.2	2	1	1	1	10	0	0	0	0	0	0	0	0	0	1	0	single umbilical artery in umbilical cord
119	25	1	2	3	3	3	2	18	2	13.1	3	1	K/C/O SLE x3years	1	7	0	0	0	0	0	0	1	0	0	0	0	Single live fetus of 13+1 week POG , NT 3.1 mm, NB not visualised
120	30	1	4	3	3	3	2	7	2	22	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SLIUF at 22+0 weeks POG
121	22	1	2	4	4	3	1	22	1	18.2	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Mild hydronephrosis/ Pyelectasis
122	30	1	2	4	4	3	1	28	2	20.5	Primigravida	1	1	2	2, 5	0	1	0	0	1	0	0	0	0	0	0	
123	28	2	1	4	4	3	2	26	2	22.5	>3	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	Increased Nuchal Fold
124	23	1	2	2	2	3	1	18	2	18.3	3	1	1	2	1, 2, 6	1	1	0	0	0	1	0	0	0	0	0	
125	27	1	1	4	4	3	2	22	2	19.5	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	SLIUF 20 WEEKS WITH LEFT KIDNEY Mild hydronephrosis/ Pyelectasis
126	25	1	1	4	4	3	2	22	2	19.5	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	SLIUF at 19+5 weeksPOG
127	28	1	1	4	4	3	1	25	2	19.1	2	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	SLIUF 19WEEKS with BILATERAL KIDNEYS Mild hydronephrosis/ Pyelectasis
128	23	1	2	4	4	3	1	22	2	20.3	2	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	SLIUFat 20+3weeks
129	28	1	1	4	4	3	1	22	1	18.2	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Mild hydronephrosis/ Pyelectasis
130	22	1	4	4	4	3	1	22	2	18.3	Primigravida	1	1	2	2, 3	0	1	1	0	0	0	0	0	0	0	0	RIGHT RENAL PELVIS IS PROMINENT (3.5 MM)
131	24	1	4	4	4	3	1	20	2	20.4	2	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	LEFT RENAL PELVIS MEASURES 4 MM AND RIGHT RENAL PELVIS 4MM
132	30	1	4	4	4	2	1	21	2	19.4	>3	1	DJ STENT INSITU WITH LEFT URETERIC CALCULI WITH MILD HDUL	1	2	0	1	0	0	0	0	0	0	0	0	0	BILATERAL KIDNEYS ARE NORMAL WITH RENAL PELVIS APD (RIGHT SIDE – 3.9 MM AND LEFT SIDE – 4.0 MM)
133	34	1	4	2	2	1	1	19	2	19	>3	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	BILATERAL CHOROID PLEXI SHOW FEW SMALL CYSTS, LARGEST MEASURING ~ 3 X 2 MM
134	26	1	4	2	2	3	2	25	2	19.5	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SMALL ECHOGENIC INTRACARDIAC FOCUS IN THE LEFT VENTRICLE
135	25	1	4	3	3	3	1	22	2	20.3	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
136	29	1	4	4	4	3	1	25	2	21		1	1	1	6	0	0	0	0	0	1	0	0	0	0	0	DUCTUS TO AORTIC ISTHMUS RATIO IS 2.3/ 1.6 >1, POSSIBILITY OF AORTIC COARCTATION. ALSO THERE IS AN EXTRA VESSEL SEEN LEFT TO PULMONARY ARTERY DRAINING INTO CORONARY SINUS-SUGGESTING PERSISTENT LSVC. DURING THE CARDIAC EXAMINATION, THERE IS ONE EPISODE OF ASYSTOLE SEEN.
137	27	1	4	2	2	2	1	26	2	31.1	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	FETAL RENAL PELVIC APD 5.5 MM ON THR RIGHT SIDE (PROMINENT) AND 3.8 MM ON LEFT SIDE
138	28	1	3	2	2	3	1	24	2	20.3	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	LEFT RENAL APD MEASURES 4.2MM
139	21	1	4	4	4	3	1	20	2	18.3	Primigravida	1	1	2	2, 4	0	1	0	1	0	0	0	0	0	0	0	ECHOGENIC CARDIAC FOCUS IS SEEN IN LEFT VENTRICLE.VISUALIZED BOWEL LOOPS APPEAR MILDLY ECHOGENIC.
140	25	1	3	4	4	3	1	22	2	19.3	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	WORRIED ABOUT THE CHANCE OF CARDIAC ANOMALIES IN THE BABY
141	23	1	1	3	3	3	1	21	2	19.2	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SLIUF AT 19+2 WEEKS POG WITH SMALL INTRACARDIAC ECHOGENIC FOCI IN LEFT VENTRICLE
142	26	1	4	4	4	2	1	22	2	19	Primigravida	1	1	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	SLIUF AT 19 WEEKS POG,EICF IN LEFT VENTRICLE ,BILATERAL CPCs AS DETAILED
143	27	1	4	4	4	3	1	25	2	33.1	Primigravida	1	HYPOTHYROIDISM	1	2	0	1	0	0	0	0	0	0	0	0	0	APD OF RIGHT KIDNEY- 20MM, LEFT KIDNEY - 8 MM
144	23	1	4	4	4	1	2	22	1	18.2	2	1	1	2	2, 3, 9	0	1	1	0	0	0	0	0	1	0	0	REDUCED LENGTH OF LONG BONES, INTRACARDIAC ECHOGENIC FOCI IN B/L VENTRICLES BILATERAL CHOROID PLEXUS CYST
145	22	1	4	4	4	2	1	20	2	19.6	Primigravida	1	HYPOTHYROIDISM	1	9	0	0	0	0	0	0	0	0	1	0	0	A CHOROID PLEXUS CYST OF 6 X 3 MM IS SEEN IN LEFT VENTRICLE
146	29	1	4	4	4	3	1	28	2	17.6	Primigravida	1	1	3	1,11	1	0	0	0	0	0	0	0	0	0	1	LEFT MULTICYSTIC DYSPLASTIC KIDNEY, INTRACARDIAC FOCI IN LEFT VETRICLE
147	25	1	4	2	2	1	2	24	2	19.5	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	A VERY SMALL SUBCENTIMETRIC CHOROID CYST IS SEEN ON LEFT SIDE OF SIZE 2 X 1.8 MM
148	22	1	4	2	2	2	2	20	2	18.6	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	SMALL INTRACARDIAC ECHOGENIC FOCI NOTED IN LEFT VENTRICLE
149	21	1	4	4	4	2	2	20	2	19.1	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	APD OF RIGHT KIDNEY - 6MM, LEFT- 7MM
150	22	1	2	2	2	2	1	20	2	27.1	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	ISOLATED IEF IN LEFT VENTRICLE
151	31	1	4	2	2	1	1	22	2	19.4	>3	1	DIABETES MELLITUS ON INSULIN WITH GESTATIONAL HYPERTENSION	1	10	0	0	0	0	0	0	0	0	0	1	0	single umbilical artery in umbilical cord
152	24	1	2	2	2	1	2	23	2	19.2	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	B/L RENAL PYELECTASIS (RENAL PELVIS AP DIAMETER =R-5.0 MM , L- 5.5 MM)
153	24	1	2	4	4	3	1	23	2	20.2	Primigravida	1	1	3	10, 11	0	0	0	0	0	0	0	0	0	1	1	SLIUF AT 20+2 WEEKS POG WITH SINGLE UMBLICAL ARTERY
154	24	1	2	4	4	3	1	22	2	20.3	Primigravida	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	NUCHAL FOLD THICKNESS-7.2 MM
155	25	1	4	2	2	2	2	23	2	13.2	Primigravida	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	NUCHAL TRANSLUCENCY THICKNED -2.8 MM WITH MINIMAL PLEURAL EFFUSION
156	25	1	4	4	4	3	1	23	2	18.2	3	1	1	2	2, 9	0	1	0	0	0	0	0	0	1	0	0	
157	28	1	2	4	4	3	1	27	2	17.1	2	1	1	2	3, 8, 10	0	0	1	0	0	0	0	1	0	1	0	BILATERAL FEMUR APPEARS SHORT AND CURVED. BILATERAL VENTRICULOMEGALY. RIGHT LATERAL VENTRICLES 10MM AND LEFT VENTRICLE MEASURES 16MM SINGLE UMBLICAL ARTERY
158	28	1	2	4	4	3	1	26	2	20.6	Primigravida	1	GDM ON MNT WITH IHCP	1	6	0	0	0	0	0	1	0	0	0	0	0	Aberrant Right Subclavian Artery
159	24	1	2	4	4	3	1	22	2	20.3	Primigravida	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	NUCHAL FOLD THICKNESS IS 7.2 MM
160	29	1	4	2	2	2	2	27	2	22.1	2	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	Absent or Hypoplastic Nasal Bone
161	25	1	4	3	3	2	2	22	2	18.2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	Intracardiac Echogenic foci
162	31	1	4	3	3	2	2	20	2	18.6	>3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	Intracardiac Echogenic foci
163	27	1	4	2	2	3	2	25	2	20.1	3	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	Absent or Hypoplastic Nasal Bone
164	23	1	4	3	3	1	2	21	2	22	Primigravida	1	1	1	3	0	0	1	0	0	0	0	0	0	0	0	LONG BONES OF FEMUR, TIBIA, ULNA APPEAR SHORT < 3 CENTILE , S/O SKELETAL DYSPLASIA
165	22	1	4	4	4	3	1	22	2	20.4	Primigravida	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	Intracardiac Echogenic foci
166	25	1	4	3	3	1	2	23	2	13.2	Primigravida	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	NUCHAL TRANSLUCENCY THICKENED -2.8 MM WITH MINIMAL PLEURAL EFFUSUION
167	30	1	4	2	2	2	2	25	2	19.4	2	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	A 6.7 X 7.4 MM CHOROID PLEXUS CYST ON RIGHT SIDE
168	26	1	4	3	3	1	2	24	2	18.6		1	1	2	1, 7, 9	1	0	0	0	0	0	1	0	1	0	0	Intracardiac Echogenic foci, Absent or Hypoplastic Nasal Bone, Choroid Plexus Cyst
169	24	1	2	2	2	1	2	23	2	19.2	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Mild hydronephrosis/ Pyelectasis
170	24	1	4	4	4	3	1	23	2	20.2	Primigravida	1	1	2	9, 10	0	0	0	0	0	0	0	0	1	1	0	Choroid Plexus Cyst, Single Umbilical Artery
171	25	1	4	4	4	3	1	24	2	22.4	Primigravida	1	1	1	6	0	0	0	0	0	1	0	0	0	0	0	Aberrant Right Subclavian Artery
172	25	1	2	4	4	3	1	24	2	20.4	2	1	K/C/O FOLLICULAR ADE1MA OF THYROID	1	5	0	0	0	0	1	0	0	0	0	0	0	THICKNESS 7 MM . POSSIBILITY OF ARNOLD CHIARI MALFORMATION NOT BE RULED OUT
173	32	1	4	1	1	2	2	18	2	18.3	3	1	1	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	B/L CHOROID PLEXUS OF 5.4 X 6.5 MM AND 7.8 X9.9 MM
174	26	1	4	1	1	2	1	20	2	18.1	2	YES , DMD IN BOTH TWIN	1	1	10	0	0	0	0	0	0	0	0	0	1	0	Single Umbilical Artery
175	33	1	4	4	4	2	1	23	2	14	Primigravida	1	OVERT DM, PRE ECLAMPSIA WITH SEVERE FEATURES	3	10, 11	0	0	0	0	0	0	0	0	0	1	1	single umbilical artery , coarctation of aorta,
176	34	1	3	1	1	2	1	30	2	18.6	2	1	1	3	8,1,11	1	0	0	0	0	0	0	1	0	0	1	Neural tube defect(meningocele/Meningomyelocele) and Type II Arnold chiari malformation, due Cleak Lateral ventricles mildly dilated(9.5mm) Cerebrum and brain stem banana shaped Crowing at for
177	18	1	2	4	4	3	1	18	2	29.4	Primigravida	1	1	1	8	0	0	0	0	0	0	0	1	0	0	0	SLIUF with mild ventriculomegaly with multiple periventricular cysts and cyst near 4th ventricle S/O periventricular leucomalacia (sequale to ischaemia), few cysts communicating to ventricle. Multiple intraparenchymal hemorrhagic foci seen in B/L frontal lobe, moderate fetal ascites with B/L pleural effusion, subcutaneous edema with cardiomegaly with significant fetal bradycardia and
178	24	1	3	4	4	2	1	22	2	23.2	Primigravida	1	GDM ON OHA	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	chogenic cardiac focus of 2.3 x 1.6 mm in left ventricle, Right kidney- 5.7 mm, no c/o significant pyelectasis.
179	32	1	2	1	1	1	1	26	2	22	2	1	GDM ON MNT (CONTROLLED)	1	2	0	1	0	0	0	0	0	0	0	0	0	Mild left renal pyelectasis (pelvis AP- 9.1 mm),
180	27	1	1	4	4	3	1	25	2	22.3	2	1	1	1	5	0	0	0	0	1	0	0	0	0	0	0	increased nf thickness-6.7 mm
181	26	1	4	2	2	2	1	24	2	21.1	2	YES , MTP 1 YEAR BACK IVO MULTIPLE ANOMALIES IN FETUS AT 6TH MONTH POG	1	2	5, 2	0	1	0	0	1	0	0	0	0	0	0	open 4th ventricle, thickened NF, left sided CDH, right hydroureteronephrosis
182	34	1	2	4	4	3	1	29	2	19	2	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
183	26	1	3	3	3	1	1	26	2	19	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
184	31	1	2	3	3	3	1	31	2	18	>3	1	OVERT HYPOTHYROIDISM	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
185	30	1	2	3	3	3	1	28	2	18	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
186	27	1	4	4	4	3	1	24	2	20.3	2	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
187	29	1	4	4	4	2	1	28	2	18.4	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
188	27	1	3	4	4	3	1	25	2	19.3	Primigravida	1	1	1	9	0	0	0	0	0	0	0	0	1	0	0	CHOROID PLEXUS CYST IN RIGHT VENTRICLE
189	26	1	1	4	4	3	1	23	2	20.6	Primigravida	1	1	3	1, 2,11	1	1	0	0	0	0	0	0	0	0	1	Intracardiac Echogenic foci, Mild hydronephrosis/ Pyelectasis, right sided CTEV
190	24	1	3	1	3	1	1	21	2	21	3	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	Intracardiac Echogenic foci, Mild hydronephrosis/ Pyelectasis
191	23	1	3	4	4	3	1	22	2	18.1	Primigravida	1	1	2	5, 4	0	0	0	1	1	0	0	0	0	0	0	Increased Nuchal Fold, Echogenic Bowel
192	25	1	3	4	4	3	2	24	2	25.5	Primigravida	1	1	2	2, 8	0	1	0	0	0	0	0	1	0	0	0	Mild hydronephrosis/ Pyelectasis, Ventriculomegaly
194	24	1	2	1	4	2	1	23	2	20.2	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	ABSENT /HYPOPLASTIC NASAL BONE
194	25	1	2	3	3	2	1	24	2	23.2	Primigravida	1	1	3	10, 11	0	0	0	0	0	0	0	0	0	1	1	Single Umbilical Artery, Other structural anomaly-cleft lip & cleft palate, absent left kidney
195	25	1	1	4	4	3	2	23	2	23.4	Primigravida	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	Intracardiac Echogenic foci, Mild hydronephrosis/ Pyelectasis
196	22	1	3	4	5	3	2	22	2	19.6	Primigravida	1	1	2	1, 2	1	1	0	0	0	0	0	0	0	0	0	Intracardiac Echogenic foci, Mild hydronephrosis/ Pyelectasis
197	25	1	2	3	4	1	1	23	2	18	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	ABSENT NB
198	23	1	3	3	4	1	1	22	2	19	Primigravida	1	1	1	4	0	0	0	1	0	0	0	0	0	0	0	Echogenic Bowel
199	28	1	3	3	4	1	1	25	2	20	Primigravida	1	1	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	Intracardiac Echogenic foci, Choroid Plexus Cyst
200	26	1	3	3	3	1	1	28	2	18.5	2	1	1	2	1, 9	1	0	0	0	0	0	0	0	1	0	0	Intracardiac Echogenic foci, Choroid Plexus Cyst
201	31	1	2	4	3	1	1	25	2	20	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	Absent or Hypoplastic Nasal Bone
202	28	1	3	4	3	1	1	25	2	21.2	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	Absent or Hypoplastic Nasal Bone
203	26	1	1	4	5	3	1		2	19.3	Primigravida	1	1	1	8	0	0	0	0	0	0	0	1	0	0	0	USG suggestive of non – visualization of CSP along with Parallel orientation of frontal horns of bilateral ventricles, corpus callosum agenesis with septo - optic dysplasia, right lateral ventricle & CM appears prominent.
204	30	1	1	5	5	3	1	28	2	19.6	Primigravida	1	1	1	2	0	1	0	0	0	0	0	0	0	0	0	Left kidney absent,lying down adrenal, right kidney 5.7x2.4 cm enlarged in size in fetuS
205	21	1	1	5	5	3	1	20	2	19.2	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	Absent nasal bone
206	24	1	1	5	5	3	1	25	2	22	Primigravida	1	1	1	3	0	0	1	0	0	0	0	0	0	0	0	NIHF, short long bones
207	22	1	1	5	5	3	1	20	2	21	Primigravida	1	1	1	7	0	0	0	0	0	0	1	0	0	0	0	ABSENT /HYPOPLASTIC NASAL BONE

Serial No.	Midtrimester apriori Risk	Combined Screening Risk	Quad Screening Risk	Either Serum biochemical markers of aneuploidy done or no	LIKELIHOOD RATIO	Modified risk	High/ low risk	Genetic Counselling	Opted for	AMNIOCENTESIS	NIPT	NONE	Sample sent for	Amniocentesis reports	OUTCOME OF PREGNANCY	ABORTION	VAGINAL_DELIVERY	CAESEREAN_DELIVERY	PRETERM	FGR	PRECLAMPSIA	STILLBIRTH	ANEUPLOIDY	TERMINATION	APGAR SCORE AT 1'	APGAR SCORE AT 5'	BIRTH WEIGHT	FOLLOW UP OF THE BABY	What did the disclosure mean to you?	How did it affect you?	How did you experience the information given?	Why did u choose or refuse amniocentesis/ NIPT?	Would you like to keep the child despite Down's syndrome?	Would you like to know more about the condition through
1	1:810	NOT DONE	NOT DONE	No	0.95	1:426	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3266	NORMAL	WAS UPSET TI	Frustrated	Unpleasant		Yes	Doctor
2	1:1030	NOT DONE	NOT DONE	No	3.81	1:270	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3726	Ultrasound Cranium The	WAS UPSET TI	Worried	Unpleasant		Yes	Doctor
3	1:1060	LOW RISK	NOT DONE	Yes	1.08	1:558	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2757	Both kidneys are normal	WAS UPSET TI	Frustrated	Unpleasant		Yes	Doctor
4	1:940	NOT DONE	NOT DONE	No	0.95	1:336	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	1875	ASYMPTOMATIC HYPO	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
5	1:441	NOT DONE	LOW RISK	Yes	6.58	1:67	1	1	1	1	0	0	QF-PCR, Karyotyping	1	3	0	0	1	0	0	0	0	0	0	1	5	3020	1. Non Immune hydrops	WAS WORRIEI	All of the above	Shocking	TO GET A FAIF	Yes	Doctor
6	1:351	NOT DONE	NOT DONE	No	0.95	1:369	2	1	3	0	0	1			3, 6	0	0	1	0	0	1	0	0	0	8	9	2960	NORMAL	WAS UPSET C	Frustrated	Shocking		Yes	Doctor
7	1:940	NOT DONE	LOW RISK	Yes	6.59		1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	3255	NORMAL	WAS UPSET C	Worried	Unpleasant	TO KNOW WH	Yes	Doctor
8	1:810	NOT DONE	NOT DONE	No	0.95	1:289	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	3	9	2500	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
9	1:810	LOW RISK	NOT DONE	Yes	6.58	1:123	1	1	2	0	1	0		1	2	0	1	0	0	0	0	0	0	0	8	9	2731	NORMAL	WAS WORRIEI	Frustrated	Unpleasant	O KNOW WHA	Yes	Doctor
10	1:441	NOT DONE	NOT DONE	No	0.13	1:3392	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3323	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
11	1:940	NOT DONE	LOW RISK	Yes	0.13	1:10138	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	2987	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
12	1:880	LOW RISK	NOT DONE	Yes	1.08	1:436	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2886	BABY DID NOT PASS U	WAS UPSET TI	Worried	Unpleasant		Yes	Doctor
13	1:940	NOT DONE	NOT DONE	No	0.95	1:336	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	10	3195	NORMAL	WAS UPSET C	Worried	Unpleasant		Yes	Doctor
14	1:940	NOT DONE	NOT DONE	No	1.08	1:495	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2791	NORMAL	WAS UPSET TI	Frustrated	Unpleasant		Maybe	Doctor
15	1:1030	LOW RISK	NOT DONE	Yes	0.95	1:368	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	6	7	2616	Atrial septal aneurysmm	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
16	1:940	NOT DONE	NOT DONE	No	32.66	1:289	1	1	1	1	1	0	QF-PCR, Sanger sequencing	1	3	0	0	1	0	0	0	0	0	0	8	9	2560	NORMAL	WAS WORRIEI	Frustrated	Shocking	TO GET A FAIF	Yes	Doctor
17	1:1030	NOT DONE	NOT DONE	No	0.95	1:368	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2891	NORMAL	WAS WORRIEI	Worried	Unpleasant		Maybe	Doctor
18	1:1090	NOT DONE	NOT DONE	No	0.95	1:389	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	3266	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
19	1:880	NOT DONE	LOW RISK	Yes	1.08	1:6704	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3956	NORMAL	WAS WORRIEI	Worried	Unpleasant		Maybe	Doctor
20	1:1030	LOW RISK	NOT DONE	Yes	83.69	1:5	1	1	1	1	0	0	Chromosomal micro-array, Clinical Exome	1	3	0	0	1	0	0	0	0	0	0	8	10	2900	NORMAL	WAS WORRIEI	Frustrated	Unpleasant	TO GET A FAIF	Yes	Doctor
21	1:720	NOT DONE	LOW RISK	Yes	3.94	1:2538	2	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	10	3000	NORMAL	WAS WORRIEI	Frustrated	Unpleasant	TO GET A FAIF	Yes	Doctor
22	1:990	LOW RISK	NOT DONE	Yes	0.95	1:354	2	1	3	0	0	1			9	0	0	0	0	0	0	0	0	1	0	0	130	MTP	WAS WORRIEI	Frustrated	Shocking		Yes	Doctor
23	1:1030	NOT DONE	NOT DONE	No	3.81	1:270	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3440	NORMAL	WAS WORRIEI	Frustrated	Shocking		Maybe	Doctor
24	1:940	NOT DONE	NOT DONE	Yes	1.08	1:336	1	1	3	0	0	1			9	0	0	0	0	0	0	0	0	1	0	0	70	Posterior urethlal valve o	WAS WORRIEI	Worried	Unpleasant		No	Doctor
25	1:1030	LOW RISK	NOT DONE	Yes	7.87	1:368	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3116	NORMAL	WAS WORRIEI	Frustrated	Shocking		Yes	Doctor
26	1:630	LOW RISK	NOT DONE	Yes	0.13	1:76923	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	10	3000	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
27	1:990	LOW RISK	NOT DONE	Yes	0.13	1:76923	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3829	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
28	1:940	LOW RISK	NOT DONE	Yes	7.87	1:178	1	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3702	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
29	1:1090	NOT DONE	NOT DONE	No	1.08	1:1009	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	3058	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
30	1:990	LOW RISK	NOT DONE	Yes	6.58	1:92	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2954	NORMAL	WAS VERY AN	Worried	Unpleasant	TO GET AN IDE	Yes	Doctor
31	1:1110	NOT DONE	NOT DONE	No	12.06	1:210	1	1	1	1	0	0	QF-PCR, Karyotyping	1	3	0	0	1	0	0	0	0	0	0	8	9	3000	NORMAL	WAS WORRIEI	Frustrated	Shocking	TO GET A AFA	Yes	Doctor
32	1:1090	LOW RISK	NOT DONE	Yes	0.95	1:389	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2388	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
33	1:810	NOT DONE	NOT DONE	No	3.79	1:213	1	1	1	1	0	0	Karyotyping, FISH	1	2	0	1	0	0	0	0	0	0	0	8	9	3500	BABY DIAGNOSED WIT	WAS WORRIEI	Frustrated	Unpleasant	TO GET A FAIF	Yes	Doctor
34	1:630	LOW RISK	NOT DONE	Yes	1.9	1:332	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2928	PASSED URINE AFTER	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
35	1:940	NOT DONE	LOW RISK	Yes	0.13	1:6246	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	1976	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
36	1:1140	NOT DONE	NOT DONE	No	0.13	1:8769	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	2924	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
37	1:720	NOT DONE	LOW RISK	Yes	1.08	1:666	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3016	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
38	1:990	LOW RISK	NOT DONE	Yes	1.08	1:9259	2	1	1	1	0	0	Chromosomal micro-array	1	2	0	1	0	0	0	0	0	0	0	9	9	2700	NORMAL	WAS WORRIEI	Worried	Unpleasant	TO GET A FAIF	Yes	Doctor
39	1:810	LOW RISK	NOT DONE	Yes	6.58	1:67	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	10	2283	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
40	1:1030	NOT DONE	NOT DONE	No	0.95	1:1084	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2603	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
41	1:990	NOT DONE	NOT DONE	No	1.08	1:521	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	10	2012	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
42	1:1030	NOT DONE	NOT DONE	No	7.87	1:195	1	1	1	1	0	0	Karyotyping,FISH	2	2,4,7	0	1	0	1	0	0	1	1	0	0		677	DOWN'S SYNDROME II	WAS WORRIEI	Worried	Unpleasant	TO GET A FAIF	Yes	Doctor
43	1:1060	NOT DONE	LOW RISK	Yes	3.94	1:269	2	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	3, 5	0	0	1	0	1	0	0	0	0	5	9	2287	NORMAL	WAS WORRIEI	Frustrated	Shocking	TO GET A FAIF	No	Doctor
44	1:940	NOT DONE	NOT DONE	No	1.08	1:495	2	2	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	3213	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
45	1:1090	NOT DONE	NOT DONE	No	0.13	1:8384	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3089	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
46	1:1030	NOT DONE	LOW RISK	Yes	3.79	1:61	1	1	2	0	1	1		1	3	0	0	1	0	0	0	0	0	0	8	9	2900	NORMAL	WAS WORRIEI	Worried	Unpleasant	TO GET A FAIF	Yes	Doctor
47	1: 540	LOW RISK	NOT DONE	Yes	6.1	1: 89.4	1	1	1	1	0	0	QF-PCR,CMA	1	2	0	1	0	0	0	0	0	0	0	1	2	1372	Baby died at 33 minutes of life .WES showed Aicardi-Goutieres syndrome-1(OMIM#225750) .	WAS WORRIEI	Frustrated	Shocking	TO GET A FAIF	No	Doctor
48	1:1060	LOW RISK	NOT DONE	Yes	0.95	1:379	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2670	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
49	1:1030	NOT DONE	NOT DONE	No	1.08	1:542	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	10	2920	PASSED URINE NORM	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
50	1:1130	LOW RISK	NOT DONE	Yes	0.13	1:1538	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	2594	NORMAL	WAS WORRIEI	Worried	Traumatic		Yes	Doctor
51	1:940	LOW RISK	NOT DONE	Yes	0.95	1:336	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3094	NORMAL	WAS WORRIEI	Worried	Shocking		Yes	Doctor
52	1:1130	LOW RISK	NOT DONE	Yes	0.95	1:404	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3934	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
53	1:1060	NOT DONE	NOT DONE	No	1.08	1:558	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2900	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
54	1:720	LOW RISK	NOT DONE	Yes	1.08	1:558	2	1	2	0	1	1		1	3	0	0	1	0	0	0	0	0	0	8	9	3702	NORMAL	WAS WORRIEI	Worried	Shocking	TO GET A FAI	No	Doctor
55	1:880	NOT DONE	NOT DONE	No	6.58	1:133	1	1	1	1	0	0	Chromosomal micro-array	1	3	0	0	1	0	0	0	0	0	0	8	9	2900	NORMAL	WAS WORRIEI	Worried	Unpleasant	NIPT DONE ON	No	Doctor
56	1:810	LOW RISK	NOT DONE	No	7.87	1:153	1	2	3	0	0	1			2, 6	0	1	0	0	0	1	0	0	0	8	9	2789	BABY IN NICU I.V.O SE	WAS WORRIEI	Frustrated	Shocking		No	Doctor
57	1:1060	LOW RISK	NOT DONE	Yes	0.13	1:76923	2	1	3	0	0	1			2, 4	0	1	0	1	0	0	0	0	0	8	9	2431	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
58	1:1110	NOT DONE	NOT DONE	No	6.58	1:7923	2	1	2	0	1	1		1	2	0	1	0	0	0	0	0	0	0	8	9	2175	NORMAL	WAS WORRIEI	Frustrated	Traumatic	TO GET A FAIF	Yes	Doctor
59	1:1110	LOW RISK	NOT DONE	Yes	0.95	1:397	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2360	NORMAL	WAS UPSET CHILI	Worried	Unpleasant		Yes	Doctor
60	1:540	LOW RISK	NOT DONE	Yes	6.58	1:7	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2203	NORMAL	WAS WORRIEI	Worried	Unpleasant	TO GET A CON	Yes	Doctor
61	1:1090	LOW RISK	NOT DONE	Yes	7.87		1	1	1	1	0	0	QF-PCR	1	2	0	1	0	0	0	0	0	0	0	5	7	1700	Baby has cystic swelling	WAS WORRIEI	Frustrated	Unpleasant	TO GET A CON	Yes	Doctor
62	1:1030	NOT DONE	NOT DONE	No	0.95	1:1084	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3091	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
63	1:940	NOT DONE	NOT DONE	No	0.95	1:336	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3044	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
64	1:880	NOT DONE	NOT DONE	No	0.95	1:926	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	2985	WAS NORMAL	WAS WORRIEI	Frustrated	Shocking		Yes	Doctor
65	1:720	NOT DONE	LOW RISK	Yes	0.95	1:257	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	10	2980	NORMAL	WAS WORRIEI	Worried	Traumatic		Yes	Doctor
66	1:1060	NOT DONE	NOT DONE	No	1.08	1:558	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2998	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
67	1:1060	LOW RISK	NOT DONE	Yes			1	1	3	0	0	1			9	0	0	0	0	0	0	0	0	1	0	0	36	MTP	WAS WORRIEI	Frustrated	Shocking		No	Doctor
68	1:720	NOT DONE	NOT DONE	No	1.08	1:666	2	2	3	0	0	1			3, 4	0	0	1	1	0	0	0	0	0	5	8	3094	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
69	1:1060	LOW RISK	NOT DONE	Yes	0.13	1:24969	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2970	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
70	1:441	NOT DONE	NOT DONE	No	0.13	1:3392	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	1755	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
71	1:1030	NOT DONE	NOT DONE	No	1.08	1:542	2	1	3	0	0	1			3, 6	0	0	1	0	0	1	0	0	0	8	9	3560	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
72	1:990	NOT DONE	NOT DONE	No	1.08	1:521	2	1	3	0	0	1			2, 6	0	1	0	0	0	1	0	0	0	8	8	2729	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
73	1:940	NOT DONE	NOT DONE	No	1.08	1:491	2	1	3	0	0	1			2, 6, 7	0	1	0	0	0	1	1	0	0	0	0	701	Preterm Vaginal Delivery	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
74	1:810	NOT DONE	NOT DONE	No	3.81	1:212	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	10	2742	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Maybe	Doctor
75	1:1060	NOT DONE	NOT DONE	No	1.08	1:558	2	1	3	0	0	1			3, 5	0	0	1	0	1	0	0	0	0	7	9	2080	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
76	1:1110	NOT DONE	NOT DONE	No	1.08	1:584	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	2912	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
77	1:1060	LOW RISK	NOT DONE	Yes	0.13	1:44761	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	3532	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
78	1:810	LOW RISK	NOT DONE	Yes	1.08	1:426	2	1	3	0	0	1			3, 4, 6	0	0	1	1	0	1	0	0	0	8	9	2585	NORMAL	WAS WORRIEI	Frustrated	Unpleasant		Yes	Doctor
79	1:441	LOW RISK	NOT DONE	Yes	6.58	1:63	1	1	1	1	0	0	Chromosomal micro-array	1	2	0	1	0	0	0	0	0	0	0	9	10	2806	NORMAL	WAS WORRIEI	Worried	Unpleasant	FOR DIAGNOS	Maybe	Doctor
80	1:272	LOW RISK	NOT DONE	Yes	0.95	1:97	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2800	NORMAL	WAS UPSET CHILI	Worried	Traumatic	TO GET A CON	No	Doctor
81	1:1130	NOT DONE	NOT DONE	No	6.58	1:171	1	1	1	1	0	0	Karyotyping, FISH	1	2	0	1	0	0	0	0	0	0	0	8	9	2800	NORMAL	WAS WORRIE	Frustrated	Unpleasant	TO GET A PRO	Yes	Doctor
82	1:1140	NOT DONE	NOT DONE	No	1.08	1:407	2	1	3	0	0	1			3,5	0	0	1	0	1	0	0	0	0	9	9	2100	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
83	1:1030	NOT DONE	NOT DONE	No	0.13	1:7923	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3668	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
84	1:1060	NOT DONE	LOW RISK	Yes	0.13	1:384615	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3253	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
85	1:990	LOW RISK	NOT DONE	Yes	0.95	1:354	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2895	NORMAL	WAS WORRIEI	Worried	Shocking		Yes	Doctor
86	1:1090	NOT DONE	NOT DONE	No	0.95	1:389	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3500	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
87	1:810	NOT DONE	NOT DONE	No	0.95	1:426	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	10	2780	NORMAL	WORRIED THE CH	Worried	Shocking		Yes	Doctor
88	1:205	NOT DONE	LOW RISK	Yes	0.95	1:73	1	1	3	0	0	1			3,4	0	0	1	1	0	0	0	0	0	8	9	1579	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
89	1:630	NOT DONE	NOT DONE	No	3.94	1:159	1	1	1	1	0	0	Karyotyping, FISH	1	2	0	1	0	0	0	0	0	0	0	9	10	3000	NORMAL	WAS WORRIEI	Frustrated	Unpleasant	FOR PROGNOS	Yes	Doctor
90	1:940	NOT DONE	NOT DONE	No	1.65	1:569	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	2800	NORMAL	WAS WORRIEI	Frustrated	Traumatic		Yes	Doctor
91	1:1090	NOT DONE	NOT DONE	No	1.08	1:574	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2500	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
92	1:880	LOW RISK	NOT DONE	Yes	397.92	1:143	1	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	2974	NORMAL	WAS WORRIEI	Frustrated	Shocking		Yes	Doctor
93	1:810	LOW RISK	NOT DONE	Yes	0.95	1:289	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2846	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
94	1:1030	LOW RISK	NOT DONE	Yes	0.95	1:368	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3817	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
95	1:940	LOW RISK	NOT DONE	Yes	83.69	1:11	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2590	NORMAL	WAS WORRIEI	Frustrated	Unpleasant	TO GET A FAIF	Yes	Doctor
96	1:1110	LOW RISK	NOT DONE	Yes	6.58		1	1	1	1	0	0	Sanger sequencing	1	2	0	1	0	0	0	0	0	0	0	9	9	2319	NORMAL	WAS WORRIE	Frustrated	Traumatic	TO GET A FAIF	No	Doctor
97	1:540	NOT DONE	NOT DONE	No	0.95	1:193	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	10	2752	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
98	1:1140	NOT DONE	NOT DONE	No	1.08	1:600	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3182	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
99	1:1140	LOW RISK	NOT DONE	Yes	3.81	1:98	1	1	1	1	0	0	QF-PCR, Karyotyping, TORCH SCREENING	1	2	0	1	0	0	0	0	0	0	0	8	9	2980	NORMAL	WAS WORRIEI	Frustrated	Traumatic	TO GET A FAIF	Yes	Doctor
100	1:351	LOW RISK	NOT DONE	Yes	0.95	1:126	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3200	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
101	1:720	LOW RISK	NOT DONE	Yes	0.13	1:769	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	8	2980	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
102	1:1060	LOW RISK	NOT DONE	Yes	0.95	1:379	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3200	NORMAL	WAS WORRIEI	Worried	Shocking		Yes	Doctor
103	1:1030	LOW RISK	NOT DONE	Yes	1.08	1:572	2	2	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3156	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
104	1:880	LOW RISK	NOT DONE	Yes	7.87	1:166	1	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2908	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
105	1:990	LOW RISK	NOT DONE	Yes	0.95	1:354	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	3100	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
106	1:1060	NOT DONE	NOT DONE	No	47.98	1:22	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	7	9	2890	NORMAL	WAS WORRIEI	Worried	Shocking	TO GET A PRO	Yes	Doctor
107	1:441	LOW RISK	NOT DONE	Yes	0.95	1:354	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	3	7	3304	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
108	1:940	NOT DONE	LOW RISK	Yes	0.13	1:15423	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2190	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
109	1:1450	NOT DONE	NOT DONE	No	1.08	1:805	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2301	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
110	1:1110	LOW RISK	NOT DONE	Yes	0.95	1:397	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	3473	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
111	1:880	NOT DONE	NOT DONE	No	1.08	1:463	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3712	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
112	1:990	NOT DONE	NOT DONE	No	6.58	1:150	1	1	1	1	0	0	QF-PCR, Chromosomal micro-array	2	1,5	1	0	0	0	1	0	0	1	0	0	0	260	Abortion at 5th month P	WAS WORRIEI	Frustrated	Traumatic	TO GET A FAIF	No	Doctor
113	1:990	NOT DONE	NOT DONE	No	3.79	1:261	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	3201	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
114	1:720	NOT DONE	LOW RISK	Yes	31.44	1:23	1	1	1	1	0	0	Karyotyping, FISH	1	3	0	0	1	0	0	0	0	0	0	3	7	3200	NORMAL	WAS WORRIEI	Worried	Unpleasant	WANTED A FA	Yes	Doctor
115	1:720	LOW RISK	NOT DONE	Yes	1.08	1:379	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2380	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
116	1:940	LOW RISK	NOT DONE	Yes	1.08	1:495	2	1	2	0	1	0		1	9	0	0	0	0	0	0	0	0	1	8	9	120	MTP	RISK OF KIDNE	Worried	Unpleasant	NIPT DONE TO	No	Doctor
117	1:720	NOT DONE	NOT DONE	No	0.95	1:257	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2570	NORMAL	WORRIED ABO	Worried	Unpleasant		No	Doctor
118	1:1130	LOW RISK	NOT DONE	Yes	0.13	1:8692	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	2198	NORMAL	WAS UPSET TI	Worried	Unpleasant		No	Doctor
119	1:1030	LOW RISK	NOT DONE	Yes	6.58	1:156	1	1	1	1	0	0	Karyotyping, FISH	1	9	0	1	0	0	0	0	0	0	1	0	0	80	MTP	WANT TO HAV	Worried	Unpleasant	FOR DIAGNOS	No	Doctor
120	1:720	LOW risk	NOT DONE	Yes	0.95	1:257	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2431	NORMAL	WAS UPSET C	Worried	Unpleasant	TO GET A CON	No	Doctor
121	1:1110	NOT DONE	LOW risk	Yes	1.08	1:584	2	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	7	9	2180	NORMAL	WAS UPSET THE E	Worried	Unpleasant	TO GET A PRO	No	Doctor
122	1:720	LOW RISK	NOT DONE	Yes	31.44	1:23	1	1	1	1	0	0	Karyotyping, FISH	1	2	0	1	0	0	0	0	0	0	0	7	9	3712	NORMAL	WAS UPSET THE E	Worried	Unpleasant	FOR PROGNO	No	Doctor
123	1:880	NOT DONE	NOT DONE	No	3.79	1:232	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	3	7	2910	NORMAL	WORRIED FOR	Worried	Unpleasant		No	Doctor
124	1:1090	NOT DONE	LOW RISK	Yes	237.98	1:4	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	7	9	3201	NORMAL	WAS UPSET C	Worried	Shocking	FOR DIAGNOS	No	Doctor
125	1:940	NOT DONE	NOT DONE	No	0.95	1:495	2	2	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3200	NORMAL	WAS UPSET THE E	Worried	Unpleasant	TO GET A CON	No	Doctor
126	1:1030	NOT DONE	NOT DONE	No	0.13	1:10384	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2380	NORMAL	WAS UPSET TI	Worried	Unpleasant	TO GET A PRO	No	Doctor
127	1:880	NOT DONE	NOT DONE	No	0.95	1:463	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	3100	NORMAL	WAS UPSET THE E	Worried	Unpleasant	FOR PROGNOSTICATION		Doctor
128	1:1090	NOT DONE	NOT DONE	No	3.79	1:65	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	3	7	2570	NORMAL	WAS UPSET C	Worried	Unpleasant		No	Doctor
129	1:880	NOT done	LOW RISK	Yes	1.08	1:463	2	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2620	NORMAL	WORRIED	Worried	Unpleasant	FOR DIAGNOS	No	Doctor
130	1:1110	NOT DONE	NOT DONE	No	1.08	1:584	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2431	NORMAL	WORRIED ABO	Worried	Unpleasant	TO GET A CON	No	Doctor
131	1:1060	LOW RISK	NOT DONE	Yes	1.08	1:558	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2180	NORMAL	WORRIED ABO	Worried	Unpleasant	TO GET A PRO	Maybe	Doctor
132	1:720	NOT DONE	NOT DONE	No	1.08	1:329	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	3	7	3712	NORMAL	WAS UPSET THE BABY MIGHT HAVE KIDNEY DISEASE			FOR PROGNOSTICATION		
133	1:351	NOT DONE	NOT DONE	No	0.13	1:2700	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2910	NORMAL	WORRIED ABO	Worried	Unpleasant		Yes	Doctor
134	1:990	LOW RISK	NOT DONE	Yes	0.95	1:354	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3201	NORMAL	WORRIED ABO	Worried	Unpleasant		Maybe	Doctor
135	1:1030	LOW RISK	NOT DONE	Yes	0.13	1:76923	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	3200	NORMAL	WORRIED ABO	Worried	Unpleasant		No	Doctor
136	1:810	NOT DONE	NOT DONE	No			1	1	3	0	0	1			9	0	0	0	0	0	0	0	0	1	0	0	160	MTP	WANT TO TER	Frustrated	Traumatic		No	Doctor
137	1:940	NOT DONE	NOT DONE	No	1.08	1:495	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	3	7	3100	NORMAL	WORRIED ABO	Worried	Traumatic		Yes	Doctor
138	1:880	NOT DONE	NOT DONE	No	1.08	1:463	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	2570	NORMAL	WORRIED ABO	Worried	Traumatic		No	Doctor
139	1:1130	NOT DONE	NOT DONE	No	1.56	1:674	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2198	NORMAL	WORRIED ABO	Worried	Traumatic		No	Doctor
140	1:1030	NOT DONE	NOT DONE	No	0.95	1:368	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	2620	NORMAL	WORRIED ABO	Worried	Traumatic		No	Doctor
141	1:1090	LOW RISK	NOT DONE	Yes	0.95	1:389	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	2431	NORMAL	WAS UPSET CHILI	Worried	Unpleasant		No	Doctor
142	1:990	NOT DONE	NOT DONE	No	0.95	1:354	2	1	1	1	0	0	QF-PCR, Karyotyping	1	3	0	0	1	0	0	0	0	0	0	3	7	2180	NORMAL	BILATERAL CP	Worried	Unpleasant	FOR DIAGNOS	No	Doctor
143	1:940	NOT DONE	NOT DONE	No	1.08	1:495	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	3109	NORMAL	WORRIED ABO	Worried	Unpleasant	TO GET A CON	Maybe	Doctor
144	1:1090	NOT DONE	NOT DONE	No	5.1	1:214	1	1	1	1	0	0	QF-PCR	2	9	0	0	0	0	0	0	0	1	1	0	0	80	MTP	WANT TO HAV	All of the above	Traumatic	WAS VERY SU	No	Doctor
145	1:1110	NOT DONE	LOW RISK	Yes	0.13	1:8538	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	8	2620	NORMAL	WORRIED ABO	Worried	Unpleasant	FOR PROGNO	No	Doctor
146	1:810	LOW RISK	NOT DONE	Yes	0.95	1:852	1	1	1	1	0	0	QF-PCR, Karyotyping, Clinical Exome Sequencing	2	9	0	0	0	0	0	0	0	1	1	0	0	190	MTP	WANT TO HAV	All of the above	Traumatic	WAS VERY SU	No	Doctor
147	1:1030	NOT DONE	NOT DONE	No	0.13	1:7923	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	8	2180	NORMAL	WORRIED ABO	Frustrated	Unpleasant		Yes	Doctor
148	1:1110	NOT DONE	NOT DONE	No	0.95	1:310	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	3109	NORMAL	WORRIED ABO	Worried	Unpleasant			Doctor
149	1:1130	NOT DONE	LOW RISK	Yes	1.08	1:404	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	9	9	2910	NORMAL	WORRIED ABO	Worried	Unpleasant		Yes	Doctor
150	1:1110	NOT DONE	NOT DONE	No	0.93	1:397	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2589	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
151	1:630	NOT DONE	LOW RISK	Yes	0.13	1:76923	2	1	3	0	0	1			3, 4, 5	0	0	1	1	1	0	0	0	0	8	9	1225	NORMAL	WAS WORRIEI	Worried	Unpleasant		Yes	Doctor
152	1:1060	NOT DONE	NOT DONE	No	1.08	1:379	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2667	BABY UNDERWENT MO	WORRIED ABO	Worried	Unpleasant		Maybe	Doctor
153	1:1060	NOT DONE	NOT DONE	No	0.13	1:8153	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3327	NORMAL	WORRIED	Frustrated	Shocking		Yes	Doctor
154	1:1060	NOT DONE	NOT DONE	No	3.79	1:558	2	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	3	0	0	1	0	0	0	0	0	0	8	8	2100	NORMAL	WORRIED ABO	Worried	Unpleasant	TO GET CONF	Yes	Doctor
155	1:1030	NOT DONE	NOT DONE	No	3.79	1:542	1	1	1	1	0	0	QF-PCR, Karyotyping	1	9	0	0	0	0	0	0	0	0	1	0	0	60	MTP	WAS WORRIEI	Worried	Unpleasant	TO GET CONF	Maybe	Doctor
156	1:1030	NOT DONE	NOT DONE	No	1.08	1:953	2	1	1	1	0	0	QF-PCR, Karyotyping	1	3	0	0	1	0	0	0	0	0	0	8	8	3712	NORMAL	WORRIED THA	Worried	Traumatic	TO GET CONF	Yes	Doctor
157	1:880	NOT DONE	NOT DONE	No	4.42	1:199	1	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	3	0	0	1	0	0	0	0	0	0	7	9	3201	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Maybe	Doctor
158	1:880	NOT DONE	NOT DONE	No	3.94	1:223	1	1	1	1	0	0		1	2	0	1	0	0	0	0	0	0	0	8	8	3712	NORMAL	WAS WORRIEI	Worried	Unpleasant	TO GET CONF	Maybe	Doctor
159	1:1060	NOT DONE	NOT DONE	No	3.79	1:63	1	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	2	0	1	0	0	0	0	0	0	0	7	9	2380	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Yes	Doctor
160	1:810	NOT DONE	NOT DONE	No	6.58	1:123	1	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	3	0	0	1	0	0	0	0	0	0	9	9	3100	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Yes	Doctor
161	1:1030	NOT DONE	NOT DONE	No	0.95	1:368	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	8	2570	NORMAL	WOORIED ABO	Worried	Traumatic		Maybe	Doctor
162	1:630	LOW RISK	NOT DONE	Yes	0.65	1:225	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	2198	NORMAL	WORRIED ABO	Worried	Unpleasant		No	Doctor
163	1:940	NOT DONE	NOT DONE	No	6.58	1:142	1	1	1	1	0	0	Karyotyping, FISH	1	2	0	1	0	0	0	0	0	0	0	8	9	2620	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Yes	Doctor
164	1:1090	NOT DONE	NOT DONE	No	0.61	1:404	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	8	2431	NORMAL	WORRIED ABO	Worried	Traumatic		Yes	Doctor
165	1:1110	NOT DONE	NOT DONE	No	0.95	1:397	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	8	2180	NORMAL	WORRIED ABO	Worried	Shocking		Maybe	Doctor
166	1:1030	IOW RISK	NOT DONE	Yes	3.79	1:61	1	1	1	1	0	0	QF-PCR, Karyotyping	1	9	0	0	0	0	0	0	0	0	1	0	0	70	MTP	WAS WORRIEI	Worried	Traumatic	TO GET CONF	No	Doctor
167	1:720	NOT DONE	NOT DONE	No	0.13	1:5538	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2901	NORMAL	WORRIED ABO	Worried	Unpleasant		Yes	Doctor
168	1:990	NOT DONE	NOT DONE	No	6.25	1:158	1	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	2,5	0	1	0	0	1	0	0	0	0	8	8	2310	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Maybe	Doctor
169	1:1060	NOT DONE	NOT DONE	No	1.08	1:558	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2667	BABY UNDERWENT MO	WORRIED ABO	All of the above	Traumatic		Maybe	Doctor
170	1:1060	NOT DONE	NOT DONE	No	0.13	1:8153	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3327	NORMAL	WORRIED ABO	Worried	Traumatic		Yes	Doctor
171	1:1030	NOT DONE	NOT DONE	No	3.94	1:261	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	8	2719	NORMAL	WORRIED ABO	Worried	Traumatic		Maybe	Doctor
172	1:1030	NOT DONE	NOT DONE	No	3.79	1:61	1	1	1	1	0	0	QF-PCR, Chromosomal micro-array	1	3	0	0	1	0	0	0	0	0	0	8	9	2808	NORMAL	WORRIED ABO	Worried	Unpleasant	TO GET A CON	Yes	Doctor
173	1:540	NOT DONE	LOW RISK	Yes	0.95	1:10526	2	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2980	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Maybe	Doctor
174	1:990	NOT DONE	NOT DONE	No	0.13	1:7615	2	1	1	1	0	0	QF-PCR	1	2	0	1	0	0	0	0	0	0	0	8	9	2870	NORMAL	WORRIED ABO	Worried	Traumatic	TO GET CONF	Maybe	Doctor
175	1:441	NOT DONE	NOT DONE	No	0.13	1:3392	2	1	3	0	0	1			3,4, 6	0	0	1	1	0	1	0	0	0	6	8	1290	ANO-VESTIBULAR FISTULA, atrial septal defect, patent ductus arteriosus, ventricular septal defect and floating thumb limb anomaly.--> Whole exome sequnecing : VUOS in Exon 11, c.1391G>A (p.Arg464Gln) Cardiofaciocutaneous syndrome-1; Noonan syndrome	WORIED ABOUT (	Worried	Shocking		Yes	Doctor
176	1:351	NOT DONE	NOT DONE	No			1	1	3	0	0	1			9	0	0	0	0	0	0	0	0	1	0	0	70	MTP	WORRIED	Worried	Shocking		No	Doctor
177	1:1140	LOW RISK	NOT DONE	Yes	3.81		1	1	3	0	0	1			2,4,7	0	1	0	1	0	0	1	0	0	0	0	0	NIHF, at 31 weeks	WAS UPSET C	Worried	Unpleasant		Yes	Doctor
178	1:1060	LOW RISK	NOT DONE	Yes	7.87	1:200	1	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	2981	NORMAL	WAS UPSET CHILI	Worried	Unpleasant		Yes	Doctor
179	1:540	LOW RISK	NOT DONE	Yes	1.08	1:284	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	2761	NORMAL	WAS UPSET THE E	Worried	Unpleasant		Yes	Doctor
180	1:940	LOW RISK	NOT DONE	Yes	3.79	1:56	1	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	3226	NORMAL	WAS VERY ANXIO	Worried	Shocking		Yes	Doctor
181	1:990	NOT DONE	NOT DONE	No			1	1	3	0	0	1			9	0	0	0	0	0	0	0	0	1	0	0	787	MTP	WANT TO HAV	Frustrated	Traumatic		NO	Doctor
182	1:351	NOT DONE	NOT DONE	No	0.13	1:2700	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	9	2912	NORMAL	WAS UPSET THE (	Worried	Unpleasant		Yes	Doctor
183	1:990	NOT DONE	NOT DONE	No	0.13	1:7615	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	3082	NORMAL	WAS UPSET THE (	Worried	Unpleasant		Yes	Doctor
184	1:630	NOT DONE	NOT DONE	No	0.13	1:4806	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	7	9	2612	NORMAL	WAS UPSET THE (	Worried	Unpleasant		Yes	Doctor
185	1:630	NOT DONE	NOT DONE	No	0.13	1:4806	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	9	9	3479	NORMAL	WAS UPSET THE (	Worried	Unpleasant		Yes	Doctor
186	1:940	NOT DONE	NOT DONE	No	0.13	1:7230	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	8	8	3668	NORMAL	WAS WORRIE DT	Worried	Unpleasant		Yes	Doctor
187	1:810	NOT DONE	NOT DONE	No	0.13	1:6230	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	8	9	3394	NORMAL	WAS WORRIE DT	Worried	Unpleasant		Yes	Doctor
188	1:940	NOT DONE	NOT DONE	No	0.13	1:7230	2	1	3	0	0	1			2	0	1	0	0	0	0	0	0	0	6	10	2961	NORMAL	WAS WORRIE DT	Frustrated	Unpleasant		Yes	Doctor
189	1:990	LOW RISK	NOT DONE	Yes	0.95	1:1042	2	1	1	1	0	0	QF-PCR, CMA, DNA Storage	1	2	0	1	0	0	0	0	0	0	0	8	9	2781	NORMAL	WAS UPSET CHILI	Frustrated	Shocking	TO GET A FAIF	Yes	Doctor
190	1:1060	NOT DONE	NOT DONE	No	7.87	1:200	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	9	9	2359	NORMAL	WAS UPSET CHILI	Worried	Unpleasant	TO GET A CON	Yes	Doctor
191	1:1130	LOW RISK	NOT DONE	Yes	48.19	1:11	1	1	1	1	0	0	QF-PCR, Karyotyping	2	9	0	0	0	0	0	0	0	1	1	0	0	80	MTP	WANT TO HAVE N	All of the above	Traumatic	TO GET A CON	No	Doctor
192	1:1030	NOT DONE	NOT DONE	No	31.6	1:32	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2912	NORMAL	WAS UPSET THE E	Frustrated	Unpleasant	FOR DIAGNOS	Yes	Doctor
194	1:1060	NOT DONE	NOT DONE	Yes	6.58	1:161	2	1	1	1	0		QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	9	9	3082	NORMAL	WAS UPSET CHILI	Worried	Unpleasant	TO GET A CON	Yes	Doctor
194	1:1030	NOT DONE	NOT DONE	No	0.13	1:7923	2	1	1	1	0	0	QF-PCR, CMA	1	2	0	1	0	0	0	0	0	0	0	7	9	2612	NORMAL	WAS UPSET THE E	Worried	Unpleasant	TO GET A PRO	Yes	Doctor
195	1:1030	LOW RISK	NOT DONE	Yes	7.87	1:130	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	9	9	3479	NORMAL	WAS UPSET CHILI	Worried	Shocking	TO GET A FAIF	Yes	Doctor
196	1:1110	LOW RISK	NOT DONE	Yes	7.87	1:210	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	8	3668	NORMAL	WAS UPSET CHILI	Frustrated	Unpleasant	TO GET A CON	Yes	Doctor
197	1:1030	LOW RISK	NOT DONE	Yes	6.58	1:168	1	1	1	1	0	0	QF-PCR, Karyotyping	1	3	0	0	1	0	0	0	0	0	0	8	9	3394	NORMAL	WAS UPSET CHILI	Frustrated	Unpleasant	TO GET A CON	Yes	Doctor
198	1:1130	LOW RISK	NOT DONE	Yes	6.1	1:179	1	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	6	10	2961	NORMAL	WAS UPSET CHI	Worried	Unpleasant	FOR DIAGNOS	Yes	Doctor
199	1:880	NOT DONE	NOT DONE	No	0.95	1:926	2	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	8	9	2781	NORMAL	WAS UPSET CHILI	Worried	Unpleasant	TO GET A CON	Yes	Doctor
200	1:990	NOT DONE	NOT DONE	No	0.95	1:1042	2	1	1	1	0	0	QF-PCR, Karyotyping	1	2	0	1	0	0	0	0	0	0	0	9	9	2359	NORMAL	WAS UPSET CHILI	Worried	Shocking	TO GET A PRO	Yes	Doctor
201	1:630	NOT DONE	NOT DONE	No	6.58	1:95	1	1	1	1	0	0	QF-PCR, CMA	1	2	0	1	0	0	0	0	0	0	0	9	9	2761	NORMAL	WAS UPSET CHILI	Worried	Unpleasant	TO GET A FAIF	Yes	Doctor
202	1:880	NOT DONE	NOT DONE	No	6.58	1:126	1	1	1	1	0	0	QF-PCR, CMA	1	2	0	1	0	0	0	0	0	0	0	8	8	3226	NORMAL	WAS UPSET CHILI	Frustrated	Shocking	TO GET A CON	Yes	Doctor
203	1:990	LOW RISK	NOT DONE	Yes	3.81	1:259	1	1	1	1		0	Whole Exome Sequencing	2	9	0	0	0	0	0	0	0	0	1	0	0	90	MTP	WAS UPSET CHI	All of the above	Traumatic	TO GET A CON	NO	Doctor
204	1:720	LOW RISK	NOT DONE	Yes	1.08	1:379	2	1	3	0	0	1			3	0	0	1	0	0	0	0	0	0	7	9	3665	UNDERWENT SURGERY F	WAS UPSET THE	Frustrated	TRaumatic		Yes	Doctor
205	1:1130	NOT DONE	NOT DONE	No	6.58	1:171	1	1	1	1	0	0	QF-PCR, Karyotyping	2	9	0	0	0	0	0	0	0	1	1	0	0	120	MTP	WAS UPSET CHI	All of the above	Traumatic	TO GET A CON	No	Doctor
206	1:880	NOT DONE	NOT DONE	No	36.58	1:24	1	1	1	1	0	0	QF-PCR, CMA	2	9	0	0	0	0	0	0	0	1	1	0	0	170	MTP	WAS UPSET CGI	All of the above	Traumatic	TO GET A CON	No	Doctor
207	1:1110	NOT DONE	NOT DONE	No	6.58	1:168	1	1	1	1	0	0	Karyotyping, FISH	1	9	0	0	0	0	0	0	0	0	1	0	0	130	MTP	WAS UPSET CHI	All of the above	Traumatic	TO GET A CONF	No	Doctor