AN OBSERVATIONAL STUDY TO ASSESS THE OUTCOMES AND COMPLICATIONS OF ABDOMINAL TRAUMA IN A TERTIARY HOSPITAL

Thesis Submitted to

All India Institute of Medical Sciences, Jodhpur

In partial fulfilment of the requirement for the degree of

Master of Surgery (MS)

General Surgery

May 2022 **Dr Kollanur Charan**

AIIMS, Jodhpur

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DECLARATION

I hereby declare that this thesis titled "**An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital**" is a bonafide and original research work carried out in partial fulfilment of the requirements for the degree of Masters of Surgery in General Surgery under supervision and guidance, in the Department of General Surgery, All India Institute of Medical Sciences, Jodhpur.

Dr Kollanur Charan

Department of General Surgery

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CERTIFICATE

This is to certify that the thesis titled "**An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital**" is the bonafide work of **Dr Kollanur Charan** carried out under our guidance and supervision, in the Department of General Surgery, All India Institute of Medical Sciences, Jodhpur.

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ACKNOWLEDGEMENT

Sanskrit transcript

आः नो भद्राः कर्तव्यो यन्तु विश्वतः॥

English translation

"Let Noble thoughts come to us from every side"

First and foremost, I would like to express a deep sense of gratitude to my guide and guru, Dr Naveen Sharma, Professor, Department of General Surgery, AIIMS Jodhpur, for instructing me and guiding me along the journey of carrying out and finally completing my study. His guidance and valuable criticisms have helped me refine my work and myself.

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Dedicated to My parents

&

My teachers

ABBREVIATIONS

LMIC	Low and Middle Income Countries
ACDiT	Adapted Clavien-Dindo in Trauma
ATLS	Advanced Trauma Life Support
FAST	Focused Assessment with Sonography for Trauma
eFAST	Extended Focused Assessment with Sonography for Trauma
CT	Computed Tomography
OIS	Organ Injury Scaling
AAST	American Association for the Surgery of Trauma
ERCP	Endoscopic Retrograde Cholangiopancreatography
MRCP	Magnetic Resonance Cholangiopancreatography
BTA	Blunt Trauma Abdomen
RTA	Road Traffic Accidents
HR	Heart Rate
SBP	Systolic Blood Pressure
Hb	Haemoglobin
ED	Emergency Department
OR	Operating Room
ISS	Injury Severity Score
NISS	New Injury Severity Score
RTS	Revised Trauma Score
T-NTS	Triage-New Trauma Score
DCS	Damage Control Surgery
NOM	Non Operative Management
ICU	Intensive Care Unit
LOS	Length Of hospital Stay
ICU LOS	Length of ICU Stay
NCD	Non-Communicable Disease
NTDB	National Trauma Data Bank
NCRB	National Crime Records Bureau
DALY	Disability Adjusted Life Years

SUMMARY

Introduction: The Adapted Clavien-Dindo Scoring System in Trauma (ACDiT) is an adaptation of the original Clavien-Dindo scoring system, which is used to grade complications of elective surgeries. The ACDiT was devised to assess morbidity in trauma patients undergoing operative or non-operative management. The aim of this study is to validate the ACDiT tool as a novel outcome measure in patients with abdominal trauma.

Objective: The primary objective of this study was to determine the outcomes of abdominal trauma based on the Adapted Clavien-Dindo scoring system in trauma (ACDiT). The secondary objectives were to correlate the outcome of abdominal injury based on Adapted Clavien-Dindo scoring system with Length of hospital stay (LOS), Length of ICU stay (ICU LOS) and mortality, to describe Injury patterns among patients with abdominal trauma, and to describe the factors associated with mortality and morbidity.

Methods: This prospective observational study was conducted at a tertiary care centre in Western India over a period of 18 months. Patients with abdominal trauma with an Abbreviated Injury Score (AIS) of more than 2 were included. Exclusion criteria were pregnancy and lactating mothers. Complications were recorded according to the ACDiT scale. Damage control surgery (DCS) was treated as an initial plan and subsequent phases of DCS were not considered as complications. Patients were followed up till their discharge or death, whichever was earlier. Length of hospital stay and length of ICU stay were correlated with ACDiT scores.

Results: A total of 154 patients with abdominal trauma of AIS $\geq$ 2 were included. The mechanism was blunt injury in 139 (90.3%) patients and penetrating injury in 15 (9.7%) patients. Seventy-one (46.1%) patients had associated extra-abdominal injuries with AIS more than 2. The median injury severity score (ISS) of the study group was 19 and the new injury severity score (NISS) was 22. A total of 59 (38.3%) patients developed complications; 32 of these patients (54.2%) were managed non-operatively and 27 (45.8%) underwent operative management. Significant extra-abdominal injury (AIS >2) was present in 32 (54%) patients with complications. ACDiT grade II complications were the commonest, occurring in 12 (20.3%) patients. Higher grades of ACDiT scale complications were associated with a longer hospital ($p<0.001$) and ICU stay ($p=0.001$). On multiple regression analysis, there was

a significant correlation between ACDiT grades and the length of hospital stay and (adjusted R-square value of 0.11, $p<0.001$).

Conclusion: ACDiT scale correlates well with outcomes in trauma patients and can be used as an objective measure of complications in abdominal trauma patients.

INDEX

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

INTRODUCTION

Trauma is a complex entity involving multiple systems affecting the anatomy as well as the physiology of the affected person. Trauma is the major cause of both mortality and morbidity among younger age groups worldwide[1,2]. In Low and Middle-income countries (LMIC) like India alone, it is found that 20 million people are hospitalized every year; among these, one million people die due to injuries[3].

Abdominal injury holds the third rank in prevalence after head and chest trauma[4]. The main modes of injury to the abdomen can be categorized into blunt and penetrating trauma. Among these, the majority of the cases are due to blunt trauma[5]. There are several mechanisms of injuries causing these blunt and penetrating injuries. The leading causes of blunt abdominal trauma are road traffic injuries (collisions) followed by fall from height in adults[6,7]. Penetrating trauma can be due to stab or gunshot injuries. In the paediatric population mechanism of trauma includes pedestrian injuries, fall, or accidents involving recreational vehicles, while trauma due to penetrating trauma (guns and knives) or assault is less common[8]. Apart from these, child abuse also contributes to causes of blunt abdominal trauma.

The commonly injured organs in patients with abdominal trauma are the liver, spleen, bowels, and stomach. The diaphragm and kidneys are the least frequently injured organs, approximately 25% of these injuries require upfront surgery; hence these patients need careful triaging for appropriate intervention[4,7,9].

Despite the advancement in diagnostic and supportive care, the morbidity and mortality rates remain high in patients with abdominal trauma. An important cause for this is the interval between trauma and hospitalization, especially in the LMIC where ambulance services are insufficient and road traffic discipline is not well organized. Other causes are delay in diagnosis, inadequate surgical treatment and associated trauma, especially to the head, chest & extremities. More than 50% of the deaths are delayed beyond 24 hours but occur within a week[10].

Complications do occur even if we strictly adhere to the best practices and patient safety guidelines in trauma cases[11]. There is no standard method for reporting these endpoints other than listing them as a percentage of patients who have suffered from complications.

Following the management of the abdominal trauma, though non-mortality complications far outnumber mortality rates, mortality is the only endpoint measured as an indicator of the quality of management. Even if morbidity is used, it is treated as a binary outcome.

The Adapted Clavien-Dindo scoring system in trauma (ACDiT) is an adaptation of the original Clavien-Dindo scoring system used to grade the complications in elective surgeries. ACDiT is a non-mortality endpoint, which is non-binary. Thus it can be used to assess the subsequent morbidity of surgical and non-surgical management in a case of trauma, thus helping in stratifying the posttraumatic complications in the case of clinical management of trauma[11].

In our study, we described the outcome and complications in patients with abdominal trauma using the ACDiT scoring system (Table 1) and also correlated them with other endpoints.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Trauma is still a major cause of emergency visits. Every year around 5 million people die from injuries worldwide[12,13]. According to the World Health Organization (WHO), road traffic injuries account for 1.35 million deaths in 2016. Trauma is the leading cause of death among younger age groups in developed countries like the United States, accounting for 10 percent of deaths among men and women[1]. According to the 2016 National Trauma Data Bank (NTDB) of the United States, out of all the patients with trauma, 11.7% had abdominal injuries with a mortality rate of 12.9%[14]. Low and middle income countries like India, Zimbabwe, Brazil, and some other South-Asian countries. disproportionately contribute to more than 90% of the mortality worldwide.

India is going through a major transition in technology and socio-demographics. There was rapid urbanization and motorization noted in the past two decades. This led to a major shift in the disease patterns. The mortality due to non-communicable diseases (NCD) and injuries are gradually increasing. There was also an increase in Disability Adjusted Life Years (DALY) due to these NCDs and injuries (Figure 1&2). DALY is a summarised objective measure of health burden among various conditions. Injuries are becoming a major public health problem now[15]. It is estimated that by 2030 mortality due to injuries will increase by 30% in India[16].

According to the National Crime Records Bureau (NCRB) deaths due to road traffic injuries have increased by 2.6% from 2017 and 2018. The majority of this include the productive age group between 18-45 years. In 2016 road. Traffic injuries contributed to around 65% more DALYs than that in 1990.

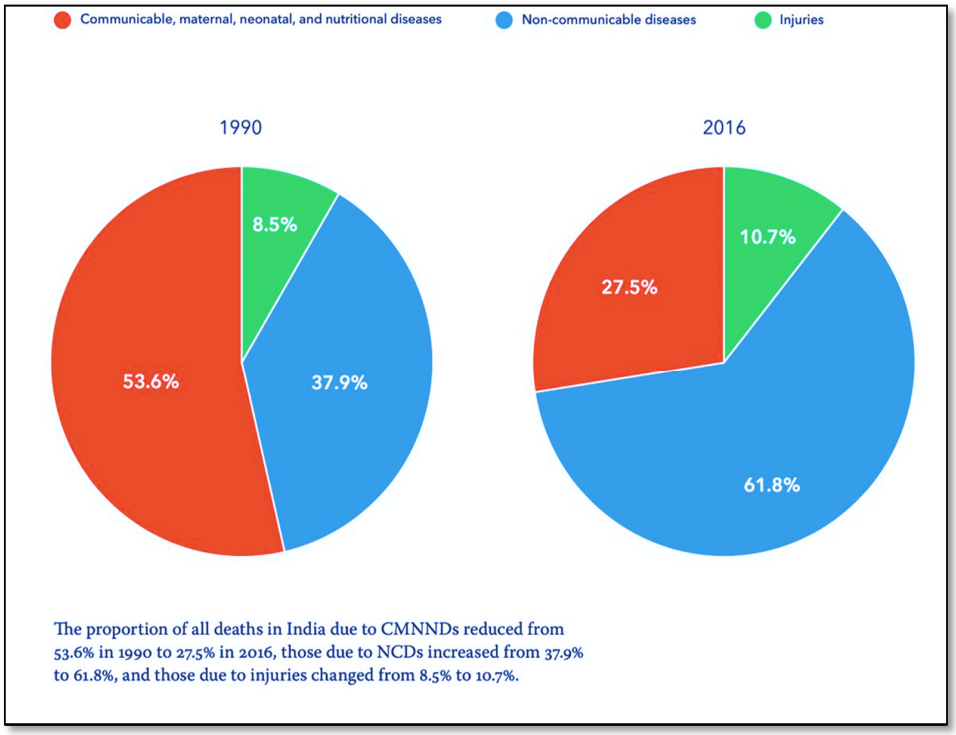

Figure 1: Comparison of the contribution of major disease groups total mortality in India

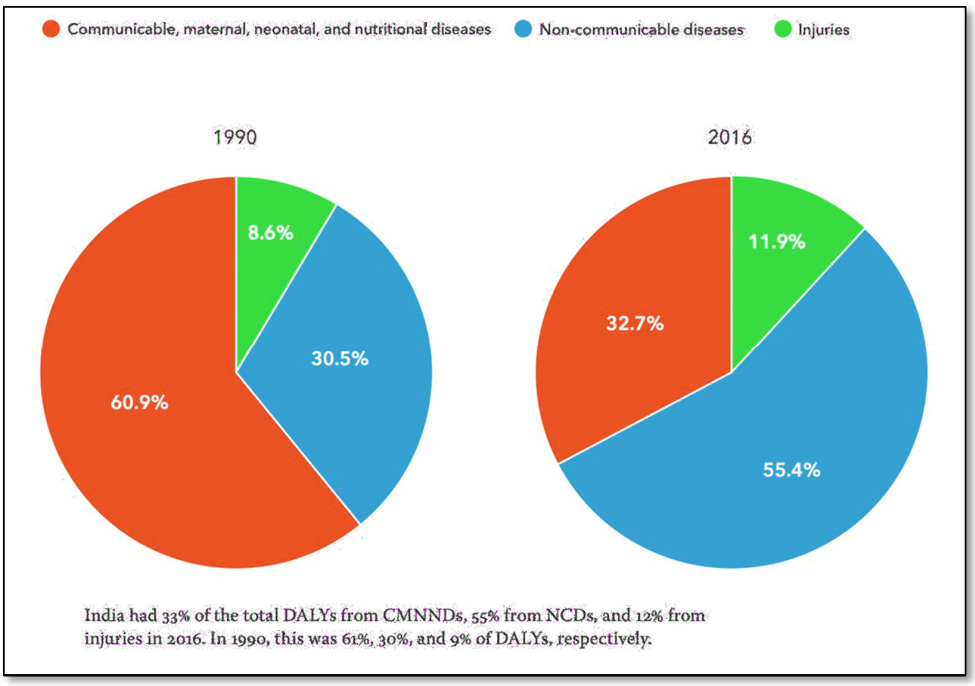

Figure 2: Comparison of the contribution of major disease groups total DALY's in India

Among these abdominal trauma holds the third rank playing a major role in mortality and morbidity. Unrecognized abdominal and pelvic injuries are the important cause of preventable deaths among patients with trauma.

Unrecognized abdominal and pelvic injuries are one of the most important causes of preventable death after trauma. The mode and mechanism of injury, severity and site of the injury and haemodynamic status of the patient should be considered in the early abdominal and pelvic assessment.

Vital organs in the abdomen determine the importance of prioritizing the evaluation and initial management of patients with abdominal trauma. There can be significant blood loss in the abdomen without any clinical signs of peritoneal irritation. Often clinical assessment is difficult because of associated extra-abdominal injuries to the brain or spinal cord, and injuries to the ribs and spine. Hence it has been emphasized in the ATLS protocol that during the circulation part of the primary survey, we must evaluate the possibility of haemorrhage in the abdomen and pelvic cavity, in patients who sustained abdominal trauma[17].

Abdominal injury is broadly categorized based on the mode of injury into blunt and penetrating injuries. Although initial evaluation and management vary among these injuries, early diagnosis and controlling the ongoing haemorrhage is the common priority.

The main mechanisms of trauma causing these abdominal injuries are direct blow, deceleration, blast and high and low velocity penetrating injuries to the torso. Hence, abdominal visceral, vascular, or pelvic injuries must be ruled out in patients with these trauma mechanisms.

ANATOMY

Anterior abdomen: It is the area defined by the following boundaries - costal margins superiorly, the pubic symphysis and inguinal ligaments inferiorly, and the anterior axillary lines laterally. Trauma to this area may cause significant injury to the hollow viscera.

Thoraco-abdomen: It is the area bounded supero-anteriorly by the nipple line and infero-posteriorly by the infra scapular line and inferiorly by the costal margins (Figure 3). This area is covered by the lower bony thorax, which guards the contents of it. It contains the diaphragm, liver, spleen, and stomach. Penetrating wounds below the nipple and fracture of

the lower ribs can injure these abdominal viscera. This occurs as the diaphragm rises to the fourth intercostal space during full expiration.

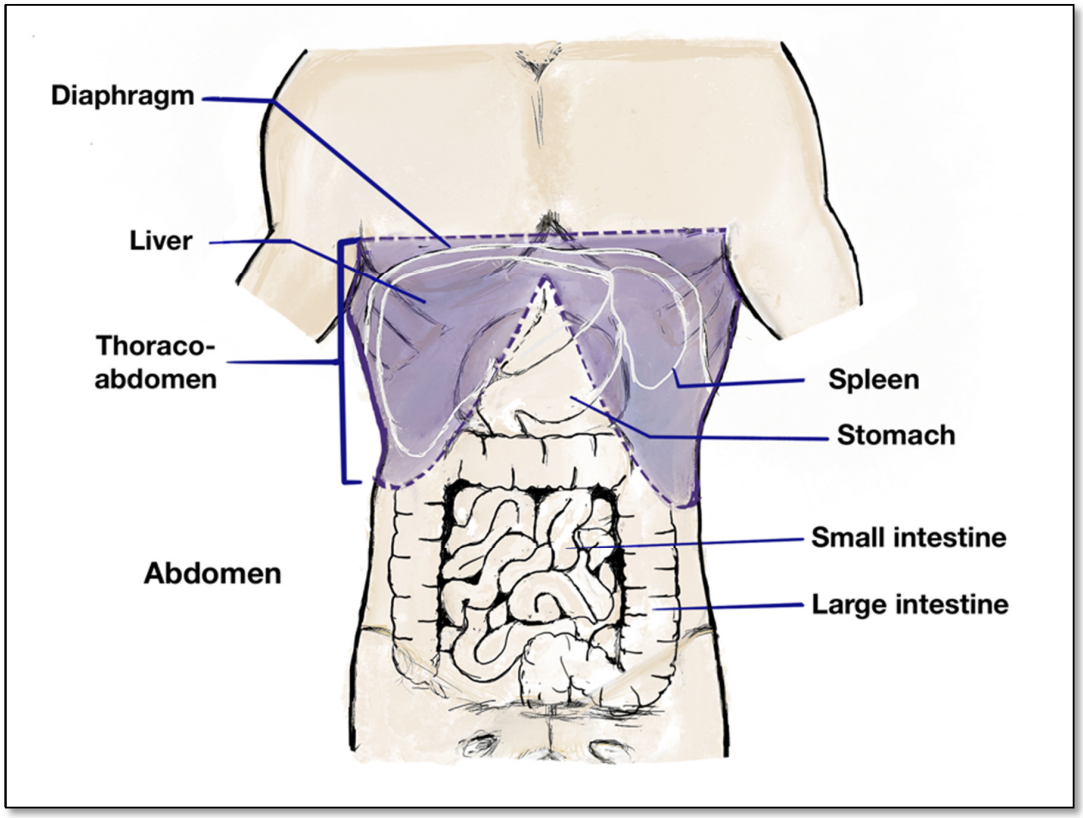

Figure 3: Pictorial depiction of Anterior abdomen and Thoraco-abdomen

Flank: It is the area enclosed by the posterior and anterior axillary lines from the iliac crest to the sixth intercostal space (Figure 4A).

Back (Posterior thoraco-abdomen): It is the area located dorsal to the posterior axillary lines from the angle of the scapulae to the iliac crests. This includes the muscles of the paraspinal region, back, and flank, which help in reducing the injury to the viscera (Figure 4B).

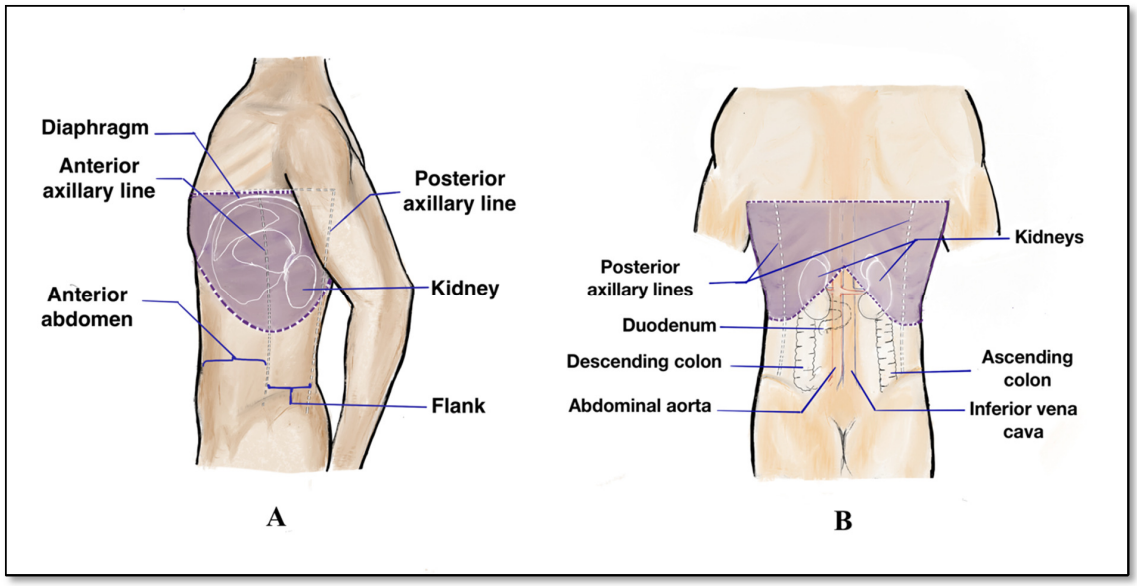

Figure 4: A- Flank; B- Posterior thoraco-abdomen

The back and the flank include the retroperitoneum, which contains the abdominal part of the aorta, inferior vena cava, duodenum, pancreas, kidneys with ureters, the ascending and descending colon.

Injuries to viscera in this space are difficult to assess as they may not present with signs of peritoneal irritation and is poorly visualized with the focused assessment with sonography in trauma (FAST).

Pelvic cavity:

It is the area bounded by pelvic bones that contain the lower part of the retroperitoneal and intraperitoneal spaces, which include the rectum, bladder, iliac vessels and female internal genital organs. Trauma to this region can cause significant bleeding, which can be due to injuries to organs of this cavity or from the bony pelvis itself (Figure 5).

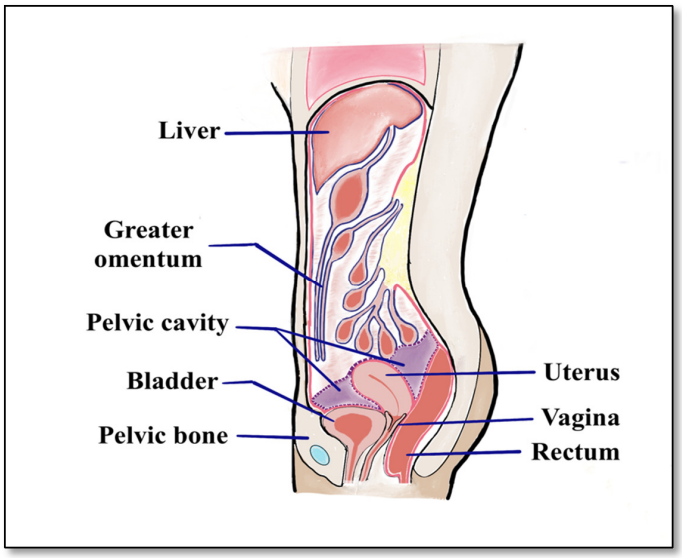

Figure 5: Pictorial depiction of Pelvic cavity along with peritoneal and retroperitoneal structures

MECHANISM AND PATHOPHYSIOLOGY OF INJURY

This helps us in the identification of potential injuries, thus guiding us in diagnostic studies needed for the evaluation of the patient. Common mechanisms causing blunt and penetrating trauma are described below. Clinical pictures of the patients with blunt and penetrating trauma were shown in Figures 6 and 7 respectively.

BLUNT TRAUMA :

Figure 6: Blunt injury to the abdomen

Common mechanisms causing these blunt trauma are Motor vehicle crashes and falls, which are usually of the following types [11].

i. Motor vehicle crashes:
    a. Head or rear-end collision
    b. Lateral impact
    c. Motorcycle and bicycle crashes
    d. Pedestrian struck by a vehicle

ii. Falls:
    a. High falls
    b. Falling downstairs
    c. Intentional injuries (Homicide)
    d. Ground-level falls (happen to all age groups, but injury severity is more in the elderly)

iii. Others:
    a. Falling objects
    b. Sports injuries
    c. Animal harms
    d. Occupational injuries (Machinery crush injuries)

These mechanisms of trauma causing blunt abdominal injuries are mainly because of the forces described below.

A direct blow:

Usually due to the handlebars of bicycle or motorcycle, the lower rim of a steering wheel, encroaching door in a motor vehicle accident. These can lead to compression and crushing injuries to vital organs in the abdomen and pelvis, and to pelvic bones, which often deform solid and hollow viscera resulting in rupture with subsequent haemorrhage and sometimes peritonitis due to contamination with visceral contents.

Shearing and Deceleration injuries:

Shearing forces are due to inappropriate usage of restraint devices in motor vehicle accidents, whereas deceleration injuries are found among trauma in which there will be sudden differential movement of mobile and fixed parts of the body. They usually cause bucket handle tears of the mesentery, rupture of solid and hollow viscera, pancreatic or duodenal

injuries, thrombosis of the iliac vessels or aorta and vertebral fractures (chance fracture of lumbar vertebrae).

Common organs injured during blunt abdominal trauma are the spleen (40% to 55%), liver (35% to 45%), and the small bowel (5% to 10%)(10). However, there are many variations in the incidence of the organs commonly involved in blunt abdominal trauma[18–20].

PENETRATING TRAUMA:

These are due to damage caused by an object entering the body and sometimes exiting it, causing damage along the path. In some cases, we may find external injuries only when these objects don't penetrate the fascia. In the majority of cases, they penetrate the fascia leading to open wounds. The pattern and severity of injuries depend on the size of the object, velocity of trauma, the direction of entry and path of penetration.

Figure 7: Penetrating abdominal injury to the abdomen

These penetrating trauma can be due to the following mechanisms:

i. Stabbing

ii. Gunshot

   a. High-energy gunshot injuries.

   b. Low-energy gunshot injuries.

The stab wounds and low energy gunshot wounds usually cause laceration or tearing of tissues which are encountered in the path of penetration. In contrast, high-velocity gunshot injuries cause increased damage to surrounding tissues along the track of the missile due to dissipation of kinetic energy, which causes temporary cavitation and also due to possible fragmentation of bullets.

Patients with stab wounds commonly involve the liver (40%), small bowel (30%), diaphragm (20%), and colon (15%), whereas gunshot injuries often involve the small bowel (50%), colon (40%), liver (30%), and the abdominal vessels (25%)[21].

Stabs to the chest and thoraco-abdomen need special consideration while evaluation and management as the angle of the penetration may indicate the injury to the diaphragm and involvement of both thoracic and abdominal cavities.

BLAST :

These injuries need special attention as it occurs via several mechanisms, including penetrating wounds due to projectile fragments and blunt injuries from the direct blow as patients are thrown or them being struck by projectiles. There are more chances of associated extra-abdominal injuries in these conditions.

Patients who are near the source of the explosion usually have added injuries like rupture of the tympanic membrane, injury to the bowel and lungs because of primary shock waves. These injuries often present late and are missed during the initial evaluation.

INITIAL ASSESSMENT AND EVALUATION:

In patients with abdominal trauma, haemorrhage is of major concern. After securing the airway and breathing, the main goal is to rapidly diagnose any abdominal or pelvic injuries that might cause haemorrhage leading to shock.

This initial assessment includes patient history, physical examination, and diagnostic adjuncts. Hemodynamically stable patients can be further evaluated in detail to diagnose any injuries which can lead to delayed morbidity and mortality. The patients must be continuously reassessed to identify newly developing signs of bleeding and peritonitis, which require immediate intervention.

HISTORY:

History regarding the mechanism of injury will indicate the possibility and severity of the abdominal injury and guide us in the evaluation and management of the patient. In road traffic accidents, the history of vehicle speed and type of collision can predict abdominal injury; similarly, in patients with trauma due to falls, the height of the fall indicates the increased chances of deceleration injuries.

In patients with penetrating injury to the abdomen, history regarding the type of weapon (knife, rifle, shotgun, or handguns,), distance from the firing in case of gunshot wounds, number of wounds, and external bleeding can guide us in the management of the patient.

PHYSICAL EXAMINATION:

Sequential examination of the abdomen includes inspection, palpation, percussion followed by auscultation. This should be followed by the examination of the pelvis, urethra, scrotum, perineum, and, if necessary, rectal and vaginal exam.

During the initial assessment, rapid examination of the abdomen should be done to look for signs of peritoneal irritation such as involuntary muscle guarding and rebound tenderness. Voluntary guarding because of pain makes the abdominal examination unpredictable. Pregnant women need special attention in the evaluation of fetal wellbeing.

In case of penetrating injuries, local examination of the wound is done to look for peritoneal breach. Location of penetrating wounds will also guide us in further evaluation and management. Skin folds should be examined properly to look for any stab wounds in obese patients.

Pelvic assessment is done to look for potential haemorrhage, which needs immediate resuscitative measures. Patients with pelvic fractures with hypotension are suspected of

having mechanical instability of the pelvic ring and requiring immediate stabilization with a pelvic binder which can be life-saving.

Findings suggestive of pelvic fractures are :

- Blood at the urethral meatus, scrotal/perineal ecchymosis indicating urethral injury.
- Limb length discrepancy or deformity of hip joint without any obvious fracture of the limb.

The distraction of the pelvis while the initial examination may cause dislodging of the clot and lead to further haemorrhage. Hence gentle palpation is enough for eliciting the tenderness over the pelvis that may suggest pelvic fractures.

ADJUNCTS TO PHYSICAL EXAMINATION:

Usage of gastric tubes and urinary catheters can be both therapeutic and diagnostic during primary survey; hence these are used as adjuncts.

Gastric tubes help in the decompression of the stomach, thus decreasing the risk of aspiration. Blood from these gastric catheters suggests injury to the esophagus or upper gastrointestinal tract in the absence of nasopharyngeal or oropharyngeal bleeding. In case of a suspected base of skull fractures or midface fractures, oro-gastric catheters are preferred over nasogastric catheters.

Urinary catheters not only help in relieving urinary retention but also identify bleeding and monitor urinary output. A retrograde urethrogram should be done in case of suspected pelvic fracture or out urethral injury. Suprapubic catheterization is done if diagnosed to have a urethral injury during the primary or secondary survey.

DIAGNOSTIC TOOLS:

In hemodynamically stable patients, these diagnostic tools guide the evaluation of the patient with suspected abdominal injury and help in proper management.

i. X- rays for abdominal trauma :

In case of injury to the Thoraco-abdomen, a chest X-ray AP (anteroposterior) view will rule out any associated hemopneumothorax and also help to diagnose pneumoperitoneum.

X-ray pelvis AP view helps in diagnosing any pelvic fractures that might cause potential haemorrhage in patients with pelvic tenderness.

ii. Focused Assessment with Sonography for Trauma (FAST) :

It helps in identifying any collection of intraperitoneal fluid but has observer variability. It also has the advantage of repeatability and can be performed bedside on hemodynamically unstable patients while resuscitating them. It is often considered as an extension of the physical exam.

It includes the examination of four regions (Figure 8A&8B):

- Pericardial sac,
- Hepatorenal fossa,
- Splenorenal fossa, and
- Pelvis or pouch of Douglas.

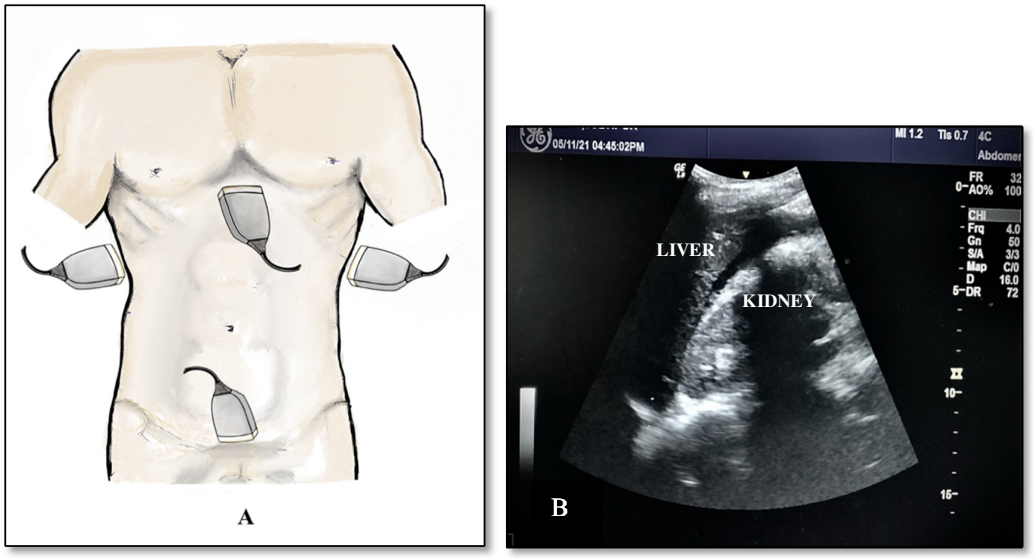

Figure 8: A- Pictorial representation of regions examined in FAST; B- FAST positive

i. Contrast-enhanced Computed Tomography (CT):

CT should be advised only in hemodynamically stable patients in whom there is no indication for an upfront laparotomy. It helps in detecting the specific organ involved and the severity of the injury. It helps in determining the injury to retroperitoneal and pelvic organs, which are difficult to assess with FAST and clinical examination[22].

Despite its sensitivity in detecting solid organ injuries, it is difficult to diagnose hollow visceral, diaphragmatic and some pancreatic injuries. Presence of significant

hemoperitoneum without any solid organ injury and clinical judgement help in the management of such injuries.

ii. Diagnostic laparoscopy

Laparoscopy in case of abdominal trauma, in both blunt and penetrating, can be used for both diagnostic and therapeutic purposes. Hemodynamic instability is an important prerequisite for laparoscopy [23,24].

Indications of laparoscopy are:

- Suspected hollow visceral or diaphragmatic injury.
- Free fluid in peritoneum without any identified source or suspected mesenteric injury.
- Unclear abdomen- Discrepancy between clinical exam and radiological findings
- Patients with penetrating injury who are haemodynamically stable.

Contraindications for laparoscopy are intracranial injuries, diffuse peritonitis, evisceration, and penetrating anal or vaginal injuries.

In the case of intracranial injuries, laparoscopy is avoided as intraperitoneal insufflation of carbon dioxide raises abdominal pressure, which in turn increases the intracranial pressure, further worsening the traumatic brain injury.

Patients with multiple organ injuries are also considered as a limiting factor[25].

INDICATIONS FOR SURGICAL EXPLORATION:

• Patients with blunt trauma to the abdomen with persistent hypotension (non-responder), with a FAST positive report or clinical evidence of intraperitoneal haemorrhage, or without any other source of bleeding.

• Haemodynamically unstable patient with a penetrating abdominal wound that breaches the anterior fascia.

• Gunshot wounds passing through the peritoneal cavity.

• Evisceration

• Significant haemorrhage from the gastrointestinal or genitourinary tract due to blunt or penetrating abdominal trauma.

• Signs of peritonitis

• Free air, retroperitoneal air, or rupture of the hemidiaphragm

• Contrast-enhanced CT suggestive of pneumoperitoneum, intraperitoneal bladder rupture, renal pedicle injury, or severe visceral parenchymal injury with active contrast extravasation after blunt or penetrating trauma.

As mentioned earlier, assessment and management strategies vary between the type of abdominal injuries. The algorithm for the initial assessment and management of blunt and penetrating injuries to the abdomen are summarized in Figures 9 and 10.

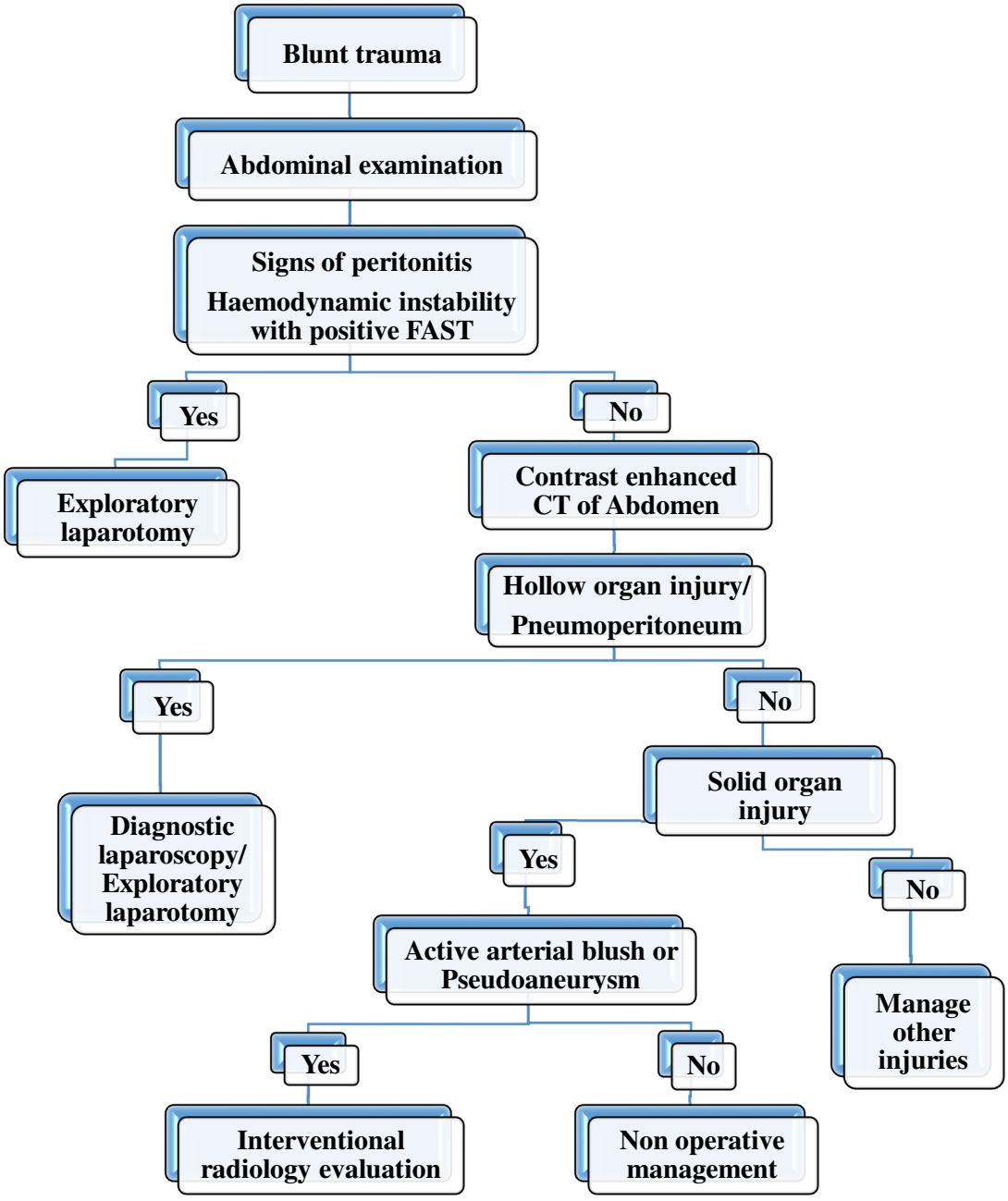

Figure 9: Flow chart summarizing management strategy for blunt abdominal trauma

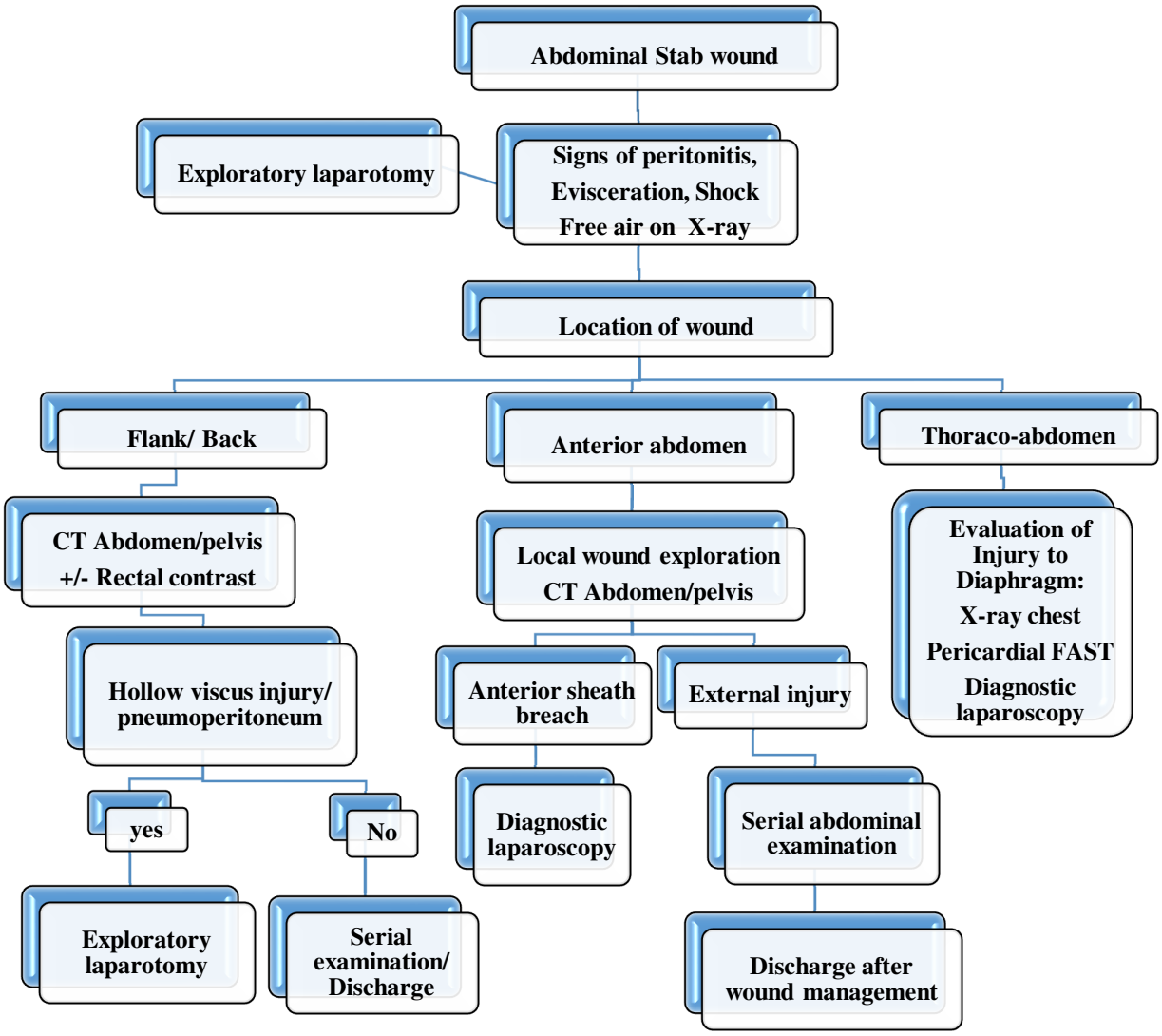

Figure 10: Flow chart summarizing management strategy for stab injury to the abdomen.

EVALUATION OF SPECIFIC INJURIES:

1. SOLID-ORGAN INJURIES:

Haemodynamic status and response to resuscitation determine the initial management of the patients with abdominal trauma. Management strategies of solid organ injuries have been shifting towards non-operative management because of advancements in imaging modalities like CT and a better understanding of the mechanism of injuries.

The spleen and liver are the commonly injured solid organs in case of blunt trauma to the abdomen, whereas renal and pancreatic injuries are less common. The partial or complete removal of these organs can greatly increase patient morbidity[26], and precise interpretation of the AAST OIS(Organ injury scaling) grading system is crucial to determining patient outcomes[27]. The OIS Grading of major organs is mentioned below(Figure 11-13).

CT images and Intra-operative images of various solid organs injuries have been included below (Figure 14-16).

AAST Grade	AIS Severity	Imaging Criteria (CT findings)	Operative Criteria	Pathologic Criteria
I	2	– Subcapsular hematoma <10% surface area – Parenchymal laceration <1 cm depth – Capsular tear	– Subcapsular hematoma <10% surface area – Parenchymal laceration <1 cm depth – Capsular tear	– Subcapsular hematoma <10% surface area – Parenchymal laceration <1 cm depth – Capsular tear
II	2	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <5 cm – Parenchymal laceration 1–3 cm	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <5 cm – Parenchymal laceration 1–3 cm	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <5 cm – Parenchymal laceration 1–3 cm
III	3	– Subcapsular hematoma >50% surface area; ruptured subcapsular or intraparenchymal hematoma ≥5 cm – Parenchymal laceration >3 cm depth	– Subcapsular hematoma >50% surface area or expanding; ruptured subcapsular or intraparenchymal hematoma ≥5 cm – Parenchymal laceration >3 cm depth	– Subcapsular hematoma >50% surface area; ruptured subcapsular or intraparenchymal hematoma ≥5 cm – Parenchymal laceration >3 cm depth
IV	4	– Any injury in the presence of a splenic vascular injury or active bleeding confined within splenic capsule – Parenchymal laceration involving segmental or hilar vessels producing >25% devascularization	– Parenchymal laceration involving segmental or hilar vessels producing >25% devascularization	– Parenchymal laceration involving segmental or hilar vessels producing >25% devascularization
V	5	– Any injury in the presence of splenic vascular injury with active bleeding extending beyond the spleen into the peritoneum – Shattered spleen	– Hilar vascular injury which devascularizes the spleen – Shattered spleen	– Hilar vascular injury which devascularizes the spleen – Shattered spleen

Vascular injury is defined as a pseudoaneurysm or arteriovenous fistula and appears as a focal collection of vascular contrast that decreases in attenuation with delayed imaging. Active bleeding from a vascular injury presents as vascular contrast, focal or diffuse, that increases in size or attenuation in delayed phase. Vascular thrombosis can lead to organ infarction.

Grade based on highest grade assessment made on imaging, at operation or on pathologic specimen.

More than one grade of splenic injury may be present and should be classified by the higher grade of injury.

Advance one grade for multiple injuries up to a grade III.

Figure 11: Spleen Organ Injury Scale-2018 revision

AAST Grade	AIS Severity	Imaging Criteria (CT Findings)	Operative Criteria	Pathologic Criteria
I	2	– Subcapsular hematoma <10% surface area – Parenchymal laceration <1 cm in depth	– Subcapsular hematoma <10% surface area – Parenchymal laceration <1 cm in depth Capsular tear	– Subcapsular hematoma <10% surface area – Parenchymal laceration <1 cm Capsular tear
II	2	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <10 cm in diameter – Laceration 1–3 cm in depth and ≤ 10 cm length	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <10 cm in diameter – Laceration 1–3 cm in depth and ≤ 10 cm length	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <10 cm in diameter – Laceration 1–3 cm depth and ≤ 10 cm length
III	3	– Subcapsular hematoma >50% surface area; ruptured subcapsular or parenchymal hematoma – Intraparenchymal hematoma >10 cm – Laceration >3 cm depth – Any injury in the presence of a liver vascular injury or active bleeding contained within liver parenchyma	– Subcapsular hematoma >50% surface area or expanding; ruptured subcapsular or parenchymal hematoma – Intraparenchymal hematoma >10 cm – Laceration >3 cm in depth	– Subcapsular hematoma >50%-surface area; ruptured subcapsular or intraparenchymal hematoma – Intraparenchymal hematoma >10 cm – Laceration >3 cm in depth
IV	4	– Parenchymal disruption involving 25–75% of a hepatic lobe – Active bleeding extending beyond the liver parenchyma into the peritoneum	– Parenchymal disruption involving 25–75% of a hepatic lobe	– Parenchymal disruption involving 25–75% of a hepatic lobe
V	5	– Parenchymal disruption >75% of hepatic lobe – Juxtahepatic venous injury to include retrohepatic vena cava and central major hepatic veins	– Parenchymal disruption >75% of hepatic lobe – Juxtahepatic venous injury to include retrohepatic vena cava and central major hepatic veins	– Parenchymal disruption >75% of hepatic lobe – Juxtahepatic venous injury to include retrohepatic vena cava and central major hepatic veins

Vascular injury is defined as a pseudoaneurysm or arteriovenous fistula and appears as a focal collection of vascular contrast that decreases in attenuation with delayed imaging, Active bleeding from a vascular injury presents as vascular contrast, focal or diffuse, that increases in size or attenuation in delayed phase. Vascular thrombosis can lead to organ infarction.

Grade based on highest grade assessment made on imaging, at operation or on pathologic specimen.

More than one grade of liver injury may be present and should be classified by the higher grade of injury.

Advance one grade for multiple injuries up to a grade III.

Figure 12: Liver Organ Injury Scale-2018 revision

AAST Grade	AIS Severity	Imaging Criteria (CT Findings)	Operative Goals	Pathologic Criteria
I	2	– Subcapsular hematoma and/or parenchymal contusion without laceration	– Nonexpanding subcapsular hematoma – Parenchymal contusion without laceration	– Subcapsular hematoma or parenchymal contusion without parenchymal laceration
II	2	– Perirenal hematoma confined to Gerota fascia	– Nonexpanding perirenal hematoma confined to Gerota fascia	– Perirenal hematoma confined to Gerota fascia
		– Renal parenchymal laceration ≤1 cm depth without urinary extravasation	– Renal parenchymal laceration ≤1 cm depth without urinary extravasation	– Renal parenchymal laceration ≤1 cm depth without urinary extravasation
III	3	– Renal parenchymal laceration >1 cm depth without collecting system rupture or urinary extravasation	– Renal parenchymal laceration >1 cm depth without collecting system rupture or urinary extravasation	– Renal parenchymal laceration >1 cm depth without collecting system rupture or urinary extravasation
		– Any injury in the presence of a kidney vascular injury or active bleeding contained within Gerota fascia	–	
IV	4	– Parenchymal laceration extending into urinary collecting system with urinary extravasation	– Parenchymal laceration extending into urinary collecting system with urinary extravasation	– Parenchymal laceration extending into urinary collecting system
		– Renal pelvis laceration and/or complete ureteropelvic disruption – Segmental renal vein or artery injury – Active bleeding beyond Gerota fascia into the retroperitoneum or peritoneum	– Renal pelvis laceration and/or complete ureteropelvic disruption – Segmental renal vein or artery injury – Segmental or complete kidney infarction(s) due to vessel thrombosis without active bleeding	– Renal pelvis laceration and/or complete ureteropelvic disruption – Segmental renal vein or artery injury – Segmental or complete kidney infarction(s) due to vessel thrombosis without active bleeding
		– Segmental or complete kidney infarction(s) due to vessel thrombosis without active bleeding		
V	5	– Main renal artery or vein laceration or avulsion of hilum – Devascularized kidney with active bleeding – Shattered kidney with loss of identifiable parenchymal renal anatomy	– Main renal artery or vein laceration or avulsion of hilum – Devascularized kidney with active bleeding – Shattered kidney with loss of identifiable parenchymal renal anatomy	– Main renal artery or vein laceration or avulsion of hilum – Devascularized kidney – Shattered kidney with loss of identifiable parenchymal renal anatomy

Vascular injury is defined as a pseudoaneurysm or arteriovenous fistula and appears as a focal collection of vascular contrast that decreases in attenuation with delayed imaging. Active bleeding from a vascular injury presents as vascular contrast, focal or diffuse, that increases in size or attenuation in delayed phase. Vascular thrombosis can lead to organ infarction.

Grade based on highest grade assessment made on imaging, at operation or on pathologic specimen.

More than one grade of kidney injury may be present and should be classified by the higher grade of injury.

Advance one grade for bilateral injuries up to Grade III.

Figure13: Kidney Organ Injury Scale-2018 revision

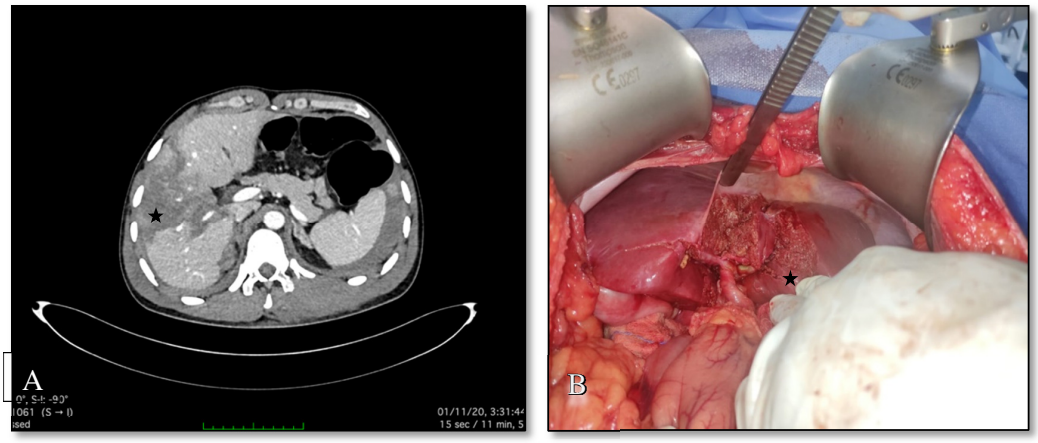

Figure 14: A- Axial cut Contrast-enhanced CT showing Grade 4 Liver laceration
B- Intraoperative picture showing Grade 4 Liver laceration

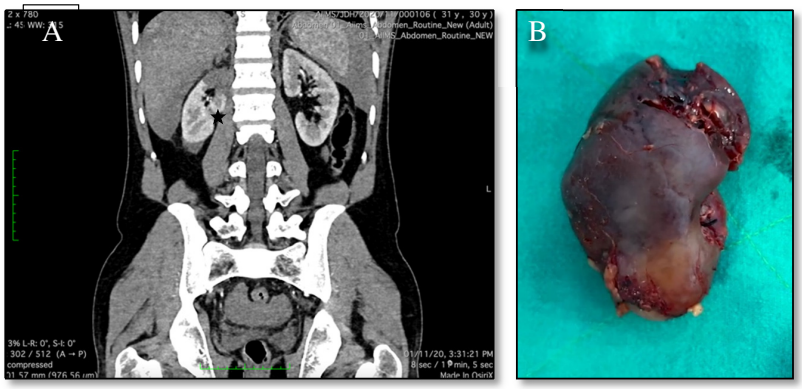

Figure 15: A- Axial cut Contrast-enhanced CT showing Grade 3 Renal laceration
B- Image showing Nephrectomy specimen

Figure 16: Splenectomy specimen showing Grade 4 splenic hilum injury

2. DIAPHRAGMATIC INJURIES:

Diaphragmatic injuries can be due to both blunt and penetrating injuries. This is often hidden and diagnosis of diaphragmatic injuries is usually delayed. The incidence of these injuries ranges between 0.8% to 15%[28]. These are more common with penetrating injuries than in blunt trauma. The commonly seen diaphragmatic injury involves the left postero-lateral hemidiaphragm. It is mostly associated with injuries to adjacent organs contributing up to 20% mortality, this may be unrelated to diaphragmatic injury. A diaphragmatic defect will lead to inadequate ventilation, and the herniation of abdominal viscera into the chest further leads to worsening respiratory functions. Chest X-ray abnormalities like abnormal gas shadow obscuring the diaphragm or nasogastric tube in the thorax may suggest diaphragmatic rupture. But in most cases, the chest x-ray can be normal. These diaphragmatic injuries can be managed laparoscopically and by open laparotomies.

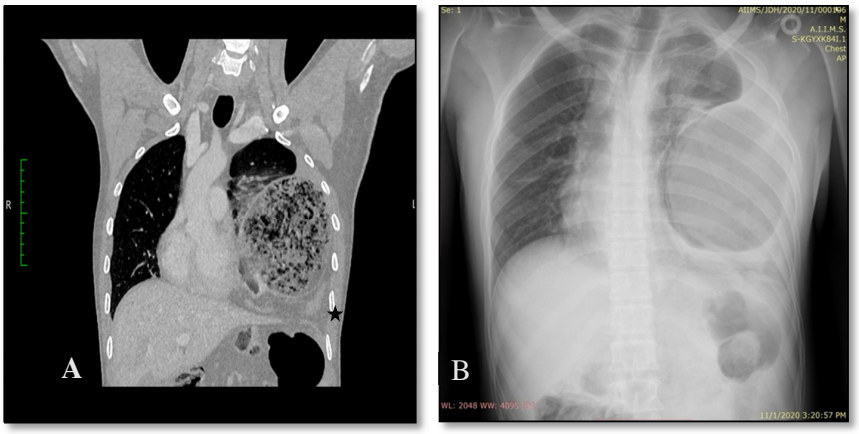

Figure 17: A- Coronal section of CT Thorax suggestive of Diaphragmatic rupture with herniation of the stomach into the thorax
B- Chest X-ray showing abnormal gas shadow in left hemithorax

3. DUODENAL INJURIES:

These are uncommon injuries accounting for 2% of abdominal trauma, more common in penetrating than blunt injury to the abdomen. Gunshot wounds account for 80% of the cases. It has a mortality of 24% and in most of the cases (70%) has other associated abdominal injuries. Morbidity is mainly related to septic complications that occur due to leak after the repair. Diagnosis of these duodenal injuries is often challenging, and are first diagnosed after exploratory laparotomy[29]. Clinical examination findings are usually masked because of other associated injuries and due to the retroperitoneal location of the duodenum. CT is a good modality of diagnosis in patients with a low threshold for exploration, which demonstrates thickened wall, peri-duodenal air and fluid. The approach to the management of these injuries depends on the amount of tissue destruction. Most of these operative duodenal injuries are suitable for primary repair[30].

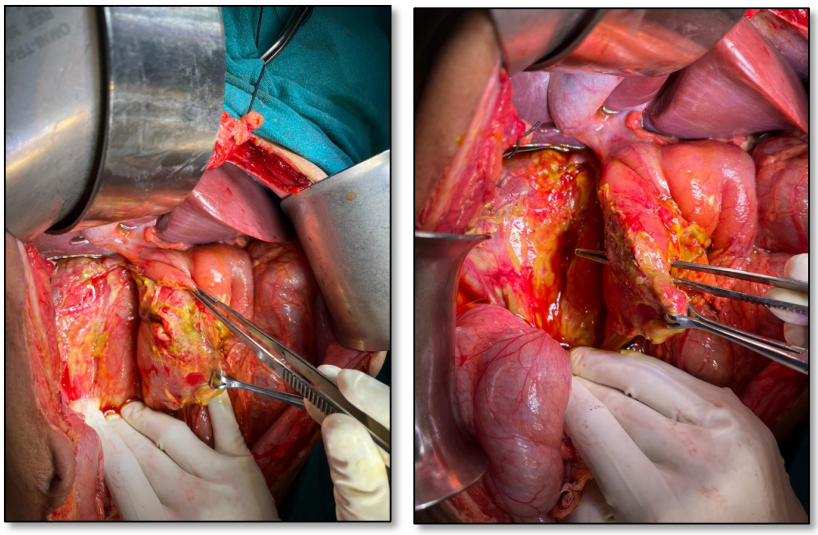

Figure 18: Intra-operative image showing through and through the perforation of D2 segment of Duodenum

4. PANCREATIC INJURIES:

It is commonly associated with duodenal injuries because of their close anatomical relation. The overall incidence of these pancreatic injuries is relatively low i.e. 0.2% to 12%. Pancreatic injuries are more common in penetrating injuries with an incidence of 4.4% [31]. The severity of the pancreatic injury, ductal injury-causing leak AAST Grade ≥ III, has a critical role in morbidity and mortality. Contrast-enhanced CT helps diagnose these injuries. A high index of suspicion should be maintained apart from the CT in diagnosing these pancreatic injuries. Raised serum amylase when obtained 3 hours after the injury is sensitive, but has low specificity. ERCP or Magnetic resonance cholangiopancreatography increases the diagnostic yield.

Major pancreatic injuries require early surgical management. Distal injuries can be managed by distal pancreatectomy, while proximal injuries can be managed by ligating the duct.

Ductal injuries with minimal tissue destruction are managed by guided drainage thus forming a controlled fistula. The closure of these fistulas can be facilitated by biliary decompression by ERCP stents. Severe tissue destruction requires pancreaticoduodenectomy (Whipple's procedure).

Grade*	Type of Injury	Description of Injury	ICD-9	AIS-90
I	Hematoma	Minor contusion without duct injury	863.81-863.84	2
	Laceration	Superficial laceration without duct injury		2
II	Hematoma	Major contusion without duct injury or tissue loss	863.81-863.84	2
	Laceration	Major laceration without duct injury or tissue loss		3
III	Laceration	Distal transection or parenchymal injury with duct injury	863.92/863.94	3
IV	Laceration	Proximal? transection or parenchymal injury involving ampulla	863.91	4
V	Laceration	Massive disruption of pancreatic head	863.91	5

*Advance one grade for multiple injuries up to grade III. *863.51,863.91 - head;

Figure 19: Pancreas Organ Injury AAST

Figure 20: Distal pancreatectomy specimen for Grade III distal pancreatic injury

5. HOLLOW VISCUS INJURIES:

These are commonly noted in penetrating injuries, but may also be seen rarely with blunt trauma to the abdomen (0.3%). Mortality ranges between 15-20%, most of them are due to associated vascular injuries. It is often due to crushing, rupture and shearing mechanisms. Steering wheel and seat belt injuries cause bucket handle tear to the mesentery due to deceleration forces(Figure 21). The clinical assessment shows signs of peritonitis more evident as time progresses. This might be difficult to assess in case of other associated injuries. A high index of suspicion is required to find missed injuries as CT imaging has some limitations.

The repair of these bowel injuries depend on the amount of intestinal wall destruction in relation to the overall circumference of the lumen and may require resection and anastomosis.

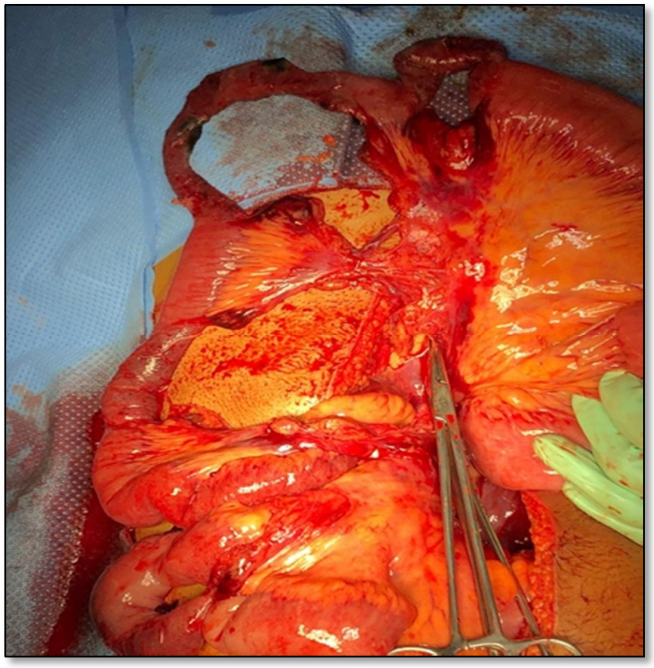

Figure 21: Intra-operative image suggesting bucket handle tear of the mesentery

Complications associated with abdominal trauma:

Complications following management of trauma are common, and there is no standardized method of reporting these endpoints. In the surgical field, postoperative complications are considered the most sensitive surrogate marker for quality[32]. A recent large randomized control trial reported 23 pre-specified complications but with no stratification for severity or clinical prognosis.

Adam et al. performed a retrospective analysis of trauma admissions from January 2009 to June 2011[33]. They compared 3866 blunt admissions and 966 penetrating admissions to their level II trauma centre (Total n=4832) during this interval. In addition, they compared patient demographics, Injury Severity Score(ISS), early shock, injury type, time to the operating room (OR), blood loss and transfusions, surgical management, infections, entero-cutaneous(EC) fistulas, enteric leaks, length of hospital stay (LOS) and mortality.

They concluded that blunt and penetrating intestinal injury patterns have high injury severity. Operative delays were noted in the case of both blunt injury group and penetrating injuries. Other complications noted are anastomotic failures, nosocomial infections, and enteric fistulas. These features implicate the complexity of blunt injury patterns and indicate the need for early and vigilant recognition of blunt abdominal injuries for improving outcomes.

Ntundu et al. conducted a study for one year between August 2016 to August 2017 [34]. They aimed to determine the relationships among the causes, characteristics, patterns and outcomes of abdominal injury patients undergoing operations at Kilimanjaro Christian Medical Centre**.** They assessed various injury patterns, aetiologies and outcomes within 30 days. The outcomes were postoperative complications and mortality. They used multivariate logistic regression to explore the association between factors associated with morbidity and mortality.

They concluded that the major factors associated with mortality are extra-abdominal injury, injury to the head or pelvis, LOS ≥ 7 days, systolic BP < 90 and anaemia. In addition, severe injury on the New Injury Severity Score (NISS) and time > 6 h from injury to admission significantly predicted mortality.

Performance improvement and patient safety (PIPS) guidance from the American College of Surgeons Committee on Trauma directs that mortality, number of complications, and LOS are useful trauma outcomes but does not have any grading scale for complications. Thus, a binary system like these (present or not) is unsuitable while determining the efficacy of new management strategies that might reduce the complication burden. To overcome this, a more precise way to compare the non-mortality complication frequency and severity is needed.

Previous attempts to grade the surgical complications:

Interpretation of the surgical outcome data was initially hampered due to the absence of a widely accepted ranking system to classify the surgical complications. Terms such as minor, major, moderate, or severe have been inconsistently used among various authors over a period of time[35]. In 1990 many attempts were made to stratify the surgical complications but none achieved widespread acceptance.

Clavien-Dindo Grading system for surgical complications[35]:

In 1992 a novel approach to rank surgical complications based on the management strategies applied to treat them was proposed. This differentiates the outcomes following surgery as (a) complication; (b) Failure to cure; and (c) sequela. These negative outcomes add new problems to the disease underlying. Complications are the unexpected events not intrinsic to the procedure whereas sequelae are inherent to the procedure, while failure means that the purpose of the procedure is not fulfilled.

These complications were classified into four grades:

- Grade 1: These are alterations from the ideal postoperative course, non-life-threatening, and with no disability.
- Grade 2: Potentially life-threatening but without residual disability. These are again subdivided based on the requirement for invasive procedures.
- Grade 3: Those with a residual disability, including organ resection or persistence of life-threatening conditions.
- Grade 4: Death as a result of complications.

This classification was revisited and modified in 2004 after 12 years of its routine usage. A new 5-grade classification system mainly focuses on reporting permanently disabling and life-threatening complications. This was further validated in a cohort of 6336 patients who had elective surgeries. Its reproducibility was evaluated with an international survey with a couple of questionnaires among 10 surgical centres worldwide [(36)].

Compared with the previous system of classification more importance was given to the patient perspective like the quality of life was considered by including potential permanent disability in the grading system

Grade	Definition
Grade I	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions Allowed therapeutic regimens are drugs as antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside
Grade II	Requiring pharmacological treatment with drugs other than such allowed for grade I complications Blood transfusions and total parenteral nutrition are also included
Grade III	Requiring surgical, endoscopic or radiological intervention
Grade IIIa,	Intervention not under general anaesthesia
Grade IIIb	Intervention under general anaesthesia
Grade IV	Life-threatening complication (including CNS complications)* requiring IC/ICU management
Grade IVa	Single organ dysfunction (including dialysis)
Grade IVb	Multiorgan dysfunction
Grade V	Death of a patient
Suffix "d"	If the patient suffers from a complication at the time of discharge (see examples in Table 2), the suffix "d" (for "disability") is added to the respective grade of complication. This label indicates the need for a follow-up to fully evaluate the complication.

*Brain haemorrhage, ischemic stroke, subarachnoid bleeding, but excluding transient ischemic attacks.

IC- Intermediate care; ICU-Intensive care unit

Figure 22: The Original Clavien Dindo Scoring System of Surgical Complications[36].

This validated Clavien-Dindo scoring system has been used in elective surgeries to assess postoperative complications for over 25 years.

Others have made modifications to the Clavien-Dindo scoring system but have not defined the purpose of such modifications. The modification made by Martin et al. is named as Memorial Sloan Kettering Cancer Centre (MSKCC) severity grading system[37,38].

Another proposed modification is The Accordian Severity Grading System[39]. It introduces a standardized tabular reporting system and defines simple quantitative terms to grade the complications. It has the ability to expand to classify a range of complications that occur in large complex studies, at the same time can contract for smaller studies. This expansion

occurs in a group of “severe” complications. The contracted state of the grading system has only four levels while the expanded classification has 6 levels(Figure 23,24).

1. Mild complication:

   Requires only minor invasive procedures that can be done at the bedside such as insertion of intravenous lines, urinary catheters, and nasogastric tubes, and drainage of wound infections. Physiotherapy and the following drugs are allowed-antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy.

2. Moderate complication:

   Requires pharmacologic treatment with drugs other than such allowed for minor complications, for instance, antibiotics. Blood transfusions and total parenteral nutrition are also included.

3. Severe complication:

   All complications requiring endoscopic or interventional radiologic procedures or re-operation as well as complications resulting in failure of one or more organ systems.

4. Death:

   Postoperative death.

Figure 23: The Accordian Severity Classification of Post-operative Complications: Contracted Classification[39]

1. Mild complication:

   Requires only minor invasive procedures that can be done at the bedside such as insertion of intravenous lines, urinary catheters, and nasogastric tubes, and drainage of wound infections. Physiotherapy and the following drugs are allowed-antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy.

2. Moderate complication:

   Requires pharmacologic treatment with drugs other than such allowed for minor complications, for instance, antibiotics. Blood transfusions and total parenteral nutrition are also included.

3. Severe: invasive procedure without general anesthesia

   Requires management by an endoscopic, interventional procedure or re-operation* without general anesthesia.

4. Severe: operation under general anesthesia

   Requires management by an operation under general anesthesia.

5. Severe: organ system failure[1]

6. Death: Postoperative death

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*An example would be a wound re-exploration under conscious sedation and/or local anesthetic

[1]Such complications would normally be managed in an increased acuity setting but m some cases, patients with complications of lower severity might also be admitted to an ICU.

Figure 24: The Accordian Severity Classification of Post-operative Complications: Expanded Classification[(39)]

It can be very much helpful in reporting complication burdens in the case of trauma patients. Some investigators had used the Clavien-Dindo scoring system to classify complications following emergency abdominal surgeries[(40)].

There are two main differences between elective general surgery and trauma. First, there is a concept of non-operative management in trauma. Second, the trauma patients will be having

physiologically deranged parameters when compared to the elective surgeries in which optimization is done before the surgery.

Naumann et al., in their multi-centric study, described a novel "adapted Clavien-Dindo in Trauma (ACDiT) scale", taking into account these differences, and also validated the scale by comparing the results with subjective opinions of trauma victims and relatives (Table 1)[11]. In our study, we use this adapted Clavien-Dindo in Trauma scale to grade the management-related complications (both operative and non-operative) in patients with abdominal trauma.

Grades	Complications
I	Any deviation from the clinical course is expected during the initial management plan without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions. The allowed therapeutic regimens include antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections that were opened at the bedside
II	Complications that require pharmacological treatment with drugs other than those allowed for Grade I complications. Unexpected blood product transfusions after haemostasis were deemed to be achieved*, and total parenteral nutrition (unless specified as part of original management) are also included
III	Complications that require unplanned surgical, endoscopic, or radiological interventions** a. without general anaesthesia b. with general anaesthesia
IV	Life-threatening complications that require unplanned readmission or extension of stay in the critical care unit (including high dependency) beyond what was initially expected. This includes new organ failure other than the primarily injured organ a. single organ dysfunction b. multi-organ dysfunction
V	Death a. No active treatment or escalation (patient kept comfortable). b. Actively treated patient.

Table 1: The Adapted Clavien Dindo in Trauma (ACDiT) scale (adapted from Naumann et al.) [11]

[Key: * Blood transfusions used for initial resuscitation are not included; ** Relook surgeries as part of Damage control are not considered as unplanned]

AIMS & OBJECTIVES

AIMS AND OBJECTIVES

AIM:

To assess the outcomes and complications in patients with abdominal trauma.

OBJECTIVES:

Primary objective:

To determine the outcomes of abdominal trauma based on the Adapted Clavien-Dindo scoring system in trauma (ACDiT).

Secondary objective:

- To correlate the outcome of abdominal injury based on Adapted Clavien-Dindo scoring system with Length of hospital stay (LOS), Length of ICU stay (ICU LOS) and mortality.
- To describe injury patterns among patients with abdominal trauma.
- To describe the factors associated with mortality and morbidity.

MATERIALS & METHODS

MATERIALS AND METHODS

Study Setting:

This study was conducted on patients with abdominal trauma at the All India Institute of Medical Sciences (AIIMS), Jodhpur.

Study Design:

A prospective observational study was conducted over 18 months, between January 2020 to July 2021.

Inclusion criteria:

- All injured patients with abdominal trauma, having Abbreviated Injury Score (AIS) of ≥2 in the abdominal region, admitted to the Department of General Surgery, or in the Department of Paediatric Surgery, AIIMS, Jodhpur.

Exclusion criteria:

- Pregnant and lactating women.
- Patients who are brought dead.

Methodology:

Patients received in the Emergency Department (ED) were triaged and resuscitated as per advanced Trauma Life Support (ATLS) protocols. After initial resuscitation, based on the severity of injuries and findings of the primary survey, patients were admitted and shifted to the operation room (OR) or the Ward or Intensive Care Unit (ICU).

Those with abdominal injury requiring admission were primarily managed by the Department of General Surgery or the Paediatric Surgery.

Patients admitted were evaluated and managed as per protocols of the admitting team.

The clinical and demographic parameters of every patient were recorded in a pre-defined proforma, which include:

Demographic data: Age, gender, date and time of arrival, any associated comorbidities.

Trauma-related data:

- Mode and mechanism of injuries
- The time interval between injury and arrival to ED
- The time interval between arrival in ED and shifting the patient to the operating room (Emergency to OT interval).

  *If the patient undergoes surgery.

Clinical data: (After initial assessment and resuscitation)

- Heart rate (HR) and systolic blood pressure (SBP)
- Revised Trauma Score (RTS) and Triage New Trauma Score (T-NTS) to assess clinical status and hemodynamic stability
- The regional examination of the abdomen
- Bedside e-FAST findings
- Additional radiological findings, if any
- Laboratory data: Haemoglobin count (Hb), serum creatinine, blood urea
- Operative findings in those requiring emergency exploratory laparotomy
- Associated injuries
- Injury Severity Score (ISS) and New Injury Severity Score (NISS) of the patient.

An initial treatment plan was made by the treating team, which include: Non-operative management (NOM), radiological intervention, expected surgery or upfront Damage control surgery (DCS).

This initial plan was written, any deviation from it was noted, any further change of plan is considered as a complication. The grading of management-related complications was done using Adapted Clavien-Dindo in Trauma (ACDiT). Damage control surgery was treated as an initial plan, and subsequent phases of DCS were not considered as complications.

Length of Hospital stay, Length of ICU stay, and in-hospital mortality was recorded and was correlated with ACDiT.

Patients were followed up till their discharge or death, whichever was earlier.

Statistical Analysis:

Data were analysed using Statistical Package for Social Sciences (SPSS) version (28.0), IBM Inc.

Descriptive statistics such as mean, median, standard deviation and interquartile range for continuous variables and frequency along with percentages of categorical variables were calculated.

Summarized data were represented using Graphs and Tables. Student t-test was used for comparison of quantitative data with normal distribution. Mann Whitney U test was used to compare numerical data without normal distribution, and two-tailed $\chi 2$ analysis was used for categorical data.

Multiple groups of continuous data were compared using a Kruskal-Wallis test.
The Wald H0 test was used for categorical data. A p-value of <0.05 was taken as significant.

Ethical Considerations:

Institutional Ethical Committee (IEC) approval was taken. (Annexure I)

RESULTS

RESULTS

During the study period, a total of 422 patients were admitted with various injuries in the Department of General Surgery and Paediatric Surgery. Out of this, 154(35.5%) patients having AIS $\geq$ 2 in the abdominal region were recruited into our study.

Patients and Clinical Characteristics:

The majority of the patients with abdominal trauma were males (n=127, 82.5%), rest 27(17.5%) were females. They were aged between 4 and 70 years with a median age of 28 years (IQR=19-39)(Figure 25). The majority of the patients were below 50 years of age (87.5%). Comorbidities among the patients were charted as Charlson's comorbidity index, which is summarized in Table 2 along with other demographic data of the patient population. Out of 154 patients, 139 (90.3%) patients had blunt abdominal injuries, while 15 (9.7%) had penetrating abdominal injuries. Among them, 103 patients (99 blunt abdominal injuries and 5 penetrating injuries) were managed non operatively initially (Figure 26). Road traffic injuries (60%) were the major cause of abdominal injuries, followed by fall from height (20%) (Figure 27).

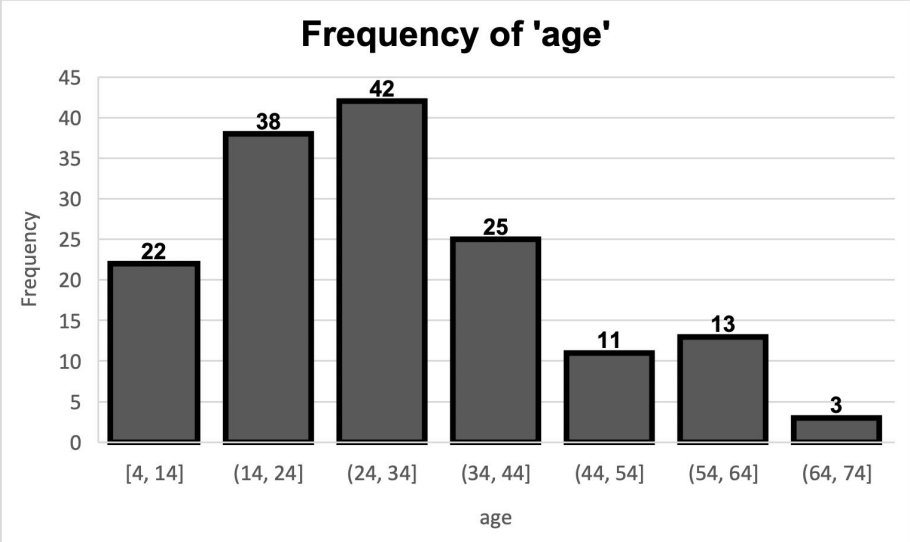


Figure 25: Graphical depiction of overall frequencies of age groups

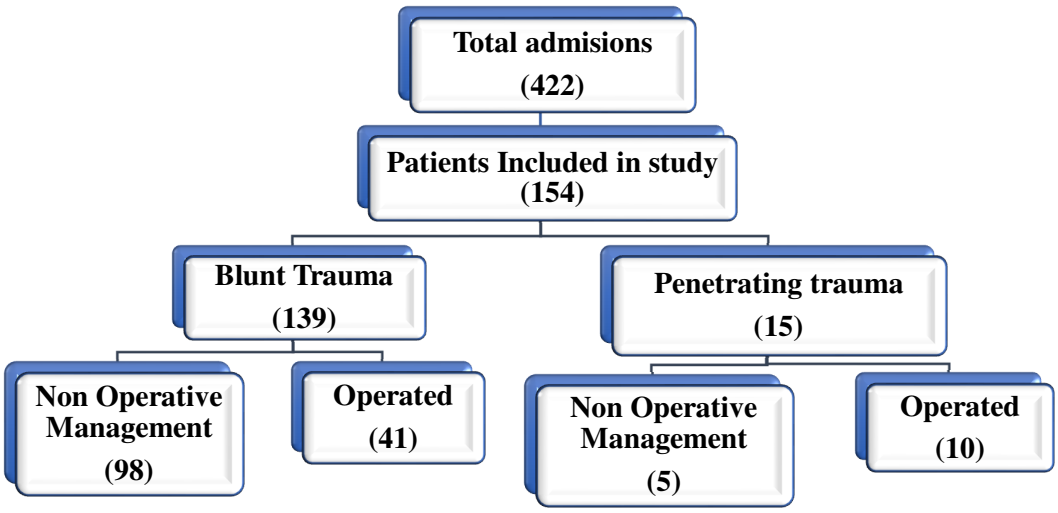


Figure 26: Flow diagram showing patient categorization and management strategy

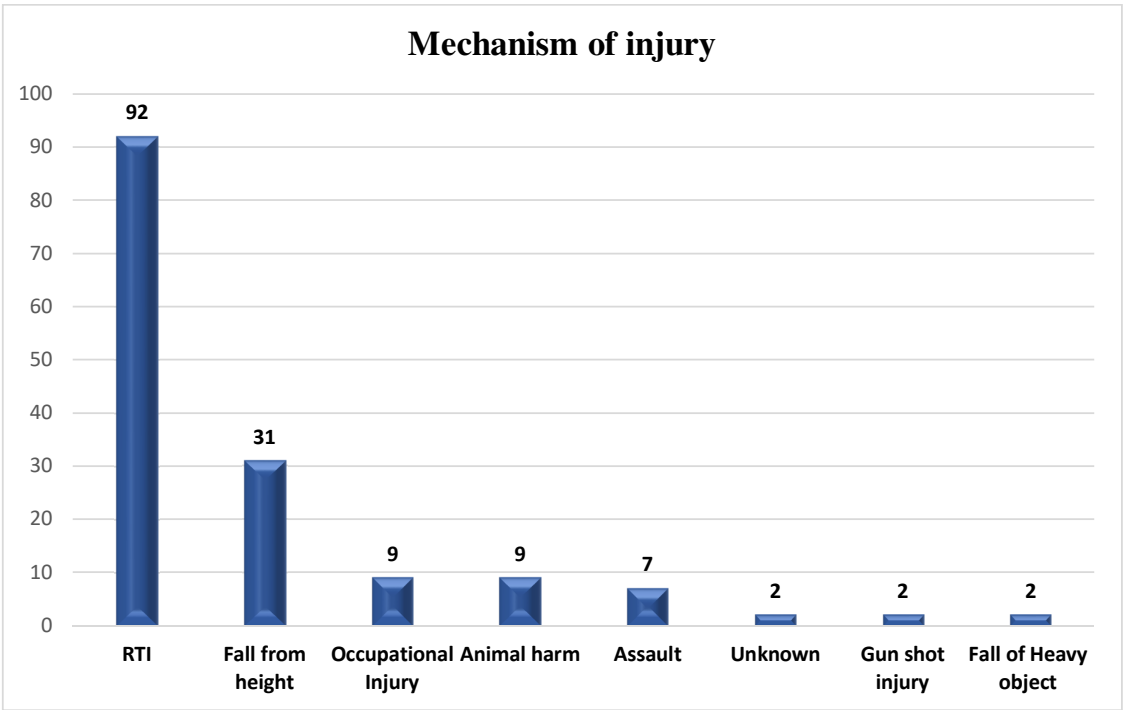


Figure 27: Chart showing various mechanisms of injury-causing abdominal trauma

The mean interval between injury to arrival at the Emergency Department was 5.5 hours (IQR:4-7.75). Figures 4 and 5 depict the distribution of patients according to the time interval between the injury to arrival at ED.

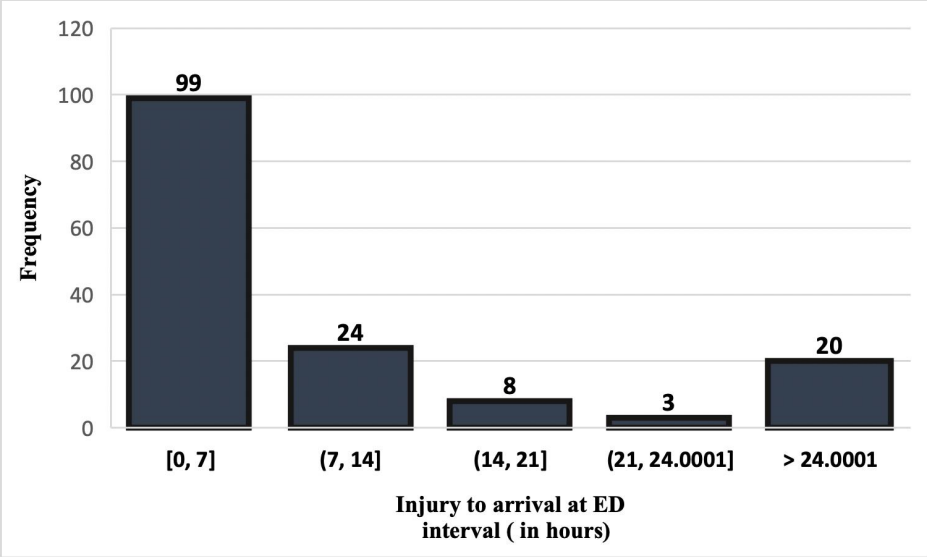


Figure 28: Graphical representation of the distribution of patients according to the time taken to reach the Emergency Department (ED)

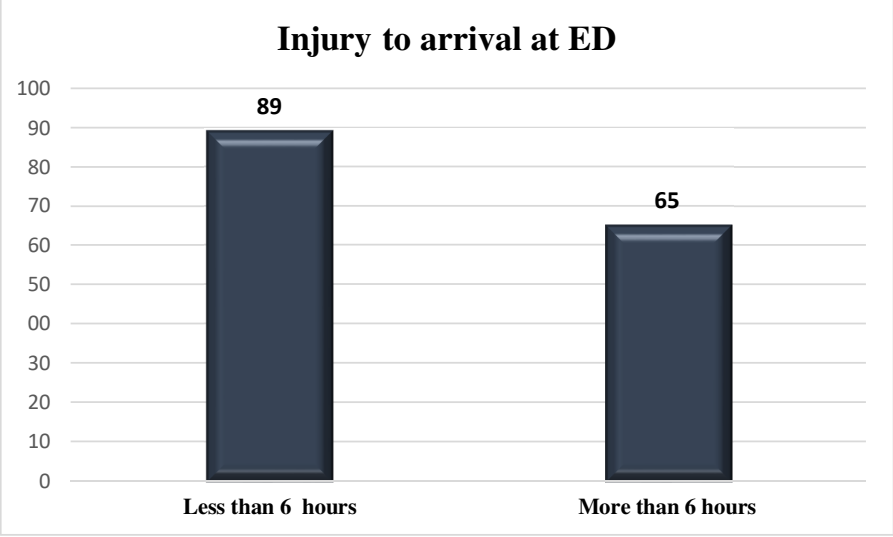


Figure 29: Distribution of patients according to the time interval between injury and arrival at Emergency Department (ED)

Injury Patterns:

In patients with blunt abdominal trauma, the liver was the most commonly injured organ found in 72 patients (51.8%) followed by spleen in 46 patients (33.1%), then small bowel and mesentery in 29 patients (20.9%). The bowel and liver were commonly injured organs seen in 5 patients (35.7%) in case of penetrating trauma to the abdomen.

Overall the most commonly injured organ was liver noted in 78 patients (50.3%) followed by spleen in 46(30.1%) patients, bowel and mesentery in 34 patients (22.2%) (Figure 30).

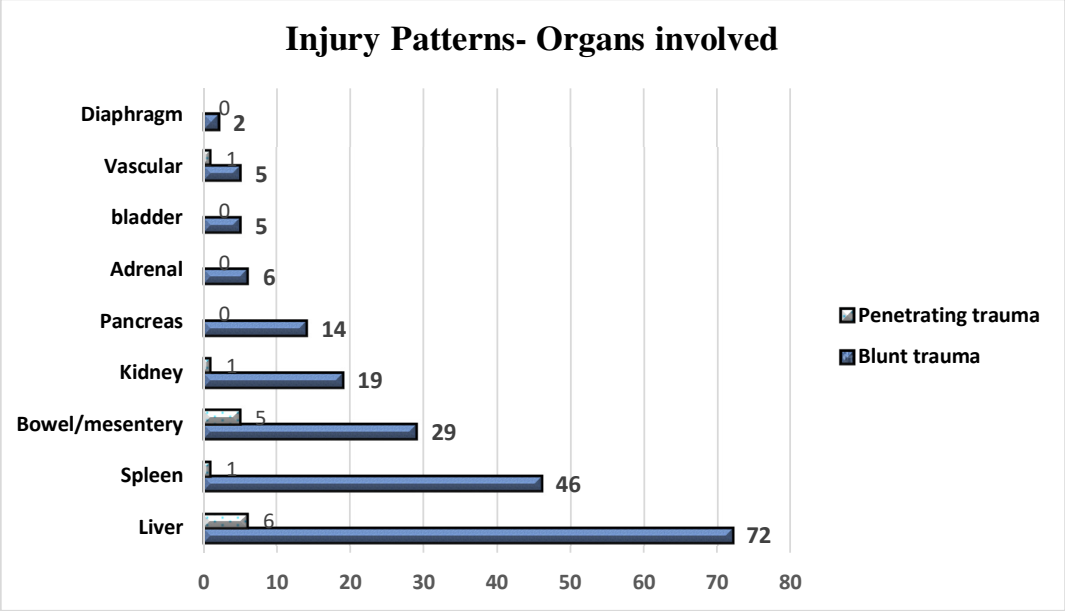


Figure 30: Injury patterns according to the visceral organ involved

Patients with abdominal trauma were also associated with other major injuries in 71 (46.1%) cases. This association is more in blunt cases (46.8%) than in penetrating injuries (7.2%). Moderate to severe thoracic injuries (AIS $\geq$ 3) seen in 64 patients(41.6%) were the major associated injuries, followed by head and neck injuries in 14 patients (9.1%) followed by injuries to extremities.

Patient Characteristics		All patients (n=154)
Age (median, IQR)		28(19-39)
Male, n(%)		127(82.5%)
Female, n(%)		27(17.5%)
Charlson's comorbidity index n(%)	Mild	18 (75)
	Moderate	4 (16.7)
	Severe	2(8.3)
Haemoglobin (Median, IQR)		10.5 (8.8-11.9)
Serum creatinine (Median, IQR)		1.02 (0.8-1.2)
Trauma scores	RTS (Median, IQR)	8 (7.75-8)
	T-NTS (Median, IQR)	21 (20-23)
	ISS (Median, IQR)	19 (14-26)
	NISS (Median, IQR)	22 (17-29)
Mechanism of injury, n(%)	Road traffic injury	92 (60)
	Fall from height	31 (20)
	Occupational injury	9 (6)
	Assault	7 (5)
	Unknown	2 (1)
	Animal harm	9 (6)
	Gunshot injury	2 (1)
	Fall of Heavy object	2 (1)
Injury presentation interval (hr)	Less than 6 hrs n(%)	89 (57.8)
	More than 6 hrs n(%)	65 (42.2)
Emergency to OT interval (Median, IQR) (in hrs)		3(0-12)
Heart rate (/min) (Median, IQR)		103(86.5-114)
Haemodynamically unstable (SBP <90mm of Hg) n(%)		30 (19.5)
Extra abdominal injuries n(%)	Thorax	64 (41.6)
	Head	14 (9.1)
	Extremities	6 (0.4)
Other endpoints (Median, IQR)	Length of hospital stay	7 (5-12)
	Length of ICU stay	2.1 (0-3)
	Mortality n(%)	23 (14.9)

Table 2: Demographic characteristics, ED presentation and outcomes of the entire patient population

Complications:

Overall, 60 patients (39%) had complications, which were graded using the ACDiT score. Out of this, 32 (53.3%) complications were found in those who were managed non operatively, while 28 (46.7%) were found in the operative group (Figure 31).

Most of these complications were found among the age group of 16-30 years. Age distribution of complications is summarised in Figure 32. Among those with complications, 25 had comorbidities. Of these 25 patients, 19 had mild Charlson's index scores, 4 had moderate scores and 1 patient had a severe index score.

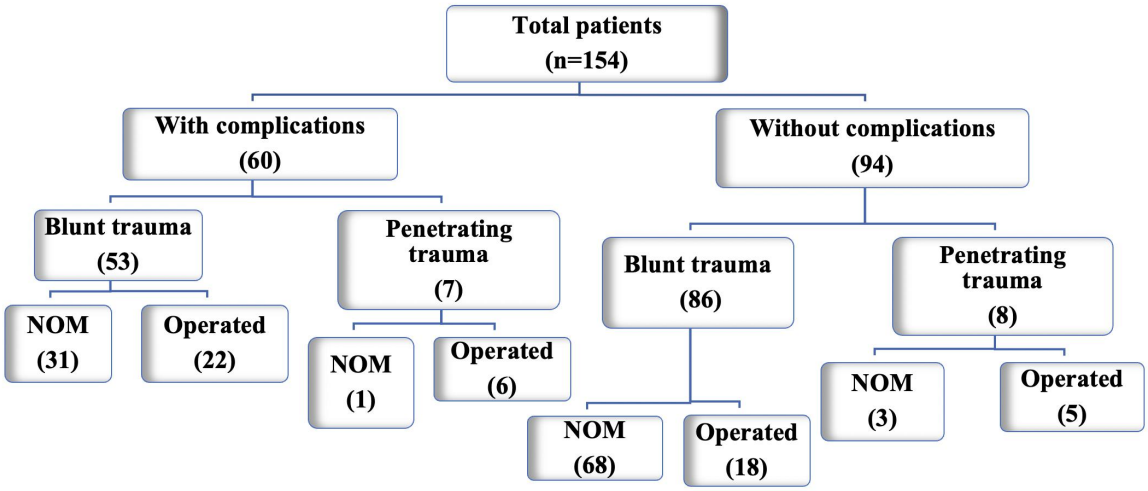


Figure 31: Flow diagram showing complications among the patient population categorized according to the mode of injury

***NOM-Non Operative management**

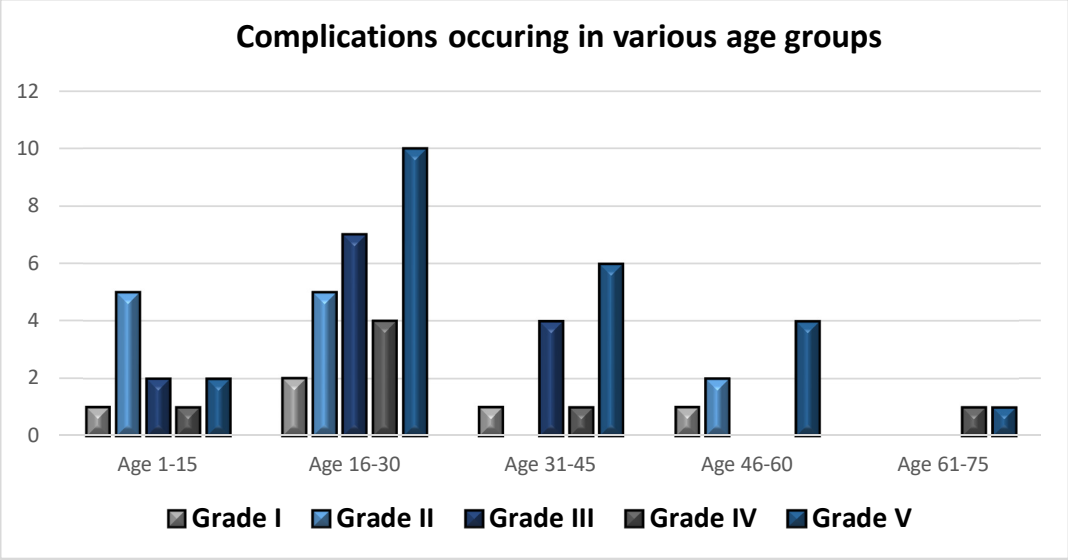


Figure 32: Graphical representation of the distribution of complications among different age groups

Patients without complications were found to have lower ISS, and NISS when compared with those with complications. Patients with higher ISS and NISS were also found to have higher grades of ACDiT scores. Among those patients who had complications, 32 patients had significant extra-abdominal injuries, most of them were thoracic injuries. Patients presented with shock initially were found to have more complications. The higher grades of complications were noted in patients who had a higher class of shock. The distribution of shock among the various grades of complication is represented in Figure 33.

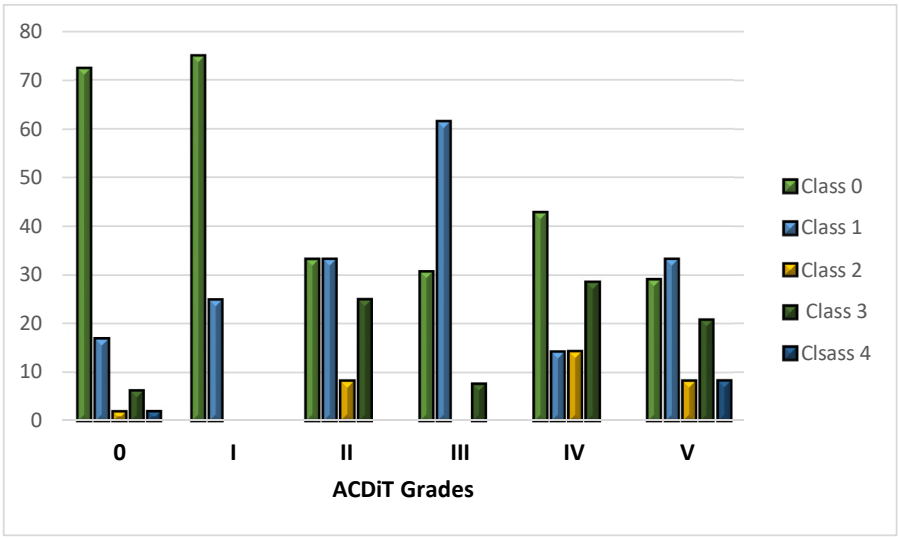


Figure 33: Distribution of population according to the class of shock and complication

Patients with lower haemoglobin and higher serum creatinine were found to have higher grades of complications. The distribution of haemoglobin levels among the various grades of complications is depicted in Figure 34.

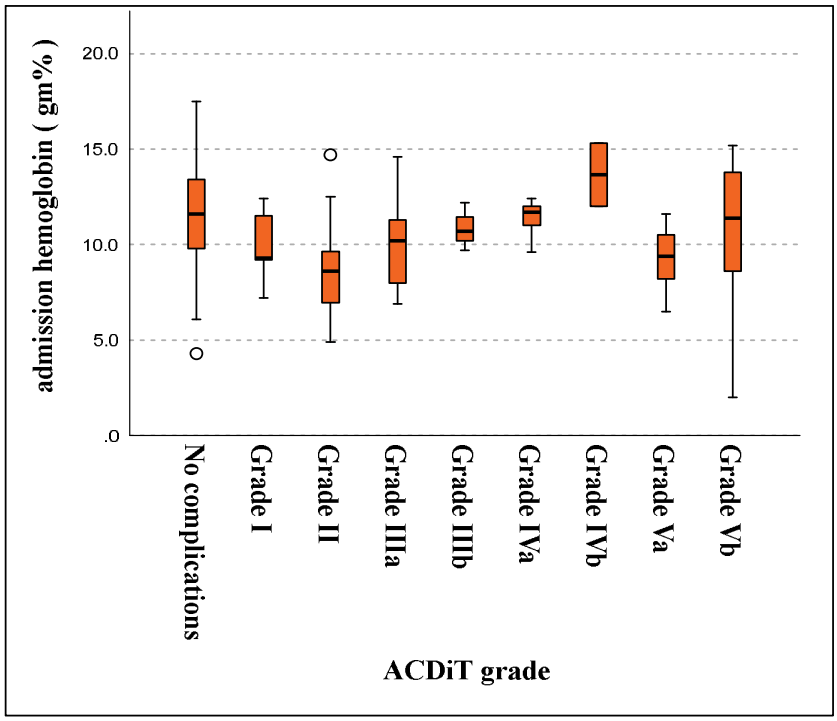


Figure 34: Distribution of Haemoglobin levels among various grades of complications

Patients who presented late to the emergency (>6 hours from the time of injury) were found to have significant (p-value=0.01, according to independent samples Kruskal-Wallis test) complications than those who presented early. Among those requiring emergency laparotomy, patients with complications had a longer median duration for shifting the patient from ED to the operating room (OR) (p-value=0.005, independent samples Kruskal-Wallis test).

Figures 35 and 36 depict the distribution of means of the time interval between injury to arrival at ED and time taken to reach OR among various grades of ACDiT complications.

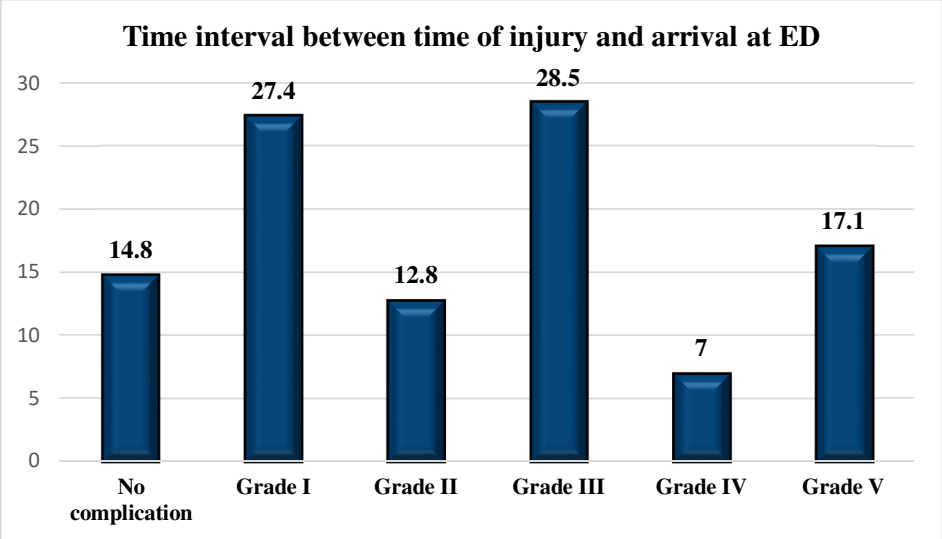


Figure 35: Distribution of study population according to mean hours taken to reach Emergency Department

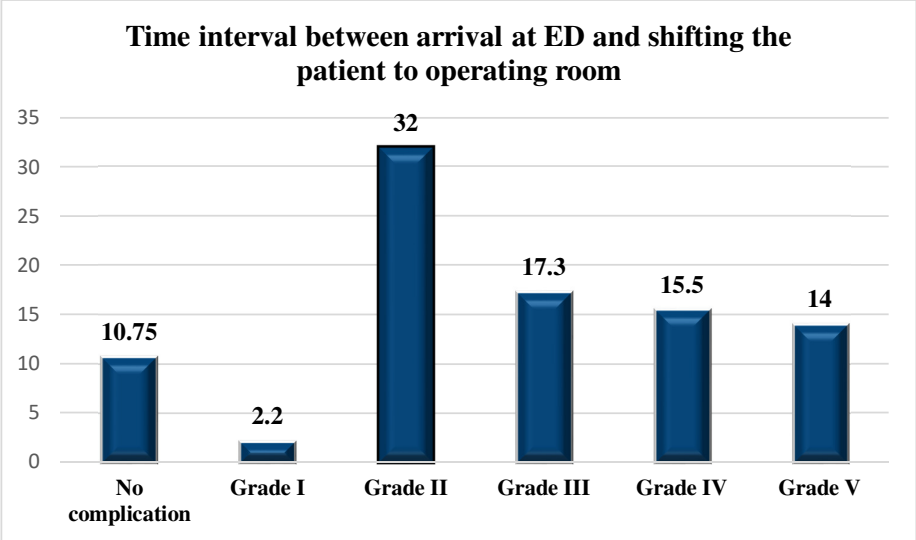


Figure 36: Distribution of study population according to mean ED to OT interval in hours

The overall comparison of demographics among patients with and without complication is depicted in Tables 3 and 4.

Complications were found in 53 (38.1%) patients with blunt abdominal trauma, and in 7 (46.7%) patients with penetrating injury had complications. Among these, 21 patients(15.1%)

with blunt injury and 3 patients (14.3%) with penetrating injury had mortality (ACDiT Grade 5). The overall mortality rate was 14.9%.

The overall distribution of individual grades of complications is shown in Figure 37. Most of the non-mortality complications include (n=12) ACDiT Grade II, which include anaemia requiring blood transfusion, sepsis. These complications were noted in 9 patients with blunt abdominal injuries, and 3 patients with penetrating injuries. Other examples of the various grades of ACDiT complications are summarized in Annexure 2.

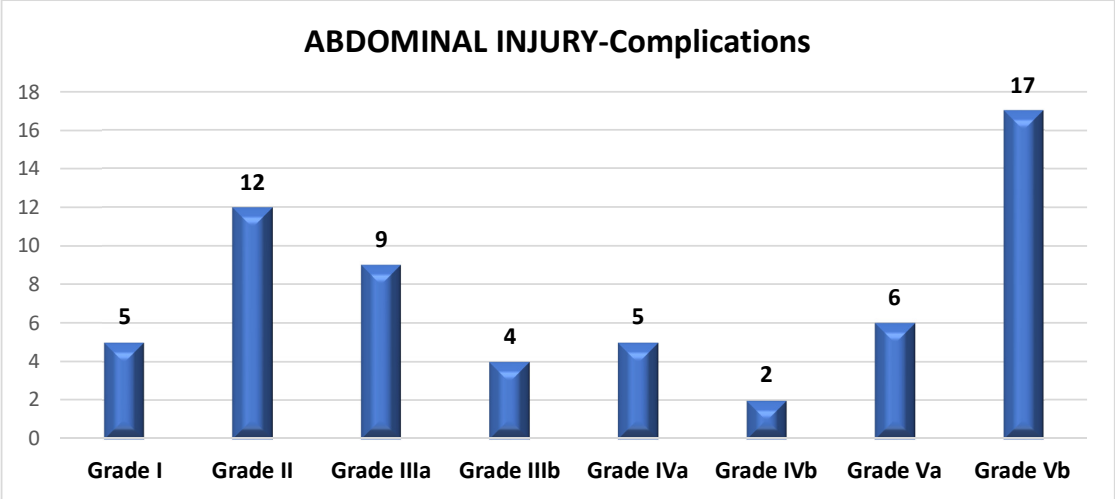
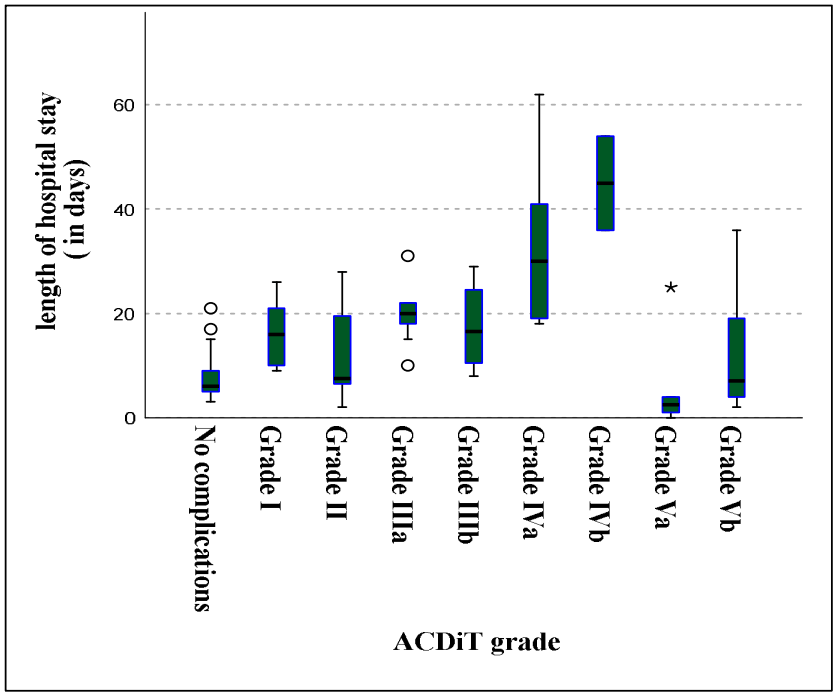


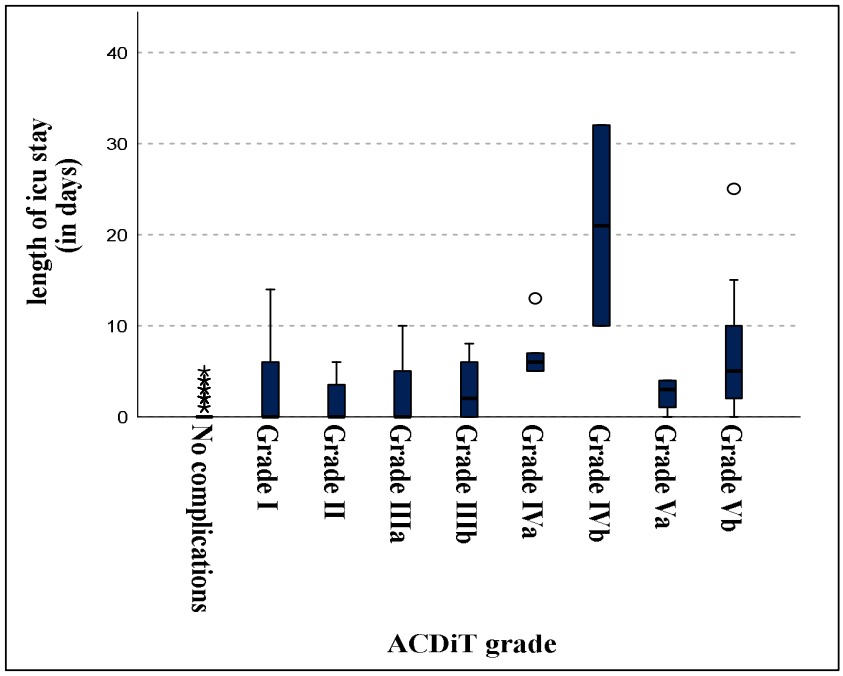
Figure 37: Graphical representation of the overall distribution of complications

Comparison of morbidity endpoints and ACDiT grades of complications:

The overall median length of hospital stay among the patient population was 7(5-12) days. In comparison, the median length of hospital stay among patients with complications was 15(4-21) days. Among patients who are admitted to ICU, the median length of ICU stay was 2.1(0-3) days. There was a significant correlation between higher ACDiT grades and length of hospital stay on multiple linear regression analysis with an adjusted R-square value of 0.11 and 95% confidence interval is 0.79-0.124 ($p<0.01$) (Figure 38).



38 A



38 B

Figure 38 A and 38 B: Comparison of length of hospital stay (A) and length of ICU stay (B) across ACDiT grades (Horizontal bars represent median values; upper and lower boundaries of boxes represent the 25th to 75th percentiles (i.e., IQR); whiskers represent 10th to 90th percentiles; circles represent outliers)

Patient characteristics		With complications (n=59)	Without complications (n= 95)	P-Value
Age (median, IQR)		27(18-40)	30(20-38)	.239
Male, n(%)		47	80	.470
Charlson's comorbidity index n(%)	Mild	10(16.9)	8(8.4)	.480
	Moderate	1(1.7)	3(3.2)	
	Severe	0(0)	2(2.1)	
Trauma scores median (IQR)	RTS	8(6-8)	8(7-8)	< .001**
	T-NTS	21(18-22)	22(21-23)	< .001**
	ISS	24(17-29)	17(12-22)	< .001**
	NISS	27(17-34)	18(14-27)	< .001**
Mode of Injury n(%)	Blunt	53(89.8)	86(90.5)	.887[1]
	Penetrating	6(0.10)	9(9.5)	
Mechanism of injury n (%)	Road traffic injury	37(63)	55(58)	.553[1]
	Fall from height	12(20)	19(20)	.959[1]
	Occupational injury	3(5)	6(7)	.752[1]
	Assault	1(1)	6(6)	.181[1]
	Unknown	0(0)	2(2)	.262[1]
	Animal harm	4(7)	5(5)	.697[1]
	Gunshot injury	1(2)	1(1)	.732[1]
	Fall of Heavy object	1(2)	1(1)	.732[1]
Injury presentation interval (hr)	Less than 6 hrs n(%)	26(44.1)	63(66.3)	.007*
	More than 6 hrs n(%)	33(55.9)	32(33.7)	.007*
Heart rate (/min) (median, IQR)		112(90-124)	98(84-110)	.003**
Haemodynamically unstable n(%)	SBP <90mm of Hg,	17(28.8)	10(10.5)	.007**
Extra abdominal injuries n(%)	Thorax	31(52.5)	35(36.8)	0.036*
	Head	11(18.6)	7(7.4)	
	Extremities	4(6.8)	3(3.2)	
	Overall	34 (57.6)	37 (38.9)	

Table 3: Comparison of patient demographics among patients with and without complications.[*Significant according to Wald H0 test

Patient characteristics	With complications (n=59)	Without complications (n= 95)	P Value
Operative management, n(%)	27(45.8)	24(25.3)	.009**
Emergency to OT interval (median, IQR) (hr)	4.75(0.5-24)	3(1-12)	0.08**
Other endpoints (median, IQR) Length of hospital stay	15(6-21)	6(5-9)	< .001**
Length of ICU stay	3(0-7)	0	< .001**

Table 4: Comparison of management and endpoints among patients with and without complications.

[Significant according to Kruskal-Wallis Test]**

**** Significant according to Kruskal-Wallis Test and. [1]According to Pearson Chi-square test.]**

Among patients requiring ICU care (n=54) more and higher grades of ACDiT complications (Grades III and IV) were noted ($p<0.001$, according to $\chi 2$ test). Figure 39 depicts the distribution of complication grades among ICU patients. Among the 54 patients who were admitted to ICU, 6 were diagnosed to have active COVID 19 infections during in-hospital management. Table 5 shows the comparison of patient characteristics and outcomes among those who are managed in ICU and those who did not.

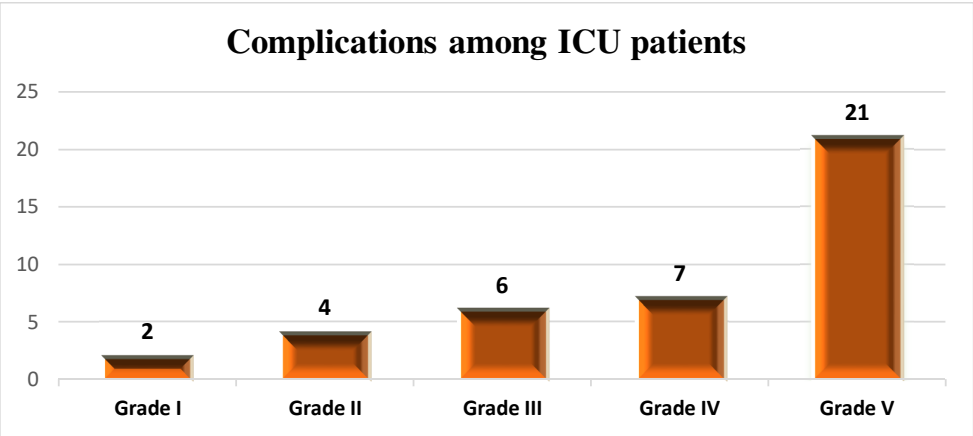


Figure 39: Graphical representation of the distribution of complications among ICU patients

Patient characteristics		ICU patients (n=54)	Non ICU patients (n= 100)	P Value
Age (Median, IQR)		27(17.5-37)	30(20.5-39.5)	.260
Male, n(%)		42(77.8)	85(85)	.262
Trauma scores median (IQR)	RTS	8(6-8)	8(7-8)	< .001*
	T-NTS	20(16.75-22)	22(21-23)	< .001*
	ISS	24(17-29)	17(12.5-22)	< .001*
	NISS	27(17-34)	18.5(14-29)	< .001*
Operative management, n(%)		27(50)	24(24)	.001
Haemodynamically unstable SBP <90mm of Hg, n(%)		15(27.8)	10(10)	.006**
Heart rate /min, median (IQR)		113(101-124.3)	97(84-108)	< .001**
ACDiT Grades of complication n(%)	No complications	14(26)	80(80)	< .001*
	I	2(4)	3(3)	< .001*
	II	4(7)	8(8)	
	III	6(11)	7(7)	
	IV	7(13)	0[+]	
	V (mortality)	21(39)	2(2)	

Table 5: Comparison between ICU and Non-ICU patients
[[+]All patients with Grade IV complications will be admitted to ICU,

***Significant according to $\chi 2$ test,**Significant according to Kruskal-Wallis Test]**

COVID 19 and abdominal trauma:

Overall 10 patients were diagnosed to have COVID 19 infection among the sample population. Among them, 2 were found to have an active infection before the trauma. While rest 8 probably had acquired COVID infection during the in-hospital stay. Out of these 8 patients, 5 (62.5%) died. Among those who died, the median ISS and NISS were 27(IQR:26-29) and 28(IQR:28-34) respectively.

Mortality:

Out of 154 patients with abdominal injuries, 23 patients died (14.9%) which were included under Grade V according to the ACDiT scale. Among them, 21 patients had blunt abdominal injuries while 2 patients had penetrating injuries. The mortality rate among patients with blunt injury was 15.1%, for penetrating trauma it was 13.3%. The distribution of patients with mortality is described in Figure 40.

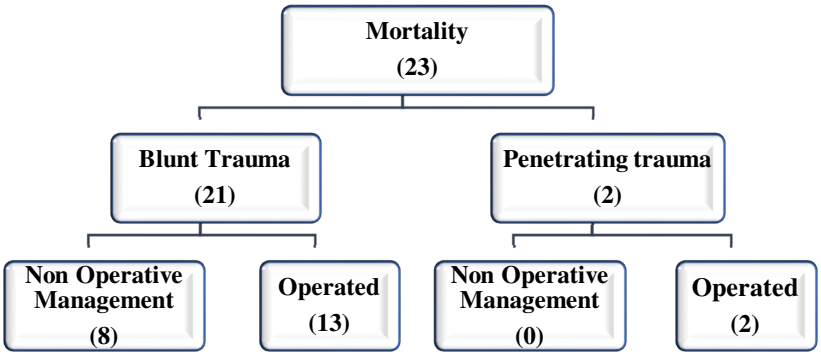


Figure 40: Flow chart showing distribution among patients with mortality

Out of these 23 patients, 8 were hemodynamically unstable at the time of presentation, 21 patients required ICU care and 15 patients required upfront exploratory laparotomy. Among the patients who had mortality 5 patients were diagnosed to have COVID 19 during the hospital stay. Table 6 depicts patient characteristics among patients who died.

Of all these 23 deaths 4 patients(17.4%) died within 48hours, 10 patients(43.5%) died within 7 days and the rest of the 9 patients (37.5%) died within 30 days (Figure 41). The median ISS and NISS among the patients who had mortality were much higher than overall median scores.

Survival rates were found to be maximum among the patients with lesser grades of ACDiT complications. Survival analysis among different ACDiT grades of complication is depicted in Figure 42.

Figure 41: Distribution of mortality over days of hospital stay

Patient Characteristics		Patients with mortality (n=23)
Age (median, IQR)		28.7 (26.3-30)
Male, n(%)		20 (87%)
Female, n(%)		3 (13%)
Haemoglobin (Median, IQR)		10.6 (8.2-12.7)
Serum creatinine (Median, IQR)		1.2 (1.03-1.44)
Trauma scores	RTS (Median, IQR)	7 (5-8)
	T-NTS (Median, IQR)	20 (13-21)
	ISS (Median, IQR)	27 (24-34)
	NISS (Median, IQR)	30 (27-34)
Mechanism of injury, n(%)	Road traffic injury	14 (60.9)
	Fall from height	6 (26.1)
	Animal harm	1 (4.34)
	Gunshot injury	1 (4.34)
	Fall of Heavy object	1 (4.34)
Injury presentation interval (hr)	Less than 6 hrs n(%)	8 (34.8)
	More than 6 hrs n(%)	15 (65.2)
Emergency to OT interval (Median, IQR) (hr)		8 (1-24)
Heart rate (/min) (Median, IQR)		114 (106-124)
Haemodynamically unstable (SBP <90mm of Hg) n(%)		7 (30.4)
Shock index (Median, IQR)		1.1 (0.97-1.5)
Extra abdominal injuries n(%)	Thorax	64 (41.6)
	Head	14 (9.1)
	Extremities	6 (0.4)
Other endpoints (Median, IQR)	Length of hospital stay	5 (3-19)
	Length of ICU stay	4 (2-8.5)

Table 6: Demographics among patients with mortality

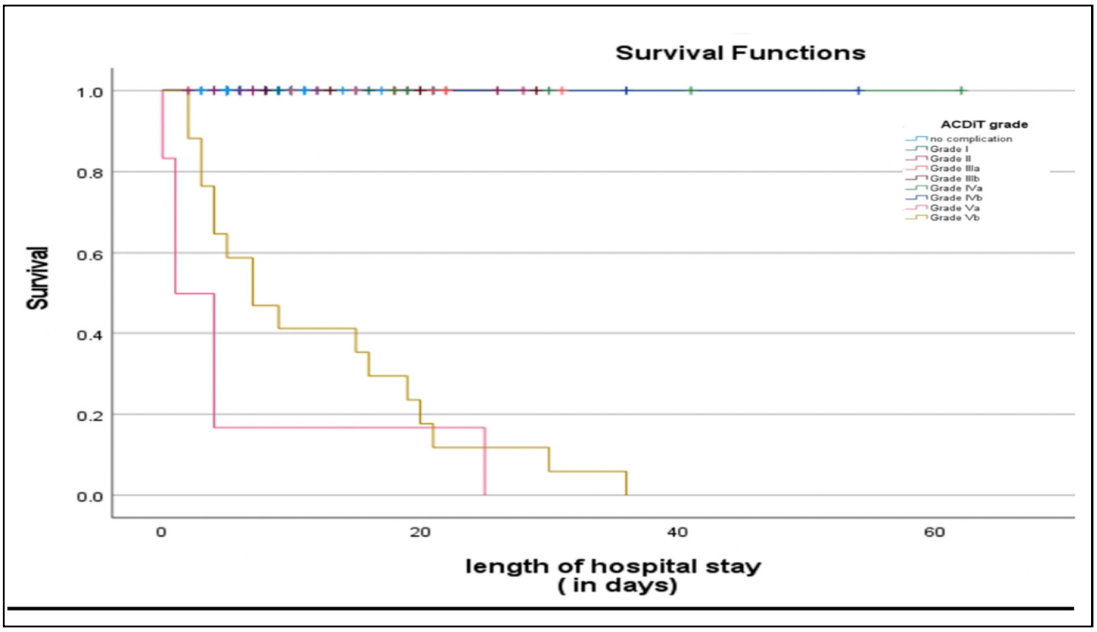


Figure 42: Kaplan Meier Curve depicting cumulative survival based on the different grades of complication

DISCUSSION

DISCUSSION

Naumann et al. in their multi-centric study described a novel "adapted Clavien-Dindo in Trauma (ACDiT) scale"[11], considering differences between elective surgeries and trauma. They validated the scale by comparing the results with subjective opinions of trauma victims and relatives. The adaptation of Clavien-Dindo scoring system in trauma (ACDiT) help in grading the complications among the patients with trauma who have been managed both operatively and non-operatively. It was successfully validated among 484 trauma patients who were managed in ICU and non-ICU wards.

In this study we determined the outcomes of the patients with abdominal trauma in an LMIC, using ACDiT grades. In our study, we found a strong association between length of ICU day and length of hospital days with higher grades of ACDiT. Thus proposing its use as a tool to assess outcomes in the case of patients with abdominal trauma.

The majority of patients included in this study were young males between the age group of 21-40 years (n=66,43%). This is comparable to other studies among LMIC[41–44]. A study by Kundlas et al conducted in level I trauma centre in South India showed 49% patients in this age group[42]. Another study held in Tanzania by Chalya et al also found that commonly involved age group was 21-30 years (46.5%)[44]. This age group is commonly involved in the socio-economic activities making them more prone for injuries. The involvement of this younger age group affects the economic activity of the society and thus becomes a major public health problem. The Comorbidities among the study population were calculated using Charlson's comorbidity index. Based on the comorbidity index scores the severity of comorbidities was categorized as mild (1-2), moderate (3-4), and severe ($\geq$5)[45]. While comparing this with outcomes we found no significant association, this can be attributed to a lesser number of patients having comorbidities.

In this study, blunt abdominal injuries are the major cause of trauma followed by penetrating contributing about 90.2% of the patients included. This is in concordance with other studies among LMIC[9,20,46]. This can be attributed to the major mechanism of injury being road traffic injuries(60%) followed by falls(20%). RTAs are the major cause of abdominal injuries because of accelerating motorization in India without proper road safety measures[6]. These findings should be considered in increasing the road safety measures as an important preventive measure for trauma. The lack of proper ambulance services also plays an

important role in the delayed presentation which in turn affects the outcomes of these patients[34]. This is proven in our study as the patients who presented late (>6 hours) are found to have more complications than those who presented to the emergency department early(p-value= 0.007, on Wald H0 test). This was seen in another study were they found delay in definitive care led to more complications[47]. Ntundu et all in their study also found that complications were more in patients presented more than 24 hours after the injury[34].

Most patients with abdominal trauma in this study had injuries to the liver followed by the spleen and bowel this is similar to some of the previous studies[18,20] but is contrary to most of the other studies which suggest the spleen is the most commonly involved organ in abdominal trauma[9,34,48,49]. In the case of penetrating trauma small bowel and liver were more commonly involved followed by the spleen.

The association of extra-abdominal injuries increases the NISS thus influencing patient outcomes[19]. In this study, we found that patients with associated extra-abdominal had more and higher grades of complications. Among the study population, 46.1% of patients had significant extra-abdominal injuries, which is comparable to other previous studies. Ntundu et al in their study noted that 65.4% patients had other associated injuries[34]. Narasimhaiah K et al in their study conducted in South India also found additional comorbid injuries in 56.1% patients[46]. While in other study conducted by Chalya et al only 31.3% patients included had extra abdominal injuries[44]. These extra-abdominal injuries include thoracic, head followed by injuries to extremities, which is similar in other studies. This is attributed to the major mechanism of injuries being RTAs and fall from height[6].

The median length of hospital stay and that of ICU stay among the patients included in the study were 7(IQR:5-12) and 2.1(IQR:0-3) respectively. This is comparable to study conducted by Ntundu et al[34]. It is less when compared to study conducted by Chalya et al who reported overall median length of hospital stay of 12 days[44].

Overall complications were found in 60(39%) patients included in the study
The factors associated with increased complications were haemodynamic instability at the time of presentation, lower T-NTS [9,34]. In the present study also patients presented with SBP <90 were found to have more complications. Patients with higher grades of complications were also found to have higher classes of shock. Patients with initial lower RTS and T-NTS

were also found to have more significant complications (p-value=<0.001, according to Kruskal-Wallis test).

Most of the previous studies compared the negative outcomes among the patients with abdominal trauma as morbidity and mortality. Some studied complications among the patients with abdominal trauma who are managed operatively. While complications following management of trauma are common and are observed in both operative and non-operative management.

There is a need for transparent and continuous assessment of quality of management in surgical patients for improving the existing treatment protocols. Common methodology for reporting the negative outcomes in surgical patients is warranted, as any deviation may cause difficulty in the evaluation of surgical performance. Thus any reporting system for stratifying the negative outcomes should be uniform, objective and with less chance of errors.

The validated Clavien-Dindo scoring system[36] has been used in the case of elective surgeries to assess postoperative complications for over 25 years. Some investigators used this scoring system to classify complications following emergency abdominal surgeries[40,50].

The validated Clavien-Dindo classification was used by Gool et al for stratifying complications after laparotomy in trauma patients [51]. In their study, they found that in patients with trauma undergoing laparotomy, pneumonia leading to respiratory failure and sepsis were major complications which were categorized as Grade II complications according to Clavien-Dindo classification.

In our study, we categorized complications using the ACDiT scale. In patients with abdominal trauma, major non-mortality complications found were of Grade II which include anaemia requiring blood transfusion, pulmonary infections. In our study wound infections were low (5 out of 57 patients) when compared to other studies. The median length of hospital stay in patients with complications was 15(IQR:6-21) days, while in patients without complications it was 6 (IQR:5-9). Patients with higher grades of complications had a higher number of both lengths of hospital stay and ICU stay on multiple linear regression analysis with an adjusted R-square value of 0.11 and 95% confidence interval is 0.79-0.124 (p<0.01).

A total of 54 patients required ICU admission. Patients admitted in ICU had more and higher grades of complications than those who are managed in the wards($p<0.001$), this is noted in other studies on ICU complications after trauma. Patients requiring ICU admissions were found to have higher ISS and NISS scores when compared to those who were managed in wards ($p<0.001$). More patients(27.8%) were found haemodynamically unstable (with SBP <90 mm of Hg) at the time of primary survey, among those requiring ICU admission than those who are managed in wards(p-value=0.006, according to Kruskal-Wallis test). In the present study, the overall complication rate in ICU patients was 74.1%. This can be attributed to more sick patients being admitted to ICU due to the limitation of ICU beds. The mortality rate of patients admitted to ICU was 39 % which is more when compared to Non-ICU patients (2%).

Abdominal injury contributes to most of the morbidity and mortality rates among trauma patients[11]. The overall mortality rate in this study was 14.9% (23 out of 154) which is high when compared to some studies among LMIC[16,17]. While some other studies had mortality rates of 17.1% and 21.3%[46], this can be attributed to associated extra-abdominal injuries in these studies. In our study delayed presentation to the ED (>6hours), SBP less than 90 mm of Hg at the time of presentation were found to have a significant association with mortality($p=0.02$). Patients lower haemoglobin and deranged serum creatinine were noted in patients with mortality. Patients with higher ISS and NISS also had a significant association with mortality($p<0.001$, according to Kruskal-Wallis test). The median emergency to OT interval among patients who were operated on in our study was 3 hours with IQR 0-12 hours. Patients with higher emergency to OT intervals were found to have more mortality($p=0.005$). Patients requiring upfront exploration(65.2%) were also found to be more among those who had mortality. Mortality within 2 days of injury was mainly due to severity of the injury and haemodynamic instability at the time of presentation, and deaths occurring within 7 days of admission were attributed to haemorrhage and sepsis, while the mortality within the next 30 days was mainly due to sepsis and multi-organ failure. Haemodynamic instability, deranged kidney function test at admission, higher ISS score and delayed injury to presentation interval >6 hours were found to be important independent predictors of mortality. The severe injury with higher NISS and time of presentation >6 hours were also found to be independent predictors in other studies[34].

Many previous studies measured the negative outcomes of abdominal trauma in terms of morbidity and mortality which are binary variables. With ACDiT we can measure other non-mortality complications which are more common than mortality. This can also help in categorizing the severity of complications among operative and non-operatively managed patients with abdominal trauma. This scale is the best available tool to assess the performance of trauma centres and to compare quality control measures and new interventions in the management of abdominal trauma.

RECOMMENDATIONS:

We recommend routine usage of the ACDiT scale for grading complications among patients with abdominal trauma. This will help in objective analysis of morbidity and improve the quality of management.

The ACDiT score should be one of the data points, among patients with abdominal trauma, to assess the quality of management among various trauma centres, or within a trauma centre. This will help in revisiting their management strategies for achieving meaningful outcomes apart from mortality.

We suggest giving weightage to each grade of the ACDiT scale, rather than considering the highest grade.

LIMITATIONS:

In the present study, overall patients with penetrating abdominal injuries are very few, thus making it difficult to correlate complications separately.

This scoring system considers only the highest grade of complication, thus ignoring minor grades in patients having multiple complications. These minor events cause significant morbidity among the patients with abdominal trauma which are underestimated. In addition, comparison of patients with more than complications are difficult.

There may be differences in decision making among the clinicians for the management of the same grade of complication.

CONCLUSION

CONCLUSION

From this study, we successfully validated the adapted Clavien Dindo in trauma (ACDiT) scale for grading complications among patients with abdominal trauma.

The ACDiT scale can be used to stratify the complication in case of patients with abdominal trauma who are managed operatively and non-operatively. It also considers damage control surgery, interventional radiology, I.C.U. management. It is a non-binary system that acts as an objective measure of complication and outcomes, thus helping us to improve the quality of management among patients with abdominal injury across different trauma centres.

Alternative methods for grading the negative outcomes do not consider non-operative management as a treatment modality, which nowadays is gaining importance as a treatment option in patients with trauma.

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BIBLIOGRAPHY

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ANNEXURES

ANNEXURE I

Institutional Ethical Clearance Certificate

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

No. AIIMS/IEC/2020/2086 **Date: 01/01/2020**

ETHICAL CLEARANCE CERTIFICATE

Certificate Reference Number: **AIIMS/IEC/2019-20/1008**

Project title: **"An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital"**

Nature of Project:	**Research Project**
Submitted as:	**M.S. Dissertation**
Student Name:	**Dr.Kollanur Charan**
Guide:	**Dr.Naveen Sharma**
Co-Guide:	**Dr. Ramkaran Chaudhary & Dr. Arvind Sinha**

This is to inform that members of Institutional Ethics Committee (Annexure attached) met on **23-12-2019** and after through consideration accorded its approval on above project. Further, should any other methodology be used, would require separate authorization.

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.

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

Dr. Praveen Sharma
Member secretary
Institutional Ethics Committee
AIIMS,Jodhpur

Enclose:
1. Annexure 1

ANNEXURE II

Examples of some cases, their complications, and the subsequent ACDiT grades assigned

Age/ Sex	Mode	Mechanism	NISS	Injuries	Management of abdominal injury	Complication	Intervention	Grade
45/M	Blunt	RTA (driver of the car)	14	Traumatic ileal perforation; Left Distal radial Bone fracture	Operative management with primary repair of perforation	Superficial SSI	Opening skin sutures	I
13/F	Blunt	Fall from height	29	Grade 3 Liver laceration; Grade 4 Renal injury with hematoma; Left calcaneal fracture	NOM	Anaemia	Blood product transfusion	II
55/M	Penetrating	Occupational injury due to metallic projectile	9	Grade2 liver laceration with Hemoperitoneum	Operative management -Retrieval of metallic foreign body	Urinary tract infection during postoperative period	Culture-based antibiotics	II
25/M	Blunt	RTA (motorcyclist)	34	Grade 3 Liver laceration; B/L lung contusions; Brain parenchymal contusion; The left shaft of femur fracture.	NOM	Perineal wound infection	debridement of the perineal wound under LA	IIIa

45/M	**Blunt**	**Fall from height**	**29**	**Grade 4 Liver laceration with Segmental branch of right Hepatic artery aneurysm; B/L Haemothorax**	**Coil angioembolization Segmental hepatic artery**	**Malena post embolization**	**Upper GI Endoscopy**	**IIIa**
16/M	**Penetrating**	**RTA (motorcyclist projected off the vehicle)**	**29**	**Grade 4 Liver laceration with Left hepatic duct transaction; Fracture both bone right upper limb**	**NOM**	**Bile leak from penetrating wound**	**ERCP followed by Diagnostic laparoscopy with drain placement**	**IIIb**
30/M	**Blunt**	**RTA (motorcyclist)**	**22**	**Grade 2 right renal laceration; Right Adrenal hematoma; Moderate hemoperitoneum** **Right tibia, fibula B/L calcaneal and talus fracture,**	**Operative management**	**VAP**	**SSI; Prolonged intubation and ICU stay**	**IVa**
27/M	**Blunt**	**RTA (Pedestrian hit by a 2 wheeler)**	**22**	**Grade 2 Liver laceration; Grade 2renal hematoma; Right multiple rib fractures with haemothorax.**	**NOM**	**LRTI; secondary HTN; Multi-organ failure**	**prolonged ICU stay for 30 days f/b recovery and discharge**	**IVb**

56/M	**Blunt**	**RTA (driver of the car)**	**34**	**Grade 2 Liver laceration; Dissection in the infrarenal aorta and left common iliac artery; Diffuse SAH and Intraventricular haemorrhage; Right Parietal bone fracture.**	**NOM**	**Brainedead**	**Palliative management till physiological death**	**Va**
30/M	**Blunt**	**RTA (Passenger of the car)**	**27**	**Grade 3 Liver multiple lacerations; Grade 2 Pancreatic laceration; Mesenteric laceration with Jejunal ischemia; B/L lower lobe of lung contusion; with right pneumothorax**	**Operative management Resection of gangrenous jejunum with barrel stoma**	**Septic shock; MODS**	**Death while active management**	**Vb**

ANNEXURE-III

INFORMED CONSENT FORM

Title of Thesis/Dissertation :

AN OBSERVATIONAL STUDY TO ASSESS THE OUTCOMES AND COMPLICATIONS OF ABDOMINAL TRAUMA IN A TERTIARY HOSPITAL

Name of PG Student : Dr KOLLANUR CHARAN
(Mobile No :9704612073)

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 "An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital".
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 I 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 would be kept confidential.

Date: _____
Place: _____ Signature/Left thumb impression

This to prove that the above consent has been received in my presence.

Date: _____
Place: _____ Signature of PG Student

1. Witness 1

Signature_____
Name: _____
Address: _____

2. Witness 2

Signature:_____
Name: _____
Address: _____

ANNEXURE-IV

ऑल इंडिया इंस्टीट्यूट ऑफ मेडिकल साइंसेज
जोधपुर, राजस्थान
सहमति प्रपत्र

थीसिस / निबंध का शीर्षक: " तृतीयक अस्पताल में दर्द का आघात का परिणामों और जटिलताओं का निर्धारित करने के लिए एक अवलोकन अध्ययन "

पीजी छात्र का नाम : डॉ। कोल्लानुर चरण दीप सं. 9704612073
रोगी / स्वयंसेवी पहचान संख्या: _____
मैं, _____ एस / ओ या डी / ओ _____
आर / ओ _____ अध्ययन का एक हिस्सा होने के लिए मेरी पूरी सहमति दें "तृतीयक अस्पताल में दर्द का आघात का परिणामों और जटिलताओं का निर्धारित करने के लिए एक अवलोकन अध्ययन ", जिसकी प्रक्रिया और प्रकृति मेरी पूरी संतुष्टि के लिए मेरी अपनी भाषा में मुझे समझाई गई है। मैं पुष्टि करता हूं कि मुझे प्रश्न पूछने का अवसर मिला है।
मैं समझता हूं कि मेरी भागीदारी स्वैच्छिक है और मुझे किसी भी कारण के बिना किसी भी समय अध्ययन से बाहर निकलने का अधिकार है।
मैं समझता हूं कि मेरे और मेरे किसी भी मेडिकल रिकॉर्ड के बारे में एकत्र की गई जानकारी को गुप्त रखा जाएगा।
दिनांक : _____
स्थान: _____ हस्ताक्षर / बाएं अंगूठे की छाप

यह प्रमाणित करने के लिए कि उपयुक्त सहमति मेरी उपस्थिति में प्राप्त की गई है।

1. साक्षी 1

हस्ताक्षर: _____

नाम:_____

पता:_____

2. साक्षी 2

हस्ताक्षर: _____

नाम : _____

पता:_____

पीजी छात्र के हस्ताक्षर: _____

दिनांक:_____

स्थान:_____

ANNEXURE-V

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

JODHPUR, RAJASTHAN

DEPARTMENT OF GENERAL SURGERY

PATIENT INFORMATION SHEET

Name: **Age/Gender:**

Phone No: **Address:**

AUTHORIZATION:

I feel free to accept or refuse to participate in this study.

I have had a choice to ask questions and all of my questions were answered to my satisfaction

I have been given the information on the survey concerning its nature, purpose and duration as well as the procedures involved in the study, including any known or expected inconvenience and I accept the same

By signing this form I give my free and informed consent to take part in this study as outlined in the information sheet and this consent form. I understand that I am free to withdraw from the study at any given time. By signing up this form I have not given up my legal rights.

Hence I, hereby give my wilful consent for my inclusion in this study which is being conducted by the Department of General Surgery, All India Institute of Medical Sciences, Jodhpur by Dr KOLLANUR CHARAN

In any case of queries you may contact:

Dr KOLLANUR CHARAN
Academic Junior Resident, General Surgery
All India Institute of Medical Sciences, Jodhpur
Phone no. 9704612073

ANNEXURE-VI

आल इंडिया इंस्टिट्यूट ऑफ़ मेडिकल साइंसेज

जोधपुर, राजस्थान

जनरल सर्जरी विभाग

रोगी की सूचना पत्र

नाम:

आयु / लिंग:

फ़ोन नंबर:

पता:

प्राधिकार:

मैं इस अध्ययन में भाग ल□□□□लिए सहमति द□सकता हूँ या मना भी कर सकता हूँ ।

म□□□ास सवाल □ूछन□का स्वतंत्रता है और म□□□सभी सवालों का संतोषजनक जवाब मिला

मुझ□सर्वेक्षण में इसकी प्रकृति, उद्द□□य और अवधि क□साथ-साथ अध्ययन में शामिल प्रक्रियाओं क□बार□ में जानकारी दी गई है, जिसमें किसी भी ज्ञात या अ□□□ित असुविधा शामिल है और मैं इस□स्वीकार करता हूं

इस फॉर्म □र हस्ताक्षर करक□मैं इस अध्ययन में भाग ल□□□□लिए अ□नी स्वतंत्र और सूचित सहमति द□□ा हूं जैसा कि सूचना □त्र और इस सहमति फॉर्म में उल्लिखित है। मैं समझता हूं कि मैं किसी भी समय अध्ययन स□□ीछ□हटन□□□लिए स्वतंत्र हूं। इस फॉर्म □र हस्ताक्षर करक□मैंन□अ□न□कानूनी अधिकारों को नहीं छोड़ा है।

इसलिए, मैं इस अध्ययन में म□□□समावे□□ा क□लिए अ□नी इच्छा-सहमति प्रदान करता हूं, जो कि जनरल सर्जरी विभाग, आल इंडिया इंस्टिट्यूट ऑफ़ म□डिकल साइंस□□, जोध□र द्वारा डॉ। म□□ल□ल्ली वेंकटा साईराम द्वारा संचालित किया जा रहा है।

प्रश्नों क□किसी भी मामल□□में आ□ संप□र्क कर सकत□हैं:

डॉ। कोल्लानूर चारण,

अकादमिक जूनियर र□□जिडेंट, जनरल सर्जरी

आल इंडिया इंस्टिट्यूट ऑफ़ म□डिकल साइंस□□, जोध□र

Phone no.9704612073

ANNEXURE-VII

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

JODHPUR, RAJASTHAN

INFORMED CONSENT FORM

Title of Thesis/Dissertation: "**An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital".**

Name of PG Student: Dr. Kollanur Charan(Mobile No.9704612073)
Patient/Volunteer Identification No.:_____

I, _____ M/o or F/o _____
R/o_____
give my full, free, voluntary consent for my child to be a part of the study, "**An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital"** 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 would be kept confidential.
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-VIII

ऑल इंडिया इंस्टीट्यूट ऑफ मेडिकल साइंसेज

जोधपुर, राजस्थान

सूचित सहमति प्रपत्र

थीसिस / निबंध का शीर्षक: " तृतीयक अस्पताल में □ट का□आघात का□□रिणामों और जटिलताओं का निर्धारित करना□क□लिए एक अवलोकन अध्ययन "

□ीजी छात्र का नाम : डॉ। कोल्लानुर चरण ट□लि सं. 9704612073
रोगी / स्वयंसे□ी □हचान संख्या: _____
मैं, _____ M/O या F/O _____
R/O _____ अध्ययन का□एक हिस्सा□होना□क□लिए मे□ी □ूरी सहमति दें "तृतीयक अस्पताल में □ट का□आघात का□□रिणामों और जटिलताओं का निर्धारित करना□क□लिए एक अवलोकन अध्ययन ", जिसकी प्रक्रिया और प्रकृति मे□ी □ूरी संतुष्टि का□लिए मे□ी अ□नी भाषा में मुझा□समझाई गई है। मैं □ुष्टि करता हूं कि मुझा□प्रश्न □ूछना□का अवसर मिला है।
मैं समझता हूं कि मे□ी भागीदारी स्वैच्छिक है और मुझा□किसी भी कारण का□बिना किसी भी समय अध्ययन से□ाहर निकलना□का अधिकार है।
मैं समझता हूं कि मे□ा□और मे□ा□किसी भी मे□िकल रिकॉर्ड का□बारा□में एकत्र की गई जानकारी को गुप्तः रखा जाये□ा I
दिनांक : _____
स्थान: _____ हस्ताक्षर / बाएं अंगूठा□की छा□

यह प्रमाणित करना□क□लिए कि उ□□र्युक्त सहमति मे□ी उ□□स्थिति में प्राप्त की गई है।

1. साक्षी 1 2. साक्षी 2

हस्ताक्षर: _____ हस्ताक्षर: _____

नाम:_____ नाम : _____

□ता:_____ □ता:_____

□ीजी छात्र का□हस्ताक्षर: _____

दिनांक:_____

स्थान:_____

ANNEXURE-IX

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

JODHPUR, RAJASTHAN

DEPARTMENT OF GENERAL SURGERY

PATIENT INFORMATION SHEET

Title of the Study/Project: "An observational study to assess the outcomes and complications of abdominal trauma in a tertiary hospital".

i) Aims and purpose of the research:

To identify the patterns of outcome and grading the complications in patients with abdominal trauma using adapted Clavien-Dindo in trauma, so that we can assess the factors influencing morbidity and mortality after abdominal trauma and to develop better management protocol.

ii) Procedure:

Your child is invited to join the study. It is planned to include all such children with abdominal trauma in this study. The assessment shall include recording of relevant history and clinical examination findings. All necessary investigations required for the management will be done as required. Your child will be followed up either by hospital visit or by telephone on 1st 3rd, 7th, and 30th days after admission.

iii) Expected duration of the subject participation- One Time

iv) The benefits to be expected from the research to the subject or to others:

Knowing factors influencing the outcomes, and grading the posttraumatic complications in case of clinical management of abdominal trauma, so that proper treatment strategies can be formulated for the benefit of the community. We can also develop endpoints to assess the outcome, which can help in further research for improving the quality of life after abdominal trauma.

v) Any risk to the subject associated with the study:

Potentially none as we are not altering any treatment strategies but assessing the outcomes while managing the abdominal trauma.

vi) Maintenance of confidentiality of records:

The medical records of the patient shall be kept confidential and accessed only by the treating physician or, if necessary, by the Ethics Committee of the All India Institute of Medical Sciences, Jodhpur.

vii) Provision of free treatment, compensation for research related injury: Not applicable.

viii) Freedom of individual to participate and to withdraw from research at any time without penalty or loss of benefits to which the subject would otherwise be entitled: You are free to participate in and withdraw from this study at any time you so desire. This will in no way affect your ongoing treatment at the Institute.

ix) Telephone number/contact number of Principal Investigator (In case of any concerns related to your child's treatment, you should contact):

Dr Kollanur Charan, PG student, Department of General surgery, All India Institute of Medical Sciences, Jodhpur, Rajasthan, 342005; Phone: 9704612073;

Email – charankol555@gmail.com

x) It is certified that translation to vernacular is accurate.

ANNEXURE-X

आल इंडिया इंस्टिट्यूट ऑफ़ मेडिकल साइंसेज

जोधपुर, राजस्थान

जनरल सर्जरी विभाग

रोगी की सूचना पत्र

अध्ययन / □रियोजना का शीर्षक: तृतीयक अस्पताल में □ट का□आघात का□□रिणामों और जटिलताओं का निर्धारित करना□का□लिए एक अवलोकन अध्ययन I

i) अनुसंधान का उद्द□श्य**:-**

आघात में ACDiT का उ□योग कर□□ट का□आघात का□साथ रोगियों में जटिलताओं का□□रिणाम और ग्रि□िंग की □हचान करना, ताकि हम □ट का□आघात का□बाद रुग्णता और मृत्यु को प्रभावित कर□□ाल□ कारकों का निर्धारित कर सकें और ब□□तर चिकित्सा प्रोटोकॉल तैयार कर सकें I

ii)प्रक्रिया:
आ□का□बच्चा□को अध्ययन में शामिल किया जाता है। इस अध्ययन में जिन बच्चों को □ट में आघात है उन सभी को श्यामिल किया जाती है । मूल्यांकन में प्रासंगिक इतिहास और नैदानिक □रीक्षा निष्कर्षों की रिकॉर्डिंग शामिल होगी। इलाज़ का□लिए आवश्यक सभी जांच की जाएगी। आ□का□बच्चा□का □ालन या तो अस्पताल की बरती का□समय □र या ट□ीफोन द्वारा 1,3,और 7 दिनों को किया जाएगा, और प्रवश□ा का□30 वें दिन बाद किया जाएगा।

iii)भागीदारी की अ□□ित सहभगिति - बर्ती स□ीस दिन तक
iv) शोध स□आ□को या दुसरो का□लिए अ□□ित लाभ:
□ट का□आघात का□□रिणामों को प्रभावित कर□□ाल□कारकों को जानना, और उदर आघात का□में जटिलताओं को □कड़ना, ताकि समुदाय का□लाभ का□लिए उचित उ□चार रणनीति तैयार की जा सक□ इस अध्ययन का□दौरान □ट का□आघात का□बाद जीवन की सुधार का□लिए आग□□ा□अध्ययनों में मदद कर सकता है।
v) अध्ययन स□ुड़□विषय □र कोई जोखिम:
संभावित रू□ स□कोई भी नहीं क्योंकि हम किसी भी उ□चार रणनीतियों में बदलाव नहीं कर रह□हैं I इस अध्ययन में हम सिर्फ □ट का□आघात का प्रबंधन कर□हुए □रिणामों का आकलन कर रह□हैंI
vi) अभिल□ों की गो□नीयता का रख-रखाव:
रोगी का□मि□िकल रिकॉर्ड को गो□नीय रखा जाएगा और क□ल इलाज कर□□ाल□चिकित्सक द्वारा या, यदि आवश्यक हो, अखिल भारतीय आयुर्विज्ञान संस्थान, जोध□ुर की आचार समिति द्वारा द□ा जा सकता है।।
vii) मुफ्त इलाज का प्रावधान, अनुसंधान स□संबंधित चोट का□लिए मुआवजा: लागू नहीं
viii) किसी भी समय अनुसंधान स□ी□ी□हटना□की स्वतंत्रता, दंड या लाभ का□नुकसान का□बिना:

आ□ इस इच्छा स□किसी भी समय इस अध्ययन स□भाग ल□□और वा□स ल□□क□लिए स्वतंत्र हैं। यह किसी भी तरह स□संस्थान में आ□क□चल रह□उ□चार को प्रभावित नहीं कर□गा।

ix) प्रधान अन्वष□क और सह अन्वष□क क□टल□फोन नंबर / सं□र्क नंबर: आ□क□बच्च□क□उ□चार स□ संबंधित किसी भी चिंता क□मामल□में, आ□को सं□र्क करना चाहिए:

डॉ। कोल्लानुर चरण, □जी छात्र, बाल रोग विभाग, अखिल भारतीयआयुर्विज्ञान संस्थान,जोध□ुर, राजस्थान-342005; फोन:**9704612073**

ईमल□- **charankol555@gmail.com**

x) यह प्रमाणित हो गया है कि अनुवाद में शब्दशः तक सटीक है।

ANNEXURE-XI
PATIENT PROFORMA

AN OBSERVATIONAL STUDY TO ASSESS THE OUTCOMES AND COMPLICATIONS OF ABDOMINAL TRAUMA IN A TERTIARY HOSPITAL

GENERAL INFORMATION:

1. Signed Consent Form **Yes** **No**

2. Completed Form **Yes** **No**

PATIENT DETAILS:

Name: **UHID No.**

Age / Sex: **Address:**

DOA: **DOD:**

Mode of injury:

Exact mechanism of injury:

Injury-Presentation interval:

Emergency department-OT interval (If operated):

Associated Extra-abdominal injuries:

Any pre-existing illness:

DM
HTN
COPD
HYPOTHYROIDISM
CAD/MI/CCF
CVA

ISS at presentation

ISS Body Region*	**Injury**	**AIS Code**	**Highest AIS**	**AIS²**
HEAD/NECK				
FACE				
CHEST				
ABDOMEN				
EXTREMITIES				
EXTERNAL				

CLINICAL EXAMINATION:-

PRIMARY SURVEY:

1. **Airway: Threatened / Patent**
2. **Breathing : Spontaneous / Laboured or assisted**

   Saturation at presentation:

   Respiratory rate:

   Admission Blood Gases (If done):
3. **Circulation:**

   Systolic BP:

   Diastolic BP:

   Grade of Haemorrhagic shock:

   Response to fluid challenge: Responder/Transient responder/Non responder

   Heart rate at presentation:
4. **GCS:- E: V: M:**

5. **Temperature:**
6. **Serum creatinine:**
7. **Extremities:**

SECONDARY SURVEY:

1. **General physical examination:**
   a. **Pallor**
   b. **Icterus**
   c. **Clubbing**
   d. **Cyanosis**
   e. **Lymphadenopathy**
   f. **Edema**
   g. **Koilonychia**
2. **Head to toe examination:**

HISTORY:

LOCAL EXAMINATION-

1. **INSPECTION :**

2. **PALPATION:**

3. **PERCUSSION:**

4. **ASCULTATION:**

5. **PR/PV:**

OTHER SYSTEMS:

1. **CVS:**
2. **CNS:**
3. **RS:**

USG FAST (Presence of intra peritoneal fluid):

CECT Abdomen (if done):

INITIAL TREATMENT PLAN:

COMPLICATIONS NOTED:

Total Length of ICU stay:

Length of Hospital stay:

Hospital Outcome: Death/Discharge/Permanent disability

ACDiT Grade of complications (Maximum grade):

Deviation from Initial Treatment plan	**Yes/ No**
Pharmacological interventions (what drugs)	
Bedside wound infection management	**Yes/No**
Blood products after haemostasis deemed to be achieved	**Yes/No**
Parenteral Nutrition	**Yes/No**
Radiological Intervention	**Yes/No**
Endoscopic intervention	**Yes/No**
Unplanned surgical intervention (under LA/RA)	**Yes/No**
Unplanned surgical intervention (under GA)	**Yes/No**
Unplanned ICU stay/ readmission	**Yes/No**
New organ failure other than the injured organ	**Yes/No**
If organ failure yes-whether single/ multiple	**Single/Multiple**
Death occurred during treatment	**Yes/No**
If yes –whether patient actively treated	**Yes/No**

ANNEXURE XII

KEY TO MASTER SHEET

Mode of injury	**1**	Blunt injury abdomen
	2	Blunt injury abdomen and thorax
	3	Penetrating injury to abdomen
	4	Perforating injury to abdomen
Age group	**0**	<50 years
	1	50–59 years
	2	60–69 years
	3	70-79 years
	4	>80 years
Myocardial infarction(MI)	**1**	yes
	0	No
Congestive heart failure(CHF)	**1**	yes
	0	No
Peripheral vascular disease (PVD)	**1**	yes
	0	No
Dementia	**1**	yes
	0	No
COPD	**1**	yes
	0	No
Connective tissue disorders	**1**	yes
	0	No
Peptic ulcer disease	**1**	yes
	0	No
Liver disease	**0**	no
	1	Mild
	3	Moderate to severe
Diabetes	0	None/ diet controlled
	1	Uncomplicated
	2	End organ failure
Hemiplegia	**1**	yes
	0	No
Mod-severe CKD	**1**	yes
	0	No
Solid tumors	0	No
	2	Localized
	6	Metastatic
Leukaemia	**1**	yes
	0	No
Lymphoma	**1**	yes

	0	No
Aids	**0**	No
	6	Yes
Cerebro-vascular accidents (CVA)	**0**	No
	6	Yes
Mechanism of injury	**1**	RTA (motorcyclist)
	2	RTA (passenger of bike)
	3	RTA (driver of car)
	4	RTA (passenger of car)
	5	Fall from height
	6	Occupational injury
	7	Pedestrian hit by vehicle
	8	Assault
	9	Unknown
	10	Intentional self-harm
	11	Animal harm
	12	Gunshot injury
	13	Fall of Heavy object
Initial resuscitation	**1**	Hypovolemic shock Fluid responder
	2	Hypovolemic shock- requiring blood transfusion
	3	Hypovolemic shock requiring Supports (Nor Ad/ Vasopressors)
	4	CPR
	5	INTUBATION
	6	Chest tube
	7	Tracheostomy
Response to resuscitation	**1**	yes
	0	No
Management of Abdominal Injuries	**1**	SNOM(Selective Non-Operative Management)
	2	Exploratory laparotomy and proceed
	3	Damage control surgery
	4	Splenectomy
	5	Diaphragmatic hernia repair
	6	Angioembolization
	7	Diagnostic lap and proceed
	8	other
Management of other injuries	**1**	Craniotomy
	2	Open reduction of fracture
	3	Closed reduction of fracture with cast
	4	Amputation

	5	OTHERS
	6	Endovascular repair
	7	VATS / THORACOTOMY
ACDiT Grade	**1**	**Grade I**
	2	**Grade II**
	3	**Grade IIIa**
	4	**Grade IIIb**
	5	**Grade IVa**
	6	**Grade IVb**
	7	**Grade Va**
	8	**Grade Vb**
Outcome	**1**	**Discharged**
	2	**Mortality**

ANNEXURE XIII

Master Sheet

s.no.	name	id	phone numb	age	sex	Age group	MI	CHF	PVD	CVA/TIA	dementia	COPD	ue dissorder	peptic ulcer	liver disease	DM	hemiplegia	CKD	solid tumor	Leukemia	lymphoma	AIDS	rbidity index	mode of inj	mechanism of injury
1	HIRA RAM	2020/01/018	9384429980	43	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
2	VIJENDER SI	2020/01/017	9772781117	42	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
3	RAKESH	2019/12/015	9983323111	32	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
4	RANJEET SIN	2020/01/024	6378802733	28	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
5	JITENDER KU	2020/01/032	7742127291	20	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6	PRADEEP	2020/01/033	7568134273	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
7	AADRAM	2020/02/016	9413359525	24	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
8	AMRAT SING	2020/02/006	6377580100	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
9	POOJA JANG	2020/02/003	9414422267	28	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
10	MANOHAR L	2020/02/007	9694913448	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
11	DEV KANWA	2020/02/002	7230961802	30	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
12	HITESH	2020/02/001	9680256299	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8
13	PREDEEP*	2020/02/010	6375722625	45	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
14	MADAN LAL	2020/03/000	9414125025	55	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1
15	SOKAT KHAN	2020/03/007	9982867590	35	M	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	4
16	GORDHAN	2020/03/012	9784352334	19	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
17	BAGH SINGH	2020/04/000	9460107907	56	M	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	3
18	TANVIR	2020/05/000	8079029882	23	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
19	BHAGWANA	2020/05/001	9571449461	24	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
20	LALIT KUMA	2020/05/001	7742038123	40	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
21	POOJA VAIS	2020/06/000	7300043567	33	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
22	RAJ KUMAR	2020/06/000	9413661096	61	M	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1
23	JAMAL KHAN	2020/06/003	9982563167	24	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
24	JAY RAM	2020/06/006	9660929967	16	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
25	JHIMO DEVI	2020/07/000	8696154695	35	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
26	CHAND MOH	2020/07/002	9660058517	60	M	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3
27	CHANCHAL S	2020/07/005	9057229188	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
28	PATA RAM*	2020/07/006	9269957737	36	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
29	ANSI	2020/08/003	9672731959	30	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	11
30	DIMPAL	2020/07/008	7073668393	17	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
31	OM PRAKAS	2020/08/002	7627043685	40	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9
32	SULEMAN K	2020/08/007	7976715891	27	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9
33	TEJ PAL	2020/08/009	8427827817	20	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6
34	RAMA RAM	2020/09/000	9950078911	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
35	KRISHNA RA	2020/09/005	9829226569	70	M	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5	1	6
36	HARINDRA Y	2020/09/007	7231839710	40	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	11
37	PRAHLAD RA	2020/09/009	9017995050	38	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
38	RADHESHYA	2020/09/011	7300456344	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
39	KULDEEP SIN	2020/10/000	9887775304	23	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
40	SURA RAM	2020/10/002	9001890037	28	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
41	JOGA RAM	2020/10/003	8094851799	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
42	ARUN*	2020/10/003	8952969706	23	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
43	RAM PRAKAS	2020/10/005	8890456458	33	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
44	PRADEEP JY	2020/10/004	9828418100	53	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5
45	MANISH	2020/10/009	8619281024	19	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
46	MEERA	2020/10/005	8003223723	60	F	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	11
47	SANTOSH	2020/10/005	7568077822	24	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
48	HARIGOPAL	2020/11/000	6350036746	45	M	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	7
49	CHAMPA LAL	2020/11/000	9928021702	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
50	JOG GIRI	20/11/0030	9414384130	32	M	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	6
51	PRATAP RAN	2020/11/003	9929620877	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
52	JAYISHREE*	20/11/00842	9413573006	23	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	8
53	NARENDRA	20/11/00708	8005988981	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6
54	MANJUR MO	2020/12/003	7976523605	45	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
55	RAJU SINGH	20/12/00185	7300226065	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
56	OMPRAKASH	2021/01/019	8432037822	60	M	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	2	2
57	JHUMAR RA	2021/01/022	9166068150	38	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
58	DEVI	2021/01/022	9571400233	26	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
59	VINOD	2021/01/023	9782954926	24	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
60	KANA RAM	2021/02/000	7877246935	19	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
61	RAMLAL	2021/02/001	7742663492	23	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
62	SHIFI KHAN	2021/02/005	9571591588	28	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
63	RANJIT*	2021/02/005	9782867327	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
64	CHUNNI LAL	2021/02/005	8968034849	52	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
65	RAJENDRA	2021/02/008	9780438828	22	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
66	NARENDRA	2021/02/009	9414671889	57	M	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	8
67	KISHORE JAI	2021/02/010	9672081408	27	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
68	MAHENDRA	2021/02/012	9983920870	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
69	GAUTHAM*	2021/02/013	9413251941	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12
70	SWAROOP R	2021/02/013	8003465191	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
71	PIRARAM	2021/03/001	9799033714,	24	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
72	MOHAN LAL	2021/03/003	9112984031	50	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
73	DEVA RAM	2021/03/004	9928789209	70	M	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5	2	1
74	CHUNA RAM	2021/03/004	7073389417	40	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
75	RITESH	2021/03/005	9799063257	28	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
76	MOTI LAL	2021/03/006	6376114670	32	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
77	MULA RAM	2021/03/007	8209462970	45	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
78	KHIV SINGH	2021/03/008	6367191382	45	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
79	BHARAT	2021/03/009	9928272009	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
80	VEENA RAM	2021/03/008	9461081047	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12
81	PREMPRAKA	2021/03/010	8278671263	28	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
82	DAMINI	2021/03/012	9898039196	20	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
83	VIKAS*	2021/03/012	9783555464	17	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8
84	HARIOM	2021/03/012	9799345435	32	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
85	SHARWAN S	2021/03/012	9413873768	60	M	2	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	4	1	1
86	BABU RAM	2021/03/013	9001148232	40	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
87	SAWAI RAM	2021/03/014	7974623605	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
88	RAJENDRA	1/03/015246	8949592234	27	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	11
89	PARAMESWA	2021/03/015	7073440982	20	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
90	RAKESH*	2021/03/016	9785328869	42	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	11
91	GOLU KUMA	2021/03/016	8830034755	22	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
92	NARENDRA	2021/03/017	8360729590	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
93	DEEPIKA SO	2021/04/002	8947950066	42	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
94	BIRENDRA P	2021/04/005	7424988829	55	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	6
95	MANOJ KUM	2021/04/009	9414139669	27	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
96	KANWARI	2021/04/010	9799838408	45	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
97	GULA RAM	2021/04/010	9928602530	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
98	HUKMA RAM	2021/04/012	9166508048	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6
99	VASHU DEV	2021/05/005	6350670448	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
100	VIJAY SINGH	2021/05/006	9799591669	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
101	AMIT PITTI	2019/12/005	9252810069	36	F	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	4
102	PRAHALAD	2021/05/008	9414030663	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
103	SHIVAM	2021/06/006	9950951113	25	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
104	TEJPAL	2021/06/003	9680783935	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
105	BHAGA RAM	2021/06/004	8890116569	65	M	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5
106	NATA RAM	2021/06/011	7023232858	45	M	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	3
107	SHOBA DEVI	2021/06/012	8688183007	32	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
108	BHART GUJA	2021/06/013	9468838766	30	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
109	DEDA RAM	2021/07/000	9950690950	32	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8
110	Manjur	2021/07/000	8107173797	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
111	NAUMAN	2021/07/001	9636562924	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
112	MIMA DEVI	2021/07/001	8824110625	32	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
113	MANGLA RA	2021/07/003	9828287136	60	M	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4
114	GOTAM	2021/07/004	8355884805	36	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8
115	JITAN	2021/07/005	9680269312	22	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
116	PADMA RAM	2021/07/011	9602362602	32	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
117	SUNITA	2021/07/012	9207683083	30	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
118	BHARAT	2021/07/013	9462653632	24	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
119	SUSHIL CHO	2021/07/014	7014370400	22	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
120	VIRENDRA P	2021/07/014	8875153964	62	M	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	8
121	MANGI LAL	2021/08/004	9869408973	57	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	6
122	RAMESH	2021/08/005	9660118584	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
123	NARANA RA	2021/08/010	9351231798	40	M	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
124	AMEDA RAM	2021/08/011	9427661096	18	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
125	TARBAN	2021/08/011652		40	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13
126	ASHOK KUM	2021/08/01283		55	M	1	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	4	2	13
127	ABDUL	2021/08/012	9799929208	35	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
128	BACHI	2021/08/013	8134469447	45	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
129	PRAKASH	2021/08/016	9413863425	26	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	11
130	JAY PRAJAPA	2019/12/016	8290117626	4	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
131	URMILA	2020/02/007	8209080482	13	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
132	LAKSHIT	2020/02/004	7689896565	4	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
133	SHIVANI	2020/04/001	9928740677	5	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
134	DIKSHA	2020/05/000	8890272690	16	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
135	MANISH KU	2020/07/005	8279989547	10	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
136	RAMESH KU	2020/08/002	7296982965	11	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
137	PUNA RAM	2020/09/010	7357121706	5	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11
138	KOMAL	2020/10/001	8003422705	4	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	11
139	SANDEEP	2020/10/001	9784747660	10	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
140	TEJ PAL	2020/10/006	8491888413	13	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5
141	HARDIK	2020/10/009	8005850295	7	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
142	PRIYANKA	2020/10/009	9799654448	7	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
143	DHARAMPAL	2020/11/007	9660553760	7	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
144	JAYPAL*	2020/12/002	9173504461	4	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11
145	KARAN	2021/01/019	8890005947	11	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
146	PAWAN*	2021/02/010	9968451721	12	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
147	MAYA	2021/03/003	9636181995	8	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
148	RITIKA	2021/04/010	9001313389	5	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
149	JITENDRA SI	2021/04/009	9116976223	15	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
150	MOTI SINGH	2021/06/007	7014277067	5	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
151	JATIN	2021/06/009	9636062362	14	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
152	MAMTA	2021/07/001	9950951113	14	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
153	AMANDEEP S	2021/07/016	9822926569	16	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
154	DEVI SINGH	2021/08/010	9678287136	9	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2

s.no.	rval (hours)	presentation	emergency-c	GCS	respiratory r	SPo2	admission hr	admission sbp (in mm of		shock index	admission hb	serum creati	blood urea	initial resusc	response to	RTS	SPO2 NTS	SBP NTS	T-NTS	Head :AIS	Face:AIS	Neck	Thorax :AIS	Abdominal a
1	4	1	0	15	22	99	86	114	1	1.3255814	10.4	3.05	230	0	0	8	4	4	23	0	0	0	0	Grade 3 liver
2	12	2	0	15	28	94	74	164	1	2.21621622	15.7	0.99	45	6	1	8	4	3	22	0	0	0	Right 2nd-5t	Liver injury(G
3	4	1	0	15	26	91	98	130	1	1.32653061	12.4	0.89	20	6	1	8	3	4	22	0	0	0	Left 5th-8th	Splenic lacer
4	6	1	240	15	22	98	90	124	1	1.37777778	6.3	1.79	61	1	1	8	4	4	23	0	0	0	0	Mesenteric t
5	3	1	0	15	26	94	104	98	1	0.94230769	13.3	0.84	30	6	1	7	4	2	21	0	0	0	Left 7th-9th	Splenic lacer
6	7	2	14	9	28	92	140	70	2	0.5	13.8	1.08	27	2	1	5	3	1	13	0	0	0	Right 10,11t	Splenic lacer
7	4	1	0	15	20	97	64	114	1	1.78125	10.2	1.18	40	2	1	8	4	4	23	0	0	0	Left first rib	Splenic lacer
8	72	2	0	15	22	98	102	94	1	0.92156863	14.7	1.09	35	0	0	8	4	2	21	0	0	0	0	Pancreatic in
9	120	2	0	15	26	93	98	112	1	1.14285714	11	0.58	23	6	1	8	3	4	22	SDH along le	0	0	Right 7,8 lat	Abdominal w
10	8	2	24	14	18	97	114	102	1	0.89473684	10.3	1.24	26	0	0	7	4	2	20	0	Abrasion:1	0	B/L lower lo	Liver multipl
11	2	1	1	15	21	97	112	90	1	0.80357143	10.4	1.16	42	1	1	8	4	2	21	0	Laceration:	0	Right 10 th r	Liver lacerati
12	5	1	0	15	22	96	94	128	1	1.36170213	7.7	7.58	197	0	0	8	4	4	23	0	0	0	left 8th rib f	Traumatic py
13	96	2	4	15	17	99	84	118	1	1.4047619	11.5	0.08	32	0	0	8	4	4	23	0	Abrasion:1	0	0	Traumatic ile
14	0.5	1	0	15	19	98	70	180	1	2.57142857	13.4	1.26	22	0	0	8	4	3	22	0	0	0	Fracture of p	Splenic lacer
15	92	2	0	15	24	95	86	124	1	1.44186047	12.2	1.02	11	0	0	8	4	4	23	0	Abrasion:1	0	Left 7-9 rib f	Left Diaphrag
16	0.5	1	0	15	18	99	76	124	1	1.63157895	14.4	1.4	23	0	0	8	4	4	23	0	0	0	Minimal pne	Renal arteria
17	7	2	0	3	23	94	124	86	2	0.69354839	10.2	1.44	22	5	1	3	4	1	8	Diffuse SAH	0	0	Multiple Rt r	Liver lacerati
18	8	2	0	15	18	98	104	88	2	0.84615385	14.2	1.26	26	2	1	7	4	1	20	0	Abrasion:1	0	0	Liver lacerati
19	120	2	0	15	16	97	80	110	1	1.375	6.1	1.04	26	0	0	8	4	4	23	Laceration: 1	Zygomatico	0	0	Splenic lacer
20	6	1	0	15	27	91	112	72	2	0.64285714	12	2.99	24	2	1	6	3	1	19	Non hemorrh	Abrasion:1	0	Right rib fra	Right Adrena
21	2	1	0	15	19	97	102	112	1	1.09803922	7.9	0.82	18	0	0	8	4	4	23	0	0	0	Right 1st ab	Liver lacerati
22	8	2	0	14	22	95	124	74	2	0.59677419	2	1.38	18	2	1	6	4	1	19	0	scleral bread	0	Bilateral hen	Liver lacerati
23	5	1	0	15	18	99	96	122	1	1.27083333	14.1	1.07	28	0	0	8	4	4	23	0	0	0	0	Grade 3 sple
24	6	1	0	15	23	100	102	95	1	0.93137255	9.7	0.9	40	2	1	8	4	2	21	0	0	0	0	Grade 4 Live
25	36	2	36	15	20	96	112	110	1	0.98214286	10.7	2.19	105	6	1	8	4	4	23	0	Laceration:1	0	B/L multiple	Ileal perforat
26	92	2	70	15	20	99	102	112	1	1.09803922	6.8	1.06	27	0	0	8	4	4	23	0	0	0	0	Abdominal w
27	2	1	0	15	26	95	108	126	1	1.16666667	13.6	1.16	24	6	1	8	4	4	23	0	Laceration: 1	0	Left multiple	Mesenteric t
28	120	2	0	15	22	97	105	136	1	1.2952381	12.4	1.02	11.9	6	1	8	4	4	23	Temporal lob	Laceration:1		Left 2rib frac	Grade 3 liver
29	1	1	0	15	24	100	89	104	1	1.16853933	7.5	0.66	22	0	0	8	4	2	21	0	0	0	Multiple Left	Grade 3 liver
30	10	2	1	15	26	89	120	74	2	0.61666667	6.4	1.06	56	2+6	1	6	3	1	19	0	0	0	Multiple rib	Grade 3 liver
31	2	1	0	15	26	84	98	118	1	1.20408163	14.3	1.25	22	5	1	8	3	4	22	Lacerations:	Lefort-2 frac	0	0	Grade 4 Live
32	2	1	0	7	26	88	91	104	1	1.14285714	7	1.13	22	5	1	6	3	2	12	0	0	0	Multiple rib	Grade 3 Live
33	4	1	1.5	15	24	99	92	94	1	1.02173913	12.2	0.95	30	1	1	8	4	2	21	0	0	0	0	Penetrating
34	3	1	1	15	24	98	145	85	2	0.5862069	9	1.7	36	2	1	7	4	1	20	0	0	0	0	Left rectus m
35	6	1	2	15	22	99	98	136	1	1.3877551	17.5	2.3	62	0	0	8	4	4	23	0	0	0	0	Ileal perforat
36	6	1	0	15	20	100	77	104	1	1.35064935	14.8	0.88	16	0	0	8	4	2	21	0	0	0	Right 9th rib	Grade 3 Live
37	7	2	0	15	20	100	108	112	1	1.03703704	13.2	1.09	32	0	0	8	4	4	23	0	0	0	0	Mesenteric i
38	92	2	0	15	18	100	106	106	1	1	11	0.93	47	0	0	8	4	2	21	0	0	abrassion:1	0	Grade 3 liver
39	8	2	0	15	20	98	78	96	1	1.23076923	12.1	1.04	34	0	0	8	4	2	21	Temporal bo	Mastoid frac	0	0	GRADE3 LIVE
40	4	1	0	15	24	96	112	108	1	0.96428571	14.2	1.28	31	6	1	8	4	2	21	FRONTAL lob	abrassions:1	0	right side pn	Grade 4 rena
41	6.5	2	1	15	24	100	108	118	1	1.09259259	14.6	0.71	15	0	0	8	4	4	23	0	0	0	0	Grade3 Liver
42	18	2	12	4	22	98	86	88	2	1.02325581	8.2	2.69	35	3, 6, 7	1	4	4	1	9	LEFT FRONT	MULTIPLE FA	0	LEFT LUNG C	GRADE 3 SPL
43	22	2	1	15	22	100	121	92	1	0.76033058	10.5	1.46	53	0	0	8	4	2	21	0	0	0	0	Transection
44	4	1	0	15	20	100	108	98	1	0.90740741	7.1	1.16	39	0	0	8	4	2	21	0	0	0	MULTIPLE LE	GRADE 4 SPL
45	6	1	56	15	18	98	80	116	1	1.45	11.1	0.72	12	0	0	8	4	4	23	0	0	0	laceration ov	ESOPHAGIAL
46	3	1	0	15	20	100	78	160	1	2.05128205	12.4	1.02	34	0	0	8	4	3	22	0	0	0	0	Abdominal w
47	4.5	1	0	15	20	99	76	114	1	1.5	9.8	1.2	36	0	0	8	4	4	23	0	0	0	0	GRADE3 LIVE
48	5	1	0	15	18	99	78	98	1	1.25641026	7.7	1.3	17	0	0	8	4	2	21	0	0	0	0	MESENTERIC
49	14	2	7	15	22	96	120	112	1	0.93333333	12.4	1.42	37	0	0	8	4	4	23	0	0	0	PNEUMOME	GRADE 4 LIV
50	4	1	3	15	19	100	112	104	1	0.92857143	14.6	1.04	51	0	0	8	4	2	21	0	0	0	ABRASSIONS	GASTRIC PER
51	2	1	1	3	24	70	86	88	2	1.02325581	11.4	1.25	26	2,5	1	3	2	1	6	SAH:2; LEFT	0	O	LEFT MULTIP	GRADE 4 SPL
52	4	1	2	15	20	98	140	96	1	0.68571429	8.4	0.96	53	2,6	1	8	4	2	21	0	0	0	LEFT HEMOT	Mesenteric a
53	4	1	24	15	22	99	87	124	1	1.42528736	13.8	0.87	22	0	0	8	4	4	23	0	0	0	0	3 *3 * 6 cm
54	12	2	0	15	22	96	94	96	1	1.0212766	7.4	1.11	48	2,6	1	8	4	2	21	LEFT PARIET	FRACTURE N	0	LEFT MULTIP	GRADE4 SPL
55	1	1	0	15	18	98	108	142	1	1.31481481	10.4	1.32	29	0	0	8	4	4	23	0	0	ABRASSIONS	LEFT 6TH &8	GRADE 4 SPL
56	2.5	1	0	15	22	100	74	94	1	1.27027027	13.2	0.93	22	0	0	8	4	2	21	0	ABRASSION	0	fracture of le	GRADE3 SPL
57	8	2	0	14	24	97	112	108	1	0.96428571	14.3	0.99	32	0	0	8	4	2	20	Right greate	ABRASSIONS	0	Mild right pn	GRADE 3 REI
58	7	2	0	15	18	100	86	124	1	1.44186047	9.8	0.75	32	0	0	8	4	4	23	0	ABRASSION	0	MINIMAL PN	GRADE5 SPL
59	1.5	1	3	15	18	100	74	99	1	1.33783784	15.1	0.88	34	0	0	8	4	2	21	0	0	0	0	Jejunal perfo
60	15	2	0	15	20	100	94	144	1	1.53191489	12.9	0.92	20	0	0	8	4	4	23	0	0	0	0	GRADE3 LIVE
61	12	2	0	15	24	99	81	114	1	1.40740741	11.3	0.95	33	0	0	8	4	4	23	0	periorbital e	0	right pulmon	Grade 3 liver
62	8	2	0	15	22	100	72	126	1	1.75	12.3	1.05	39	0	0	8	4	4	23	0	Abrasions ov	0	0	Grade4 liver
63	92	2	0	6	20	95	91	122	1	1.34065934	6	3.29	197	0	0	6	4	4	14	Tonsillar her	0	0	B/l lung cont	Grade3 liver
64	6	1	4	15	18	100	110	154	1	1.4	13.7	0.98	30	0	0	8	4	3	22	right superio	Right Zygom	0	0	Jejunal perfo
65	24	2	0	15	28	86	130	138	1	1.06153846	9.3	0.88	47	0	0	8	3	4	22	Right frontal	Multiple faci	0	0	Gross hemo
66	5	1	0	15	16	100	102	130	1	1.2745098	9.9	1.05	34	0	0	8	4	4	23	0	0	0	right sided 6	Grade3 splen
67	3	1	15	15	22	90	108	96	1	0.88888889	12	0.99	22	1	1	8	4	2	21	0	NASAL bone	0	B/L pulmona	Grade1 Liver
68	12	2	15	14	24	98	132	128	1	0.96969697	14.3	2.05	33	0	0	8	4	4	22	Few hemorrh	0	0	0	Grade4 proxi
69	92	2	0	10	15	99	108	136	1	1.25925926	6.5	6.27	192	0	0	7	4	4	18	0	0	0	0	Hepatic vasc
70	6	1	0	15	20	100	109	114	1	1.04587156	7.5	0.65	15	0	0	8	4	4	23	Linear Undis	Abrasions:1	0	Left mild pn	Grade4 liver
71	5	1	3	11	22	95	76	126	1	1.65789474	15.3	1.11	23	2	1	7	4	4	19	SAH in centr	0	0	0	Multiple me
72	72	2	4	15	18	98	106	108	1	1.01886792	11.7	3.29	116	0	0	8	4	2	21	0	0	0	Abrasions:1	Complete tra
73	0.5	1	5	15	24	100	84	86	2	1.02380952	11.8	1.29	24	1	1	7	4	1	20	0	Laceration o	0	Right multip	Grade 4 liver
74	10	2	0	15	16	100	90	126	1	1.4	11.1	1.03	28	0	0	8	4	4	23	0	0	abrasions:1	B/l efusion:3	GRADE4 SPL
75	5	1	0	15	16	100	104	110	1	1.05769231	10.6	0.75	41	0	0	8	4	4	23	0	0	0	Left 7-11 rib	GRADE4 SPL
76	6	1	0	15	18	100	90	110	1	1.22222222	9	1.21	33	1	1	8	4	4	23	0	0	0	0	psoas muscl
77	6	1	0	15	16	98	94	106	1	1.12765957	13.4	1.12	22	0	0	8	4	2	21	0	0	0	0	GRADE3 LIVE
78	4	1	0	15	22	98	84	128	1	1.52380952	6.9	1.01	40	0	0	8	4	4	23	0	0	0	RIGHT SIDE	GRADE4 LIVE
79	2	1	48	15	20	100	108	138	1	1.27777778	12.1	1.12	36	1	1	8	4	4	23	0	0	0	Right 4th rib	Grade 4liver l
80	10	2	0	15	18	97	90	128	1	1.42222222	14.8	1.2	28	1	1	8	4	4	23	0	0	0	0	Entry wound
81	148	2	6	15	18	96	110	108	1	0.98181818	11.4	0.85	33	0	0	8	4	2	21	0	0	0	0	Grade4 liver l
82	12	2	0	8	16	100	74	106	1	1.43243243	7.8	0.63	22	5	1	8	4	2	14	DAI:3	0	0	0	Retroperitone
83	72	2	0	15	18	99	83	124	1	1.4939759	14	0.9	37	0	0	8	4	4	23	0	Contusion:1	0	STAB injury	GRADE 3 SPL
84	2	1	1	3	24	98	118	78	2	0.66101695	8.6	1.2	26	3	0	3	4	1	8	0	abrasions:1	0	0	Grade spleni
85	1	1	0	15	18	100	94	160	1	1.70212766	13.4	0.95	29	0	0	8	4	3	22	Right parieta	Abrassions:1	0	0	Anterior abd
86	96	2	0	15	16	98	104	108	1	1.03846154	7.1	1.1	28	1	1	8	4	2	21	0	0	0	left multiple	Grade3 splen
87	4	1	0	15	26	94	82	130	1	1.58536585	14	0.84	25	6	1	8	4	4	23	Abrassion:1	Abrassion:1	0	left multiple	Grade 3Liver
88	0.5	1	1	15	18	100	120	124	1	1.03333333	15.2	1.18	19	0	0	8	4	4	23	0	0	0	0	avulsion:5
89	20	2	0	15	18	98	89	116	1	1.30337079	7.8	1.02	27	0	0	8	4	4	23	0	0	0	Right 1 rib fr	Grade# right
90	4	1	0	6	18	98	87	124	1	1.42528736	8	0.79	27	5	1	6	4	4	14	DAI:3	Right zygoma and maxilla		B/L basal ate	Grade 2 liver
91	5	1	0	15	16	100	114	128	1	1.12280702	12.7	0.87	16	0	0	8	4	4	23	0	0	0	0	Grade3 liver
92	48	2	0	15	22	98	94	124	1	1.31914894	15.7	1.29	35	1	1	8	44	4	63	0	Abrassions:1	0	0	Grade3 left r
93	6	1	48	5	20	98	162	152	1	0.9382716	10.6	1.01	31	5	1	5	4	3	12	DAI:3 , Lacer	Abrassions	0	B/L pneumot	Mesenteric t
94	0.5	1	2	15	18	99	110	66	2	0.6	12.5	1.15	31	2	1	6	4	0	19	0	0	0	0	Grade2 liver
95	1	1	0	15	20	85	112	144	1	1.28571429	12	68	4.35	6	1	8	3	4	22	0	0	0	LEFT 1 RIB F	GRADE2 LIVE
96	8	2	0	15	24	98	112	104	1	0.92857143	8.6	0.76	58	6	1	8	4	2	21	0	abrasions:1	0	B/L multiple	Perisplenic h
97	4	1	4	7	26	98	90	80	2	0.88888889	9.6	1.26	38	3, 5	1	5	4	1	12	Multiple con	Abrasions:1	0	minimal pne	Grade 2 righ
98	1	1	12	15	18	99	76	116	1	1.52631579	12.8	0.72	25	1	1	8	4	4	23	0	0	0	0	Laceration o
99	16	2	2	15	20	97	112	97	1	0.86607143	11.3	1.32	61	2	1	8	4	2	21	0	0	0	Minimal right	Mesenteric
100	6	1	0	15	26	79	98	115	1	1.17346939	12	0.89	25	6	1	8	2	4	21	0	0	0	Multiple B/L	Grade4 Liver
101	9	2	0	15	24	75	102	116	1	1.1372549	11.7	1.03	24	6	1	8	2	4	21	0	Nasal bone f	0	Descending t	Adrenal Hem
102	5	1	0	9	18	100	140	150	1	1.07142857	12.4	1.12	17	1	1	7	4	3	16	Multiple hen	left zygomat	laceration:1	0	Grade 3 Live
103	18	2	0	10	20	99	117	87	2	0.74358974	8.1	1.15	69	2	1	6	4	1	15	Multiple brain	0	0	B/L Lung con	Grade 3 Live
104	48	2	0	15	18	100	86	130	1	1.51162791	11.8	0.92	34	1	1	8	4	4	23	0	0	0	0	Grade 2 liver
105	10	2	48	15	26	96	114	80	2	0.70175439	11	2.2	60	1	1	7	4	1	20	0	abrasions:1	0	B/L Lung con	Grade3 splen
106	5	1	0	15	24	92	115	77	2	0.66956522	8.8	1.44	33	2	1	7	3	1	19	0	abrasions-1	0	B/L multiple	Grade 5 Liver
107	20	2	3	15	20	98	90	70	2	0.77777778	8.2	0.87	18	2	2	7	4	1	20	0	0	0	0	Grade 4 Sple
108	1	1	0	15	20	92	104	133	1	1.27884615	12.9	1.34	29	6	1	8	3	4	22	Longitudinal	Multiple facia	0	Bilateral pne	Grqde3 liver l
109	6	1	0	15	20	99	112	130	1	1.16071429	11.2	1.04	73	2	1	8	4	4	23	0	0	0	B/L multiple	Grade 4 Sple
110	10	2	0.5	15	18	97	142	82	2	0.57746479	7.2	1.14	29	2	2	7	4	1	20	Rightparieta	B/L mandibular fracture-2		Multiple righ	Grade 3 liver
111	4	1	0	15	20	98	78	108	1	1.38461538	12.7	0.77	27	1	1	8	4	2	21	0	0	0	B/L multiple	Grade1 Liver
112	5.5	1	0	15	18	99	82	98	1	1.19512195	7.9	0.85	48	2	1	8	4	2	21	0	0	0	0	GRADE3 SPL
113	6	1	0	15	24	94	86	130	1	1.51162791	12.4	1.16	34	6	1	8	4	4	23	0	0	0	Right multip	Right Adrena
114	1	1	1	15	22	100	92	140	1	1.52173913	12	0.68	14	1	1	8	4	4	23	0	0	0	0	Omental her
115	40	2	0	14	18	98	100	128	1	1.28	10.1	0.75	36	2	1	8	4	4	22	Pneumoceph	abrasions:1	0	B/L lung cont	Grade 2 Live
116	12	2	0	10	20	97	96	128	1	1.33333333	12.1	0.95	15	1	1	7	4	4	18	0	BRASIONS:1	0	B/L Lung con	GRADE 3 REI
117	1	1	0	15	22	99	82	104	1	1.26829268	8.7	0.6	21	1	1	8	4	2	21	0	0	0	Right multip	GRADE LIVER
118	6	1	0	15	18	100	124	98	1	0.79032258	14.7	1.2	35	1	1	8	4	2	21	Bi-frontal pn	Multiple max	0	B/L lung con	Grade IV AAS
119	4	1	0	14	22	100	92	105	1	1.14130435	15.3	0.92	18	6	1	8	4	2	20	Depressed co	0		left multiple	Grade2 splen
120	4	1	0	15	22	99	98	112	1	1.14285714	12	0.82	31	1	1	8	4	4	23	0	ital region:1	0	contusion:2	Grade2 splen
121	2	1	0	15	20	100	82	60	2	0.73170732	8.8	1.52	41	2	1	6	4	0	19	0	0	0	0	LACERATION
122	3	1	0	15	24	96	119	80	2	0.67226891	10.7	1.43	28	2	1	7	4	1	20	0	0	0	Multiple rib	Shattered sp
123	8	2	0	15	20	99	86	112	1	1.30232558	14.3	1.03	43	1	1	8	4	4	23	ABRASIONS:	0	0	0	Pancreatic h
124	6	1	0	15	20	100	81	114	1	1.40740741	10.1	0.72	19	1	1	8	4	4	23	0	0	0	0	Grade 2 Live
125	23	2	18	15	24	100	84	122	1	1.45238095	10.3	0.74	34	1	1	8	4	4	23	0	0	0	0	GRADE 3 DIS
126	7	2	0	14	22	97	140	103	1	0.73571429	13.8	1.44	30	2,6	1	18	4	2	20	0	0	0	Right multip	Grade IV spl
127	2	1	1	15	20	100	153	96	1	0.62745098	12.7	0.99	30	2	1	8	4	2	21	0	0	ter muscle:2	B/l lung cont	Grade 5Splee
128	1	1	0	15	24	95	116	112	1	0.96551724	4.3	0.73	29	2,6	1	8	4	4	23	0	0	0	Right multip	Grade 3 Live
129	3	1	1	15	22	99	112	90	1	0.80357143	14.6	1.48	24	2	1	8	4	2	21	0	0	0	0	Grade5 liver
130	8	2	24	15	23	98	105	124	1	1.18095238	10.5	0.62	21	5	1	8	4	4	23	EDH,SDH : 3	0	0	0	Splenic lacer
131	7	2	0	15	22	100	120	86	2	0.71666667	8.8	0.86	24	0	0	7	4	1	20	0	0	0	0	Liver lacerati
132	1	1	0	15	29	98	102	64	2	0.62745098	7.2	0.48	20	1	1	6	4	0	19	0	0	0	0	Retroperiton
133	2	1	0	15	28	98	92	98	1	1.06521739	11.1	0.52	33	0	0	8	4	2	21	0	0	0	0	Liver lacerati
134	72	2	0	15	22	99	102	110	1	1.07843137	10.9	0.66	45	0	0	8	4	4	23	0	0	0	0	Complete tra
135	2	1	0	14	26	94	124	54	2	0.43548387	11.6	0.88	30	6	1	6	4	0	18	0	0	0	Left pneumo	Liver lacerati
136	6	1	0	15	30	100	110	124	1	1.12727273	13.9	0.8	31	0	0	8	4	4	23	0	0	0	0	GRADE4 REN
137	6	1	0	12	36	98	128	76	2	0.59375	12	0.95	60	5	1	6	4	1	17	0	0	0	0	LACERATION
138	2	1	0	14	30	92	124	72	2	0.58064516	10.8	0.81	47	0	0	7	3	1	18	0	0	0	RIGHT 8&9 R	GRADE4 LIVE
139	3	1	0	15	28	100	112	98	1	0.875	10.2	0.46	23	0	0	8	4	2	21	0	0	0	0	Grade 4 panc
140	30	2	2	15	20	100	112	94	1	0.83928571	12	0.62	21	0	0	8	4	2	21	0	0	0	0	Grade 3 Live
141	10	2	6	15	24	99	120	100	1	0.83333333	10.6	0.71	24	1	1	8	4	2	21	0	ABRASIONS	0	0	GRADE 4 SP
142	4	1	2	15	22	98	126	90	1	0.71428571	9.2	0.59	31	0	0	8	4	2	21	0	ABRASIONS	0	0	GRADE4 LIVE
143	20	2	0	15	30	100	125	128	1	1.024	6.7	0.47	20	2	1	8	4	4	23	0	ABRASIONS	0	0	GRADE 3 LIV
144	48	2	0	15	25	100	115	101	1	0.87826087	9.3	0.42	26	0	0	8	4	2	21	0	0	0	ABRASIONS	Grade 4 liver
145	4	1	0	15	22	100	108	102	1	0.94444444	8.7	0.57	33	1	1	8	4	2	21	0	0	0	0	Grade 4 liver
146	92	2	0	15	25	100	114	101	1	0.88596491	11.3	0.48	22	0	0	8	4	2	21	0	0	0	abrasions:1	Grade4 panc
147	8	2	0	15	26	100	147	95	1	0.6462585	9.5	0.6	35	6	1	8	4	2	21	ABRASIONS:	0	0	B/L pneumot	Grade 4 Live
148	5	1	0	14	26	100	110	98	1	0.89090909	9.1	0.38	12	0	0	8	4	2	20	0	0	0	0	Grade 3 liver
149	4	1	0	15	18	100	82	120	1	1.46341463	10.5	0.69	30	2	1	8	4	4	23	0	0	0	0	GRADE3 SPL
150	6	1	0	8	30	100	123	107	1	0.8699187	4.9	0.64	43	3,5	1	6	4	2	14	0	0	0	Left multiple	Grade 5 Sple
151	3	1	0	15	28	87	128	110	1	0.859375	8.9	0.5	17	6	1	8	3	4	22	0	abrasions:1	0	B/L lung con	Grade3 splen
152	18	2	12	15	26	92	118	106	1	0.89830508	8.1	1.15	69	1	1	8	3	2	20	0	0	0	Right lung co	Diaphragmat
153	4	1	0	15	22	99	140	62	2	0.44285714	7.9	1.04	20	2	1	6	4	0	19	0	ABRASIONS	0	LEFT 9TH RIB	grade 4 liver
154	7	2	4	15	22	100	108	88	2	0.81481481	11.3	0.79	33	2	1	7	4	2	21	0	0	0	MILD RIGHT	GRADE2 LIVE

s.no.	Liver	spleen	Pancreas	Kidney	Adrenal	Bowel/mese	bladder	Vascular	Diaphragm	Other	Spine: AIS	Upper extrer	Lower extrer	External:AIS	ISS	NISS		management of abdominal injury	managemen	complication	ACDiT grade	hospital stay	ay (in days)	outcome
1	3	0	0	0	0	0	0	0	0	0	0	Abrasion : 1	0	0	10	10	1	SNOM	0	NO	0	7	0	1
2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	19	27	1	SNOM	0	NO	0	5	0	1
3	0	3	0	0	0	0	0	0	0	0	0	0	Abrasion : 1	0	19	27	1	SNOM	0	NO	0	8	0	1
4	0	0	0	0	0	3	0	0	0	0	0	0	Left superior	0	13	22	2	Gangrenous	0	Superficial S	2	26	0	1
5	0	2	0	0	0	0	0	0	0	0	Body of D3 v	0	0	0	17	27	1	SNOM	0	No	0	7	0	1
6	3	5	0	0	0	0	0	0	0	0	0	Left clavicle	B/L Head of	0	43	43	3 4	SNOM	0	Blood transf	8	30	25	2
7	0	4	0	3	0	0	0	0	0	0	C7 Transvers	Abrasion : 1	0	Electrical bu	29	34	1	SNOM	0	NO	0	7	0	1
8	0	0	4	0	0	2	0	0	0	0	0	0	0	0	16	20	1	SNOM	0	HYPOTENSIO	2	19	0	1
9	0	0	0	0	0	0	0	0	0	1	Burst fractur	Laceration : 1	Right pubic r	0	25	25	1	SNOM	0	NO	0	21	0	1
10	3	0	2	0	0	0	0	0	0	0	0	0	0	0	19	27	2	Gangrenous	0	GI Bleed wit	8	9	2	2
11	2	0	0	0	0	3	0	0	0	0	0	0	Right acetab	0	22	22	2	primary repa	2	NO	0	14	0	1
12	0	0	0	2	0	0	0	0	0	0	0	0	0	0	13	14	1	SNOM	0	NO	0	8	0	1
13	0	0	0	0	0	3	0	0	0	0	0	Fracture left	0	0	14	14	2	with resecti	3	Superficial S	1	10	0	1
14	0	4	0	0	0	0	0	0	0	0	0	Laceration: 1	0	0	26	29	1	SNOM	0	NO	0	6	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	34	5	SNOM	0	Unplanned s	4	8	0	1
16	3	4	0	0	0	0	0	2	0	0	0	0	0	0	20	29	1	SNOM	0	NO	0	5	0	1
17	2	0	0	0	0	0	0	4	0	0	0	Abrasion : 1	0	0	34	34	1	SNOM	0	Death	7	1	1	2
18	4	3	0	0	0	0	0	0	0	0	0	0	Right distal	0	21	29	1	SNOM	0	NO	0	10	0	1
19	0	5	2	0	0	0	0	0	0	0	0	0	0	0	27	30	1	SNOM	0	NO	0	5	0	1
20	4	0	0	0	1	0	0	0	0	0	0	0	Abrasions :1	0	34	34	1	SNOM	0	NO	0	11	3	1
21	4	0	0	0	0	0	0	0	0	0	0	0	Abrasions :1	0	26	34	1	SNOM	0	NO	0	5	0	1
22	3	2	2	0	0	2	0	0	0	0	Fracture in p	Comminuted	0	0	22	27	1	SNOM	0	Prolonged IC	8	7	7	2
23	0	3	0	0	0	0	0	0	0	0	0	Abrasion : 1	Abrasions :1	0	10	10	1	SNOM	0	NO	0	4	0	1
24	4	0	0	0	0	0	0	0	0	1	0	Both bone fr	0	0	20	29	1	SNOM	3	diagnostic la	4	29	0	1
25	0	0	0	0	0	3	3	0	0	0	Comminuted	0	Displaced co	0	34	34	2	Ileal perforat	0	Re operated	4	20	8	1
26	0	0	0	0	0	0	0	0	0	2	undisplaced	0	Comminuted	0	12	12	1	SNOM	2	NO	0	6	0	1
27	0	0	0	0	0	2	0	0	0	0	0	0	0	0	14	22	1	SNOM	0	NO	0	8	0	1
28	3	0	0	0	0	0	0	0	0	0	0	Left clavicula	0	0	22	27	1	SNOM	0	NO	0	5	0	1
29	3	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	1	SNOM	0	NO	0	4	0	1
30	3	0	0	0	0	0	0	0	0	0	0	0	Linear undisp	0	38	50	2	Primary repa	6	Death	8	5	5	2
31	4	0	0	0	0	0	0	0	0	0	0	0	0	0	29	34	1	SNOM	2	NO	0	5	1	1
32	3	0	0	0	0	0	0	0	0	0	0	Right clavicle	0	0	22	27	1	SNOM	0	NO	0	9	2	1
33	0	0	0	0	0	3	0	3	0	0	0	0	0	0	9	18	2	Ligation of b	0	NO	0	6	0	1
34	0	0	0	0	0	3	0	0	0	2	L4 undisplac	0	0	0	13	17	2	Resection of	0	No	0	7	0	1
35	0	0	0	0	0	3	0	0	0	0	0	0	0	0	9	9	2	Perforation r	0	NO	0	10	0	1
36	3	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	1	SNOM	0	NO	0	5	0	1
37	0	0	0	0	0	2	0	0	0	0	0	0	closed shaft	Abrasion :1	9	9	1	SNOM	2	NO	0	4	0	1
38	3	0	0	0	0	0	0	0	0	0	0	Abrassion:1	0	0	11	14	1	SNOM	0	ERCP for bil	3	18	0	1
39	3	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	1	SNOM	2	NO	0	17	0	1
40	2	2	0	4	0	0	0	0	0	0	0	0	A lacerated	0	34	34	1	SNOM	0	no	0	10	0	1
41	3	0	0	0	0	3	0	0	0	0	0	0	0	0	9	18	2	Resection an	0	NO	0	15	0	1
42	0	3	0	0	0	2	0	0	0	0	0	0	0	0	27	27	1	SNOM	1	DEATH	7	4	4	2
43	2	3	0	0	0	3	0	0	0	0	0	0	0	0	9	22	2	Resection an	0	NO	0	11	4	1
44	0	4	0	0	0	0	0	0	0	0	0	CLAVICULAR	0	0	29	29	1	SNOM	0	ANGIOEMBO	8	19	0	2
45	0	0	0	0	0	2	0	0	0	0	0	0	0	0	8	8	2	Diagnostic la	0	NO	0	11	4	1
46	0	0	0	0	0	0	0	0	0	2	0	0	Abrassion ov	Abrassion:1	6	6	9	Secondary cl	0	wound infect	1	9	0	1
47	3	0	0	0	0	0	0	0	0	0	B/L PARS AR	0	0	0	9	9	1	SNOM	2	NO	0	7	3	1
48	0	0	0	0	0	2	0	0	0	0	TRANSEVER	0	B/L PUBIC R	MATOCELE:2	12	12	1	SNOM	2	NO	0	6	0	1
49	4	0	0	3	0	3	0	0	3	0	Fracture left	0	0	0	24	34	8	DIAPHRAGM	0	patient had	5	30	2	1
50	0	0	0	0	0	3	0	0	0	0	0	0	ABRASSIONS	0	11	11	2	MODIFIED G	0	NO	0	8	0	1
51	0	4	2	0	0	0	3	0	0	0	0	LEFT THUMB	LACERATION	0	34	34	2	REPAIR OF B	0	DEATH	8	4	4	2
52	0	0	0	0	0	3	0	0	0	1	0	Segmental n	0	CERATION:2	22	22	2	JEJUNAL PER	PRIMMARY (	ANEMIA REC	2	7	0	1
53	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4	4	7	EXPLORATIO	0	NO	0	4	0	1
54	0	4	0	0	0	0	0	0	0	0	0	0	TIBIAL SHAFT	0	34	34	1	SNOM	2	NO	0	10	0	1
55	0	4	0	0	0	0	0	0	0	0	0	0	0	0	18	18	1	SNOM	0	patient had	0	4	0	1
56	0	3	0	0	0	0	0	0	0	0	0	Comminuted	0	0	14	17	1	SNOM	3	0	0	7	0	1
57	3	0	0	3	0	0	0	0	0	0	Left transver	Comminuted	Linear fractu	0	17	22	1	SNOM	2	0	0	5	0	1
58	0	5	0	0	0	0	0	0	0	0	FRACTURE T	RIGHT HAND	RIGHT HIP A	0	38	38	1	SNOM	3	required blo	2	20	0	1
59	0	0	0	0	0	2	0	0	0	0	0	Abrassion ov	0	0	5	5	2	primary repa	0	0	0	5	0	1
60	3	0	0	0	0	0	0	0	0	1	0	0	ABRASSIONS	0	10	11	1	SNOM	0	NO	0	5	0	1
61	3	0	0	3	0	0	0	0	0	0	0	0	abrasions ov	0	12	20	1	SNOM	0	0	0	5	0	1
62	4	0	0	0	0	0	0	0	0	0	0	abrasions:1	abrasions:1	0	18	18	1	SNOM	0	0	0	7	0	1
63	3	0	0	5	0	3	0	0	0	0	L1 L2 transve	abrasions:1	lacerations:1	0	43	43	2	Right nephre	0	MODS f/b de	8	15	15	2
64	0	2	0	0	0	3	0	0	0	0	0	abrasion:1	abrasion:1	0	17	17	2	Diversion sto	2	0	0	9	2	1
65	0	0	0	0	0	0	0	0	0	2	0	Abrasion:1	Left femur s	0	17	17	1	SNOM	5	wound infect	1	16	0	1
66	0	3	0	0	0	0	0	0	0	0	0	Abrasions an	0	0	19	19	1	SNOM	0	0	0	5	0	1
67	2	4	0	0	0	0	0	0	0	0	0	Abrasions:1	Abrasions:1	0	29	29	4	splenectomy	0	CT guided pe	3	21	5	1
68	2	0	4	2	0	2	0	0	0	0	0	left clavicula	abrasions:1	0	24	29	2	(Pancreatico	3	Death	8	2	2	2
69	5	0	0	0	0	3	0	0	0	0	0	0	0	Entry and ex	27	27	7	angioemboli	0	MODS f/b De	7	4	4	2
70	4	0	0	0	0	0	0	0	0	0	0	Right clavicle	Communities	Abrasions:1	29	29	1	SNOM	2	NO	0	5	0	1
71	0	0	0	0	0	3	0	0	0	2	0	0	Transverse j	0	17	17	2	Resection an	0	infected mid	6	54	10	1
72	0	0	3	0	0	0	0	0	0	0	0	0	Abrasions:1	0	11	11	2	Distal pancre	0	patient reop	8	16	10	2
73	4	0	0	0	0	0	0	0	0	0	0	0	0	0	26	29	7	Angioemboli	0	No	0	10	0	1
74	0	4	0	0	0	0	0	0	0	0	0	Abrasions:1	abrasions:1	0	26	26	1	SNOM	0	no	0	6	0	1
75	0	4	0	0	0	0	0	0	0	0	0	Abrasions:1	Laceration o	0	26	29	1	SNOM	2	no	0	6	0	1
76	0	0	0	0	0	0	3	0	0	2	Wedge comp	0	Communited	0	17	17	1	SNOM	3	no	0	6	0	1
77	3	0	0	0	0	0	0	0	0	0	0	abrasions:1	abrasions:1	0	11	11	1	SNOM	0	no	0	6	0	1
78	4	0	0	0	0	0	0	0	0	0	0	abrasions:1	abrasions:1	0	26	29	1	SNOM	0	angio embol	3	15	0	1
79	4	2	2	0	0	3	0	0	0	0	0	abrasions:1	0	0	26	34	8	LAP CONVE	Endoscopic s	reoperated fo	8	36	7	2
80	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4	4	1	SNOM	0	No	0	6	0	1
81	4	0	0	0	0	0	0	0	0	0	0	abrasion :1	abrasions;1	0	18	18	8	Diagnostic la	0	no	0	8	0	1
82	0	0	0	0	0	0	0	0	0	2	Linear mildly	0	communited	0	12	12	1	SNOM	3	No	3	10	4	1
83	0	3	0	0	0	0	0	0	0	2	0	0	0	abrasions:1	14	17	1	SNOM	0	No	0	3	0	1
84	2	5	0	0	0	0	0	0	0	0	0	0	0	abrasions:1	27	30	4	Splenectomy	0	Death	7	1	0	2
85	0	0	0	0	0	0	0	0	0	2	0	0	0	abrasions:1	12	12	1	SNOM	0	no	0	10	0	1
86	0	3	0	0	0	0	0	0	0	0	0	left clavicula	Abrassions:1	0	22	27	1	SNOM	0	no	0	5	0	1
87	3	0	0	0	0	0	0	0	0	0	transverse p	0	0	0	22	27	1	SNOM	0	no	0	5	0	1
88	0	0	0	5	0	0	0	0	0	0	0	0	0	abrasions:1	26	34	2	nephrectomy	0	ia and death	8	21	15	2
89	0	0	0	3	0	0	0	0	0	2	fracture of t	0	Sacral alar fr	abrasions:1	22	22	1	SNOM	2	became covi	2	8	0	1
90	2	0	0	0	0	2	0	0	0	0	0	Abrassion:1	0	0	17	17	1	SNOM	0	VAP f/b Per	3	20	10	1
91	3	0	0	0	0	0	0	0	0	0	0	Abrassion:1	0	0	10	10	1	SNOM	0	no	0	5	0	1
92	0	0	0	3	0	0	0	0	0	0	0	leftclaviclefr	Abrassions:1	0	14	14	1	SNOM	0	no	0	4	0	1
93	0	0	0	0	0	3	0	0	0	0	0	right clavicle	abrassions :1	0	27	27	2	Resection an	0	death	8	3	3	2
94	2	0	0	0	0	0	0	0	0	2	0	0	0	Penetrating	5	9	2	retrival of me	0	Pulmonary inf	2	12	3	1
95	2	0	0	0	0	0	0	0	0	0	0	0	ABRASSIONS	ABRASSIONS	14	22	1	SNOM	0	rhabdomyoly	6	36	32	1
96	0	2	0	0	0	0	0	0	0	0	D10-D11 tra	0	0	0	29	34	1	SNOM		COVIDpneum	8	20	15	2
97	0	0	0	2	2	0	0	0	0	0	0	0	Right inferio	0	22	22	3	non therape	1,2	SSI ; Prolong	5	62	13	1
98	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4	4	9	Primary repa	0	no	0	3	0	1
99	0	0	0	0	0	3	0	0	0	0	0	0	Shaft of fem	Abrasion-1	17	17	2	distal jejuna	0	Death	8	2	2	2
100	4	2	0	0	0	0	0	0	0	0	Vertebral bo	0	Left subtroch	Abrasion:1	36	41	1	SNOM	2	no	0	11	0	1
101	0	0	0	0	2	0	0	0	0	2	0	0	Proximaltibia	0	24	41	1	SNOM	6	motor cortica	5	18	6	1
102	3	0	0	0	0	0	0	0	0	0	0	0	0	0	22	27	1	SNOM	1	NO	0	15	4	1
103	3	0	0	0	0	0	0	0	0	0	0	0	B/L shaft of	laceration:1	34	34	1	SNOM	2	debridement	3	31	7	1
104	2	0	0	3	0	0	0	0	0	2	L2 L3 Verteb	LACERATIO	LEFT KNEE	Abrasions:1	17	17	1	SNOM	(Debridemen	No	0	10	0	1
105	0	3	0	0	0	0	3	0	0	0	0	0	Sacral al frac	Contusions:1	22	27	1	SNOM	0	Splenectomy	5	41	7	1
106	5	0	0	0	2	0	0	0	0	0	0	0	Rt 1st and 2n	0	45	57	1	SNOM	3	No	0	8	0	1
107	0	4	0	0	0	0	0	0	0	0	0	0	0	abrasion ove	17	17	4	splenectomy	0	No	0	7	2	1
108	3	0	0	3	0	0	0	0	0	0	Transverse p	0	0	Abrasions:1	22	27	1	SNOM	0	NO	0	10	0	1
109	0	4	0	0	0	0	0	0	0	0	0	Closed proxin	Multiple lace	over hand :2	41	48	7	Splenic arter	2	No	0	7	0	1
110	3	0	0	0	0	0	0	3	0	0	0	0	abrasions-1	0	22	27	3	B/L internal	2	wound infect	1	21	6	1
111	2	0	0	2	0	0	0	0	0	0	Fracturs Tra	Right Distal radial fracture		0	24	29	1	SNOM	3	No	0	6	0	1
112	0	3	0	0	0	0	0	0	0	0	0	Right scapula	0	abrasions:1	14	14	1	SNOM	0	No	0	6	0	1
113	2	0	0	0	2	0	0	0	0	0	0	0	Right femur	Abrasions:1	17	22	1	SNOM	4	NO	0	9	0	1
114	0	0	0	0	0	2	0	0	0	0	0	0	0	tab wound:1	5	5	2	omental hen	0	No	0	6	0	1
115	2	0	0	0	0	0	0	0	0	0	0	0	Suprapubic r	0	29	34	1	SNOM	2	no	0	7	0	1
116	0	0	0	3	0	0	0	0	0	0	. vertebra: 2.	0	TIBIAL SHAFT	0	22	22	1	SNOM	2	NO	0	10	0	1
117	2	0	0	0	0	0	0	0	0	0	C7 fracture:2	0	0	Abrasion :1	17	22	1	SNOM	0	no	0	5	0	1
118	4	2	0	3	0	2	0	0	0	0	0	0	0	laceration:1	34	34	1	SNOM	0	laparoscopy	4	13	4	1
119	0	2	0	0	0	0	0	0	0	0	ocess of D5:2	Displaced co	0	0	22	27	1	SNOM	0	no	0	5	0	1
120	0	2	0	0	0	0	0	0	0	0	0	0	0	contusions:1	12	12	1	SNOM	0	No	0	4	0	1
121	0	0	0	0	0	0	0	3	0	0	0	0	Comminuted	Abrasion:1	14	17	1	SNOM	0	urinary tract	2	28	0	1
122	0	5	0	0	0	0	0	0	0	0	FRACTURE:2	Comminuted	0	0	38	43	1	SNOM	0	no	0	7	0	1
123	4	2	2	0	0	0	0	0	0	0	0	0	Displaced co	0	24	24	1	SNOM	1	DEATH	8	3	1	2
124	4	0	0	0	0	0	0	0	0	0	0	0	0	Abrasion-1	5	5	1	SNOM	0	NO	0	3	0	1
125	0	0	3	0	0	0	0	0	0	0	0	0	0	Abrasion-1	10	10	2	SPLEEN PRES	0	No	0	9	0	1
126	3	4	0	0	0	0	0	0	0	0	0	0	0	Abrasion :1	26	34	1	SNOM	0	Death	8	4	1	2
127	3	5	3	0	0	3	0	3	0	0	0	0	Communited	0	39	43	3	Spleenectom	2	death	8	7	6	2
128	3	0	0	0	0	0	0	0	0	0	L1,2 and 3:2	0	0	0	22	27	1	SNOM	0	no	0	5	0	1
129	5	0	0	0	0	2	0	0	0	0	0	0	0	laceration:1	26	30	3	packing	0	BILE LEAK FO	3	22	0	1
130	2	5	0	0	0	0	0	0	0	0	0	Fracture of L	displaced fra	0	48	48	4	SNOM	1 2	Death	7	25	3	2
131	3	0	0	4	0	0	0	0	0	0	0	Lt distal radi	0	0	20	29	1	SNOM	2	Blood transfu	2	7	0	1
132	0	0	0	0	0	0	0	3	0	2	0	0	Laceration o	0	13	17	1	SNOM	1	Infected Ingu	2	2	0	1
133	4	0	0	0	0	0	0	0	0	0	0	0	0	0	16	16	1	SNOM	0	N+BT134:BT	0	5	0	1
134	0	0	4	0	0	0	0	0	0	0	0	Abrasion :1	0	0	17	17	1	SNOM	0	NO	0	10	0	1
135	3	0	0	0	0	0	0	0	0	0	0	0	Comminuted	0	22	27	1	SNOM	7	Death	7	0	3	2
136	0	0	0	4	0	0	0	0	0	0	D7 Compress	0	0	contusion ov	21	21	1	SNOM	0	no	0	5	0	1
137	4	0	0	0	0	0	0	0	0	1	0	0	ABRASIIONS	0	17	18	1	SNOM	0	UTI AND SEP	5	19	5	1
138	4	0	0	0	0	0	0	0	0	0	0	0	0	0	25	34	1	SNOM	0	NO	0	5	0	1
139	0	0	4	0	0	0	0	0	0	0	0	0	0	0	16	16	1	SNOM	0	ERCP stuntin	3	22	0	1
140	3	0	0	0	0	3	0	0	0	0	0	0	0	0	9	18	2	gastric perfo	0	no	0	9	0	1
141	0	4	0	0	0	0	0	0	0	0	0	ABRASIONs:	CONTUSIONS	0	17	17	8	SPLENIC LA	0	NO	0	6	1	1
142	4	0	0	0	0	0	0	0	0	0	0	ABRASIONs:	RIGHT INFER	0	26	34	1	SNOM	5 FACIOTOM	SEPSIS	1	26	14	1
143	3	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	1	SNOM	0	Anemia requi	2	4	4	1
144	4	0	0	0	0	0	0	0	0	0	0	ABRASIONS:	ABRASIONS	0	18	18	1	SNOM	0	NO	0	5	0	1
145	4	0	0	0	0	0	0	0	0	0	0	0	0	ABRASSION	17	17	7	coil angioem	0	NO	0	10	0	1
146	0	0	4	0	0	0	0	0	0	0	0	0	0	0	17	17	1	SNOM	0	Endoscopic s	3	18	0	1
147	4	0	0	0	0	0	0	0	0	0	0	Fracture righ	0	0	29	34	1	SNOM	3	PRBC transfu	2	6	6	1
148	3	0	0	0	0	0	0	0	0	0	0	0	0	Contusion ov	10	10	1	SNOM	0	no	0	6	3	1
149	0	3	0	0	0	0	0	0	0	0	0	RIGHT BOTH	0	ABRSIONS:1	14	14	1	SNOM	3	no	0	5	0	1
150	0	5	0	0	0	0	0	0	0	0	0	0	Left Pubic ra	Abrasions:1	38	43	1	SNOM	0	Blood transfu	2	7	6	1
151	0	3	0	0	0	0	0	0	0	0	0	0	0	Abrasions:1	20	27	1	SNOM	0	No	0	7	5	1
152	0	0	0	2	0	2	0	0	3	0	0	0	Multiple frac	Abrasions:1	17	17	5	Laparoscopic	2	No	0	7	2	1
153	4	3	0	0	0	0	0	0	0	2	L4-L5 SPINO	0	SCARAL ALA	0	24	29	1	SNOM	2	NO	0	12	2	1
154	2	0	0	0	0	3	0	0	0	0	0	0	B/L SUPERIO	0	17	17	7	DIAGNOSTIC	2	NO	0	7	0	1