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### RESEARCH ARTICLE

#### ACLINICAL PROFILE OF SPLENIC TRAUMA FOLLOWING ALLEGED HISTORY OF ROAD TRAFFIC ACCIDENT ATTENDING ATERTIARY CARE HOSPITAL

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Splenic Trauma, Non-Operative Management, Abdominal Tenderness

#### Abstract

**Background:** Spleen is commonly injured in blunt abdominal trauma. Each year, an average of 25% of admissions are for blunt trauma[1]. The incidence is higher in males (M/F:2:1) with a peak between 18 to 34 years old[2]. In the last few years the management of blunt splenic injuries both in adults and children has shifted towards a conservative approach[3].

**Materials and methods:** A hospital based prospective observational study was done in 30 patients presenting with blunt splenic trauma admitted in Jorhat Medical College and Hospital, Jorhat, from June 2021 to May 2022. Demographic profile, detailed history, physical examination, operative managements and the outcome were noted.

**Results:** A striking male preponderance of 93% was observed. The most common age group affected was those aged 20–39 years. The majority of our study population presented with abdominal pain in 25 cases. Most common sign was abdominal tenderness 25 cases. Non-operative management was adopted in 63.33% patients, operative management was done in 11 cases (36.67%). The most common post-operative complication was respiratory infections (27.27%). The present study showed a mortality of 10% (3 cases). 11 were treated operatively and 19 patients were treated conservatively.

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#### Introduction:-

Spleen is commonly injured in blunt abdominal trauma. Each year, an average of 25% of admissions are for blunt trauma[1]. The incidence is higher in males (M/F:2:1) with an incidence between 18 to 34 years old[2]. In the last few years the management of blunt splenic injuries both in adults and children has shifted towards a conservative approach because of the vital role played by the spleen in the immune defence system and because of the risks of post operative complications[3]. Computed tomography (CT) is the imaging modality of choice, minimally invasive techniques (angiography and endovascular intervention) and the use of AAST. Nowadays, non operative management is mainly used in terms of bed rest, close monitoring of vital signs, hydration, analgesia, and serial physical examination and laboratory studies. It is associated with higher rates of splenic salvages and decreased morbidity compared to surgical management.

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## Aims and Objectives:-

### Aim:-

A Clinical Profile Of Splenic Trauma Following Alleged History Of Road Traffic Accident Attending A Tertiary Care Hospital.

### Materials And Methods:-

A hospital based prospective observational study was done in 30 patients presenting with blunt splenic trauma admitted in Jorhat Medical College and Hospital (JMCH) ,Jorhat,Assam, India from June 2021 to May 2022. Demographic profile, detailed history, physical examination, operative managements and the outcome were noted.All the patients with splenic trauma following an alleged history of physical assault admitted to JMCH will be excluded.

All relevant data, including identification, history, clinical findings, diagnostic tests, operative findings, operative procedures, and complications, were documented on a specially prepared proforma during the hospital stay and subsequent follow-up period. The data was tabulated on Microsoft Excel and analyzed with relevant tables and bar or pie diagram and the results were discussed with relevant literature to arrive at the conclusion.

Ethical clearance was obtained from the Institutional Ethics Committee of Jorhat Medical College and Hospital.

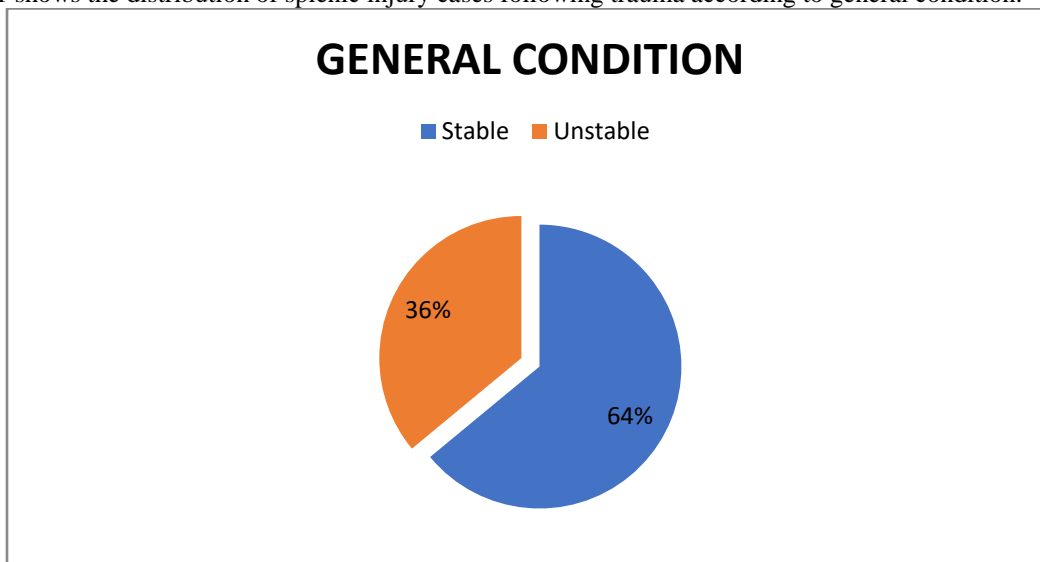
### Results And Observation:-

Male preponderance of 93% (28 cases) was observed.The most common age group affected was those aged 20–39 years.The majority presented with abdominal pain in 25 cases (83%). Most common sign was abdominal tenderness 25 cases (83%). Ultrasonography (FAST) has picked up splenic injury or collection in 29 cases (96.67%).CECT abdomen was performed in 25 cases (83.33%) . Non-operative management was adopted in 19 patients (63.33%).Operative management was done in 11 cases (36.67%).The average duration of stay in the hospital was longer for the operative group (15.72 days) as compared to the non-operative group (13.72 days).Post-operative respiratory infections were the most common complication(27.27%).The present study showed a mortality of 10% (3 cases). 11 were treated operatively and 19 patients were treated conservatively .

**Table 1:-** Overall Situation.

GENERALCONDITION	Number(n)	Percentage (%)
STABLE	19	64
UNSTABLE	11	36
TOTAL	30	100

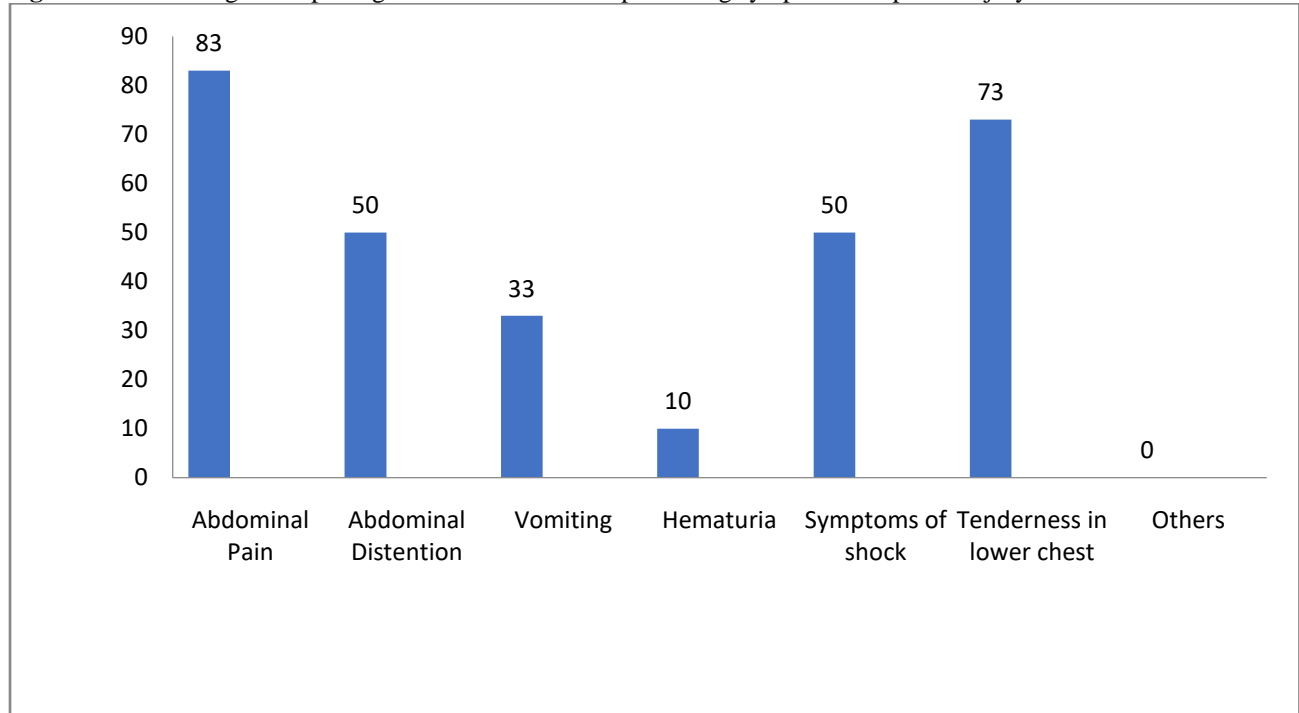
Table—1 shows the distribution of splenic injury cases following trauma according to general condition.



**Fig. 1:-** Pie diagram showing the distribution of splenic injury cases following trauma according to general condition.

**Table 2:-** Symptoms.

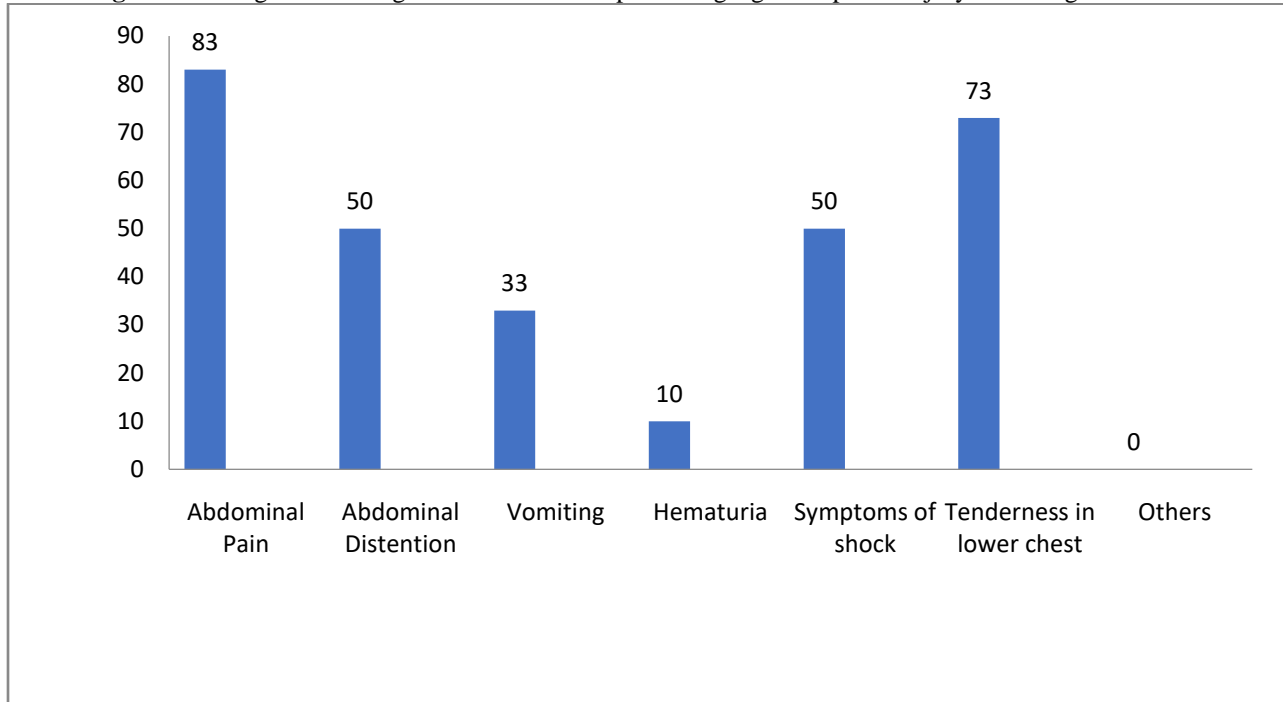
SYMPTOMS	Numbers(n)	Percentage (%)
Abdominal Pain	25	83
Abdominal Distention	15	50
Vomiting	10	33
Hematuria	3	10
Symptoms of shock	15	50
Tenderness in the lower chest	22	73
Others	0	0

**Figure 2:-** A bar diagram depicting the various modes of presenting symptoms in splenic injury after trauma.**Table 3:-** Clinical Characters Or Significance:

SIGN	Number(n)	Percentage(%)
Guarding and rigidity	11	36
Abdominal tenderness	25	83
Distension	15	50
shock indication	15	50
Shifting Dullness	7	23
Others		

Table—3 shows different modes of presenting signs in splenic injury following trauma.

**Fig. 3:-** Bar diagram showing different modes of presenting signs in splenic injury following trauma.



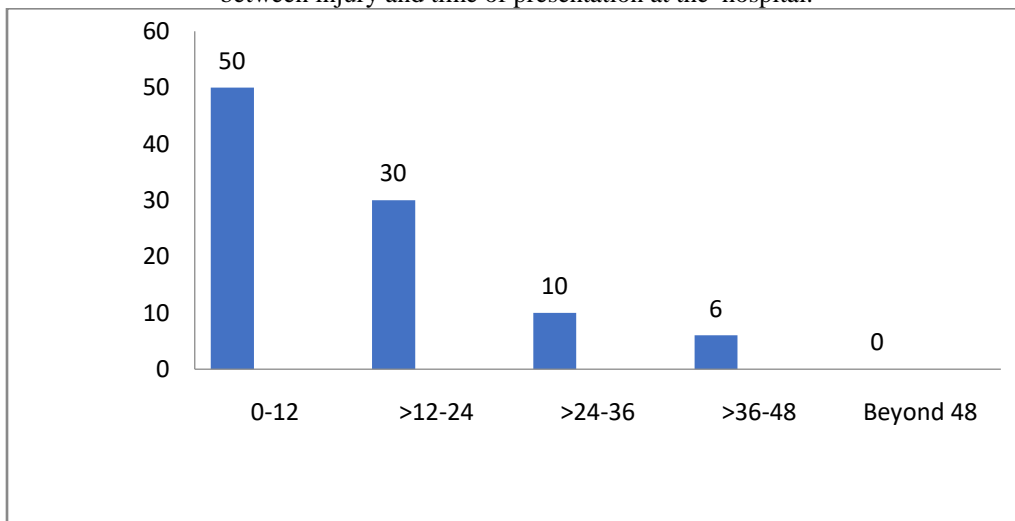
**Table 4:-** The Interval Between Trauma and Arrival at the Hospital.

TIME (in hours)	Numbers (n)	PERCENTAGE (%)
0-12	15	50
>12-24	10	30
>24-36	3	10
>36-48	2	6
Beyond 48	0	0
TOTAL	30	100

Table –4 shows the distribution of splenic injury cases following trauma according to the time interval between injury and time of presentation at the hospital.

**The time between the injury and the presentation**

**Fig. 4:** Bar diagram showing the distribution of splenic injury cases following trauma according to the time interval between injury and time of presentation at the hospital.

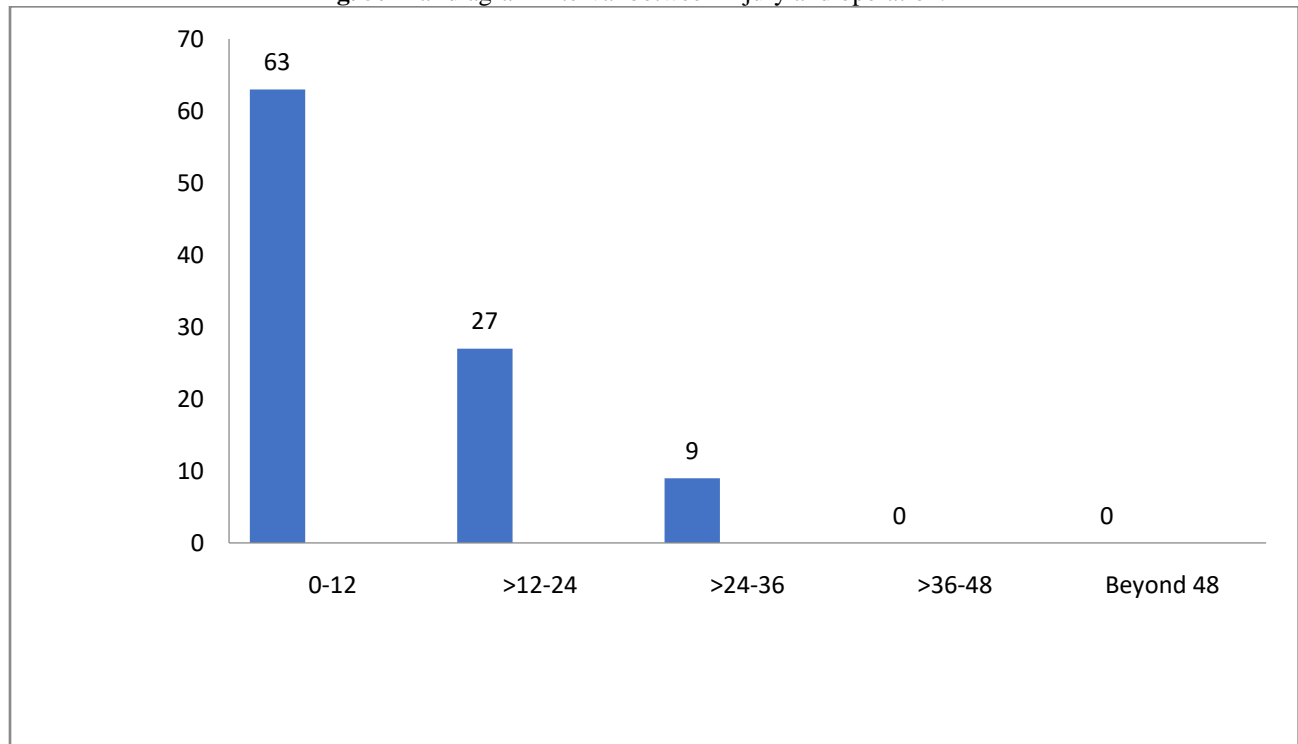


**Table 5:-** Time Interval Between Trauma And Surgery:

TIME (in hours)	Numbers(n)	PERCENTAGE(%)
0-12	7	63
>12-24	3	27
>24-36	1	9
>36-48	0	0
Beyond 48	0	0
TOTAL	11	100

The distribution of splenic injury cases following trauma is shown in Table 8.16 by time interval between injury and operation.

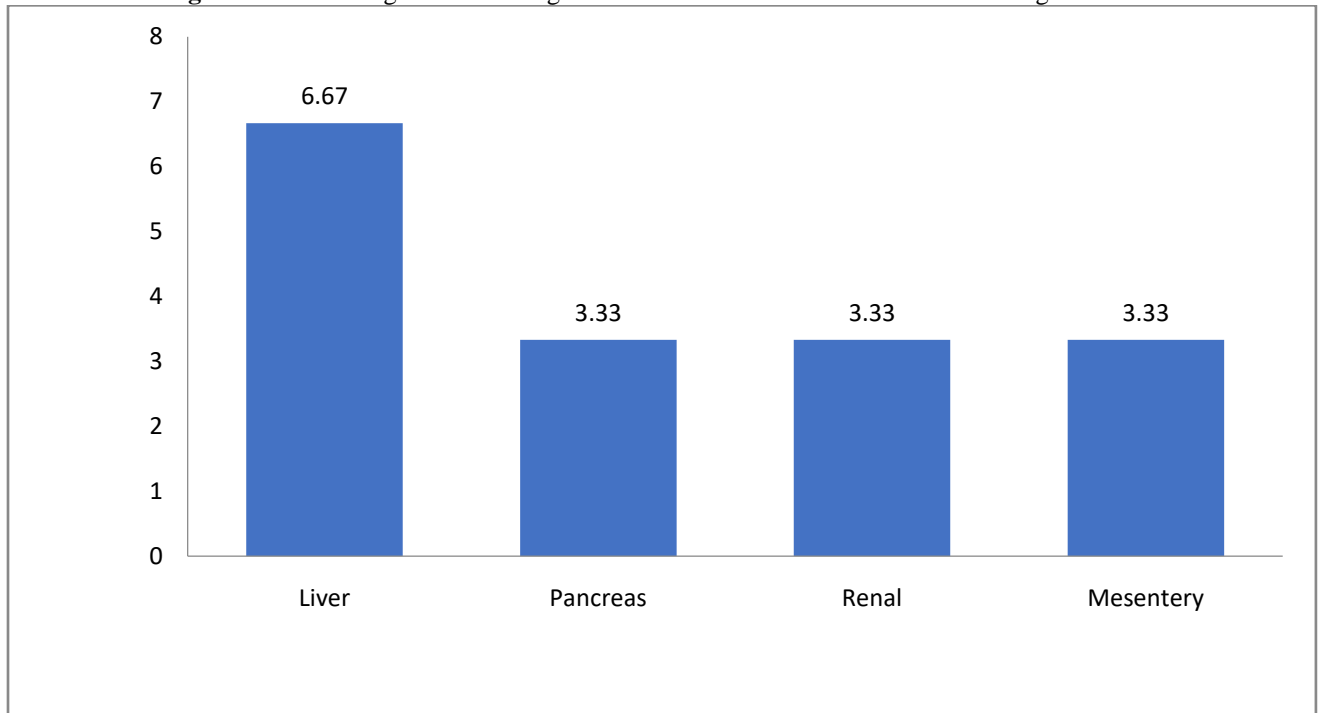
#### Interval Of Time Between Injury And Operation

**Fig. 5:-** Bar diagram interval between injury and operation.**Table 6:-** Associated Involvement Of Other Intra-Abdominal Organs.

ORGAN	(n = 30) NUMBER	PERCENTAGE (%)
Liver	2	6.67
Pancreas	1	3.33
Renal	1	3.33
Mesentery	1	3.33

**Associated Other Intra-Abdominal Organ Involvement**

**Figure 6:-** A bar diagram illustrating the involvement of other intra-abdominal organs.



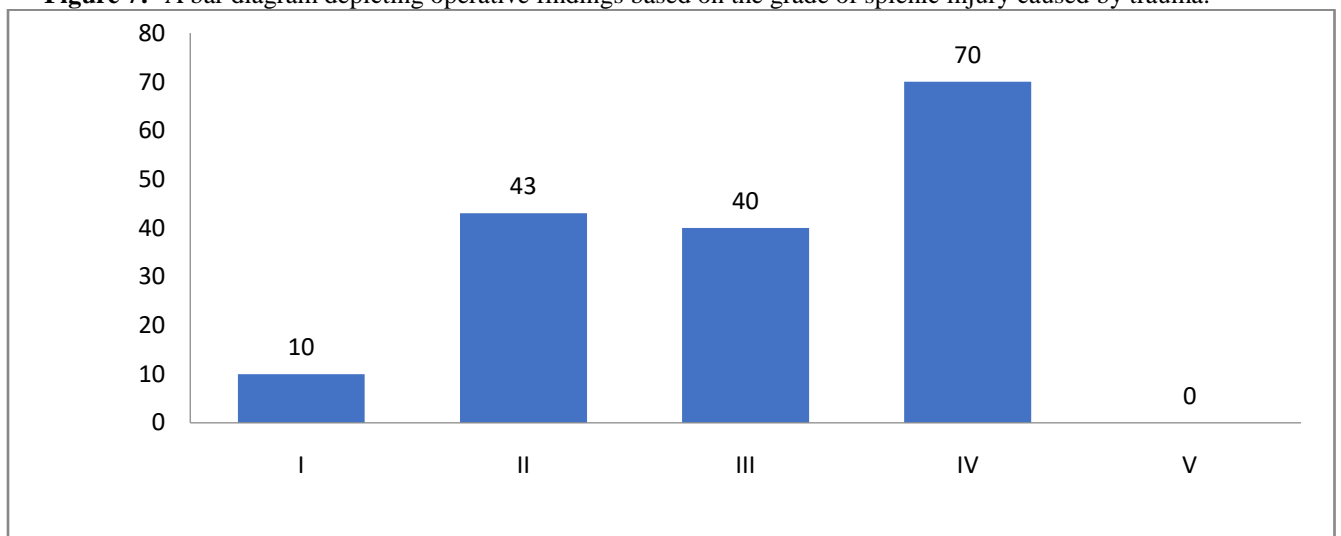
**Table 7:-** Operative Research.

OPERATIVE FINDING (GRADE)	NUMBER (n)	PERCENTAGE (%)
I	3	10
II	13	43
III	12	40
IV	2	7
V	0	0
TOTAL	30	100

Table 7 depicts operative findings based on the grade of splenic injury caused by trauma.

**Distribution By Grade**

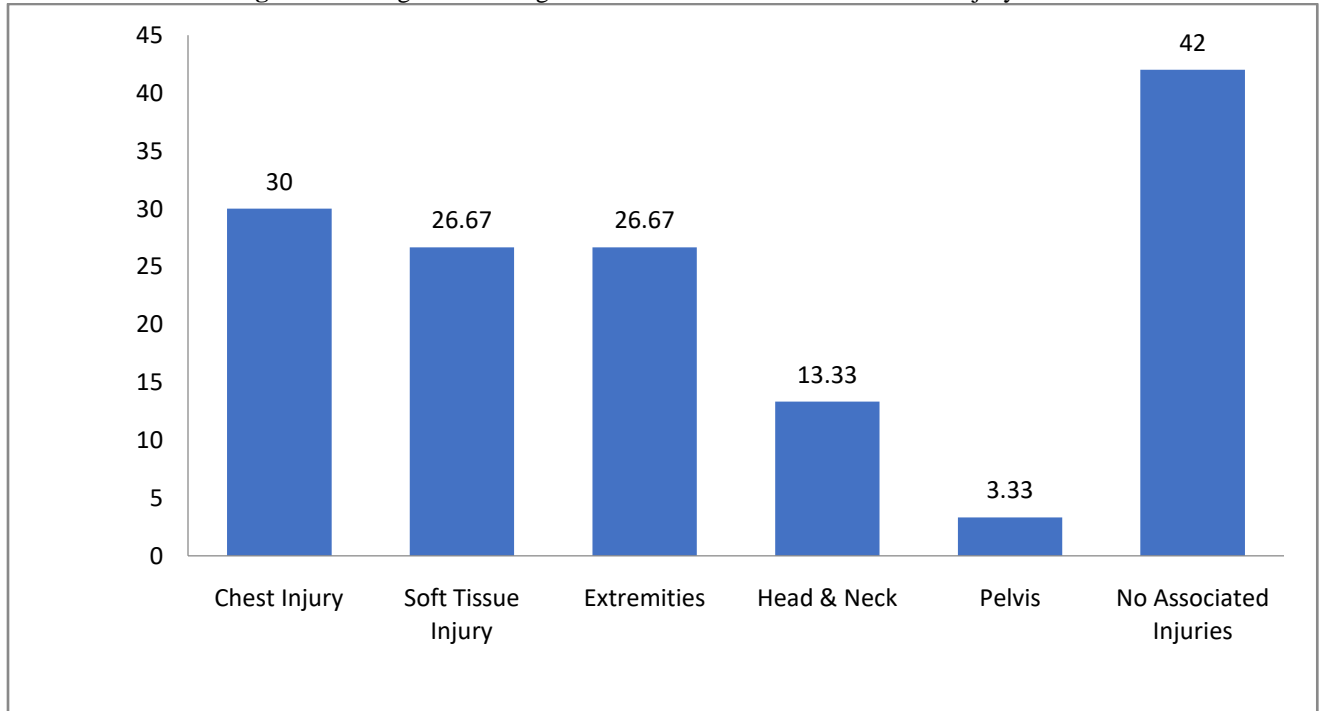
**Figure 7:-** A bar diagram depicting operative findings based on the grade of splenic injury caused by trauma.



**Table 8:-** Associated Injuries.

ASSOCIATED INJURIES	NUMBER (n)	PERCENTAGE (%)
Chest Injury	9	30
Soft Tissue Injury	8	26.67
Extremities	8	26.67
Head & Neck	4	13.33
Pelvis	1	3.33
No Associated Injuries	11	42%

Table-8 shows the various distributions of sites of associated injury

**Fig. 8:-** Bar diagram showing the distribution of sites of associated injury.**Table9:-** CECT Abdomen:

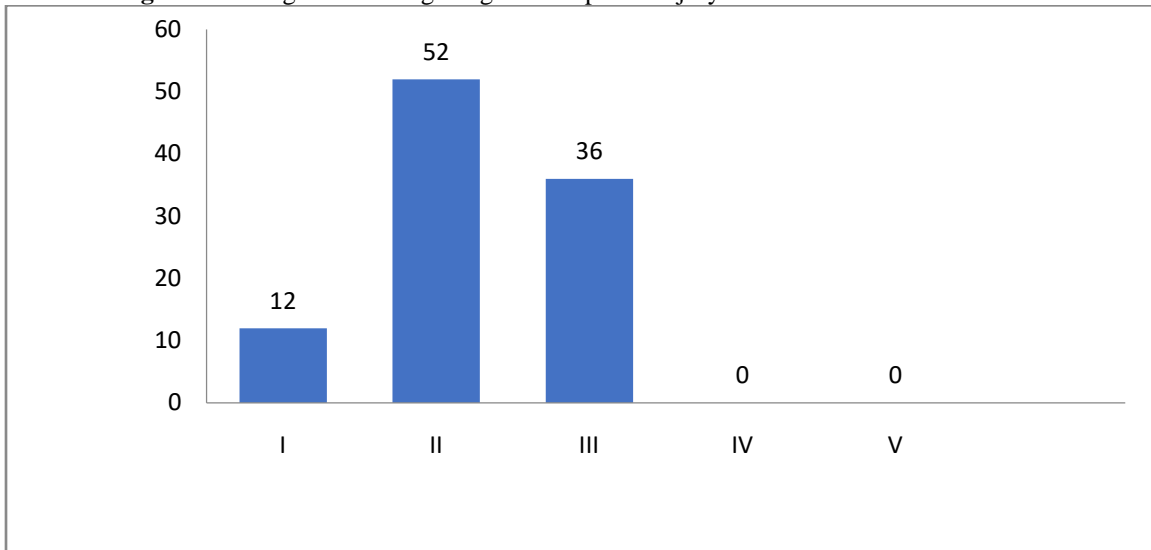
CECT was performed in 25 cases. Those patients who did not undergo CECT due to financial constraints or hemodynamically unstable conditions were taken up for surgery based on continuous clinical assessment.

CECT ABDOMEN (GRADE)	NUMBER (n)	PERCENTAGE (%)
I	3	12
II	13	52
III	9	36
IV	0	0
V	0	0
TOTAL	30	100

Table 9 shows the grade of splenic injury found in the CECT abdomen.

**Grading Of The CECT Abdomen**

**Fig. 9:-** Bar diagram showing the grade of splenic injury found in the CECT abdomen.



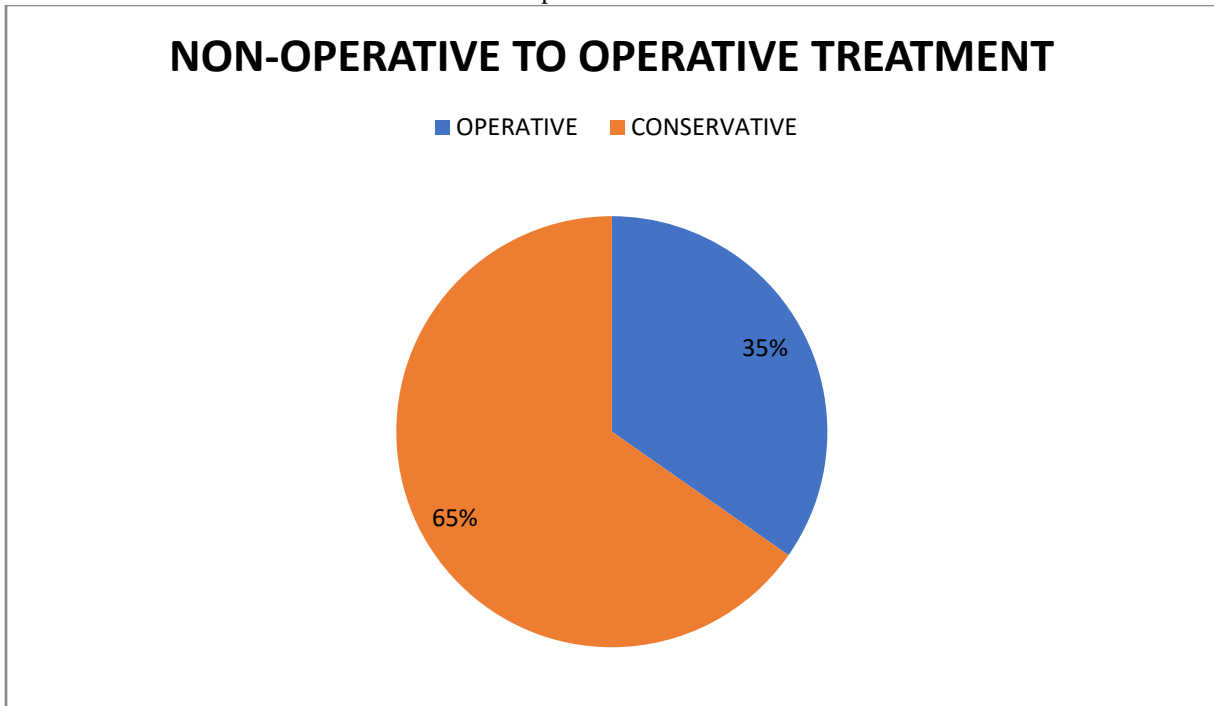
**Table 10:- Management:**

Ratio of Operative to Non-Operative Treatment

OPTIONS	NUMBER(n)	PERCENTAGE (%)
OPERATIVE	11	33.67
CONSERVATIVE	19	63.33
TOTAL	30	100

Table 10 shows the distribution of splenic injury cases following trauma according to non-operative and operative treatment.

**Fig. 10:-** Pie diagram showing the distribution of splenic injury cases following trauma according to non-operative and operative treatment.

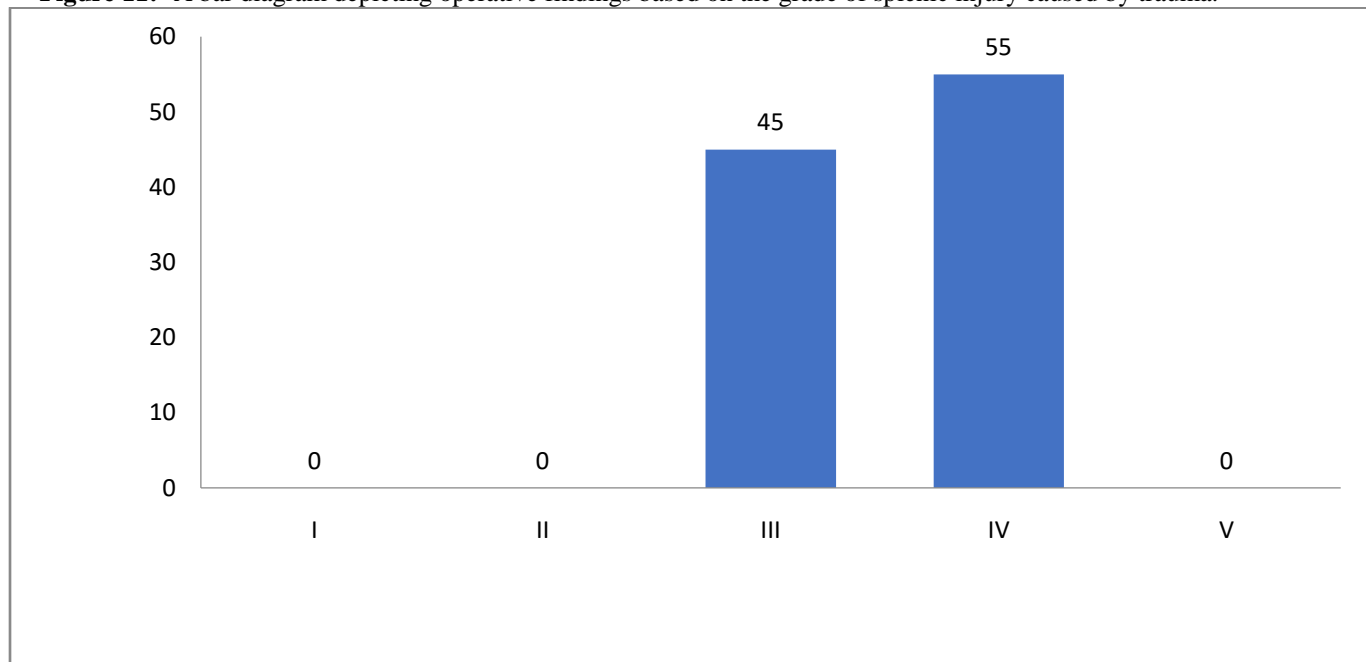




**Table 11:-** Operative Finding.

OPERATIVE FINDINGS (GRADE)	NUMBER(n)	PERCENTAGE (%)
I	0	0
II	0	0
III	5	45
IV	6	55
V	0	0
TOTAL	11	100

Table—11 shows operative findings according to grade of splenic injury following trauma.

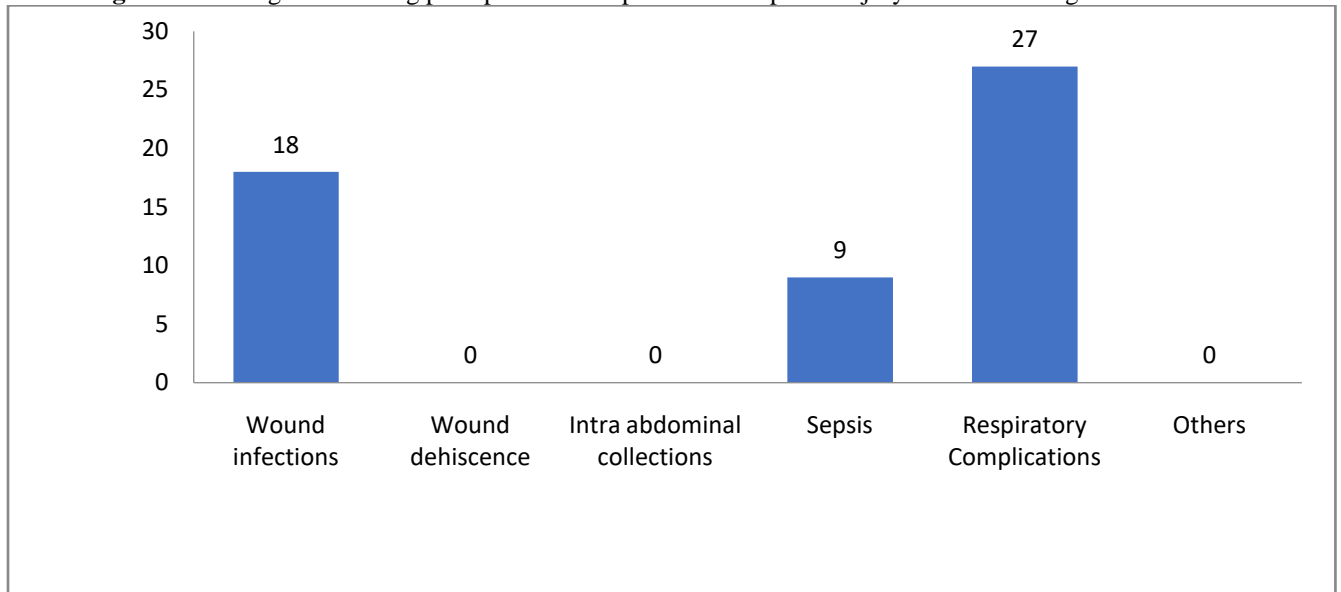
**Grade Wise Distribution:****Figure 11:-** A bar diagram depicting operative findings based on the grade of splenic injury caused by trauma.**Table 12:-** Complication.**Postoperative Complications**

COMPLICATIONS	NUMBER (n)	PERCENTAGES (%)
Wound infections	2	18.18
Wound dehiscence	0	0
Intra-abdominal collections	0	0
Sepsis	1	9
Respiratory Complications	3	27.27
Others	0	0

Table–12 shows postoperative complications in splenic injury cases following trauma.

**Postoperative Complications**

**Fig. 12:-** Bar diagram showing postoperative complications in splenic injury cases following trauma.

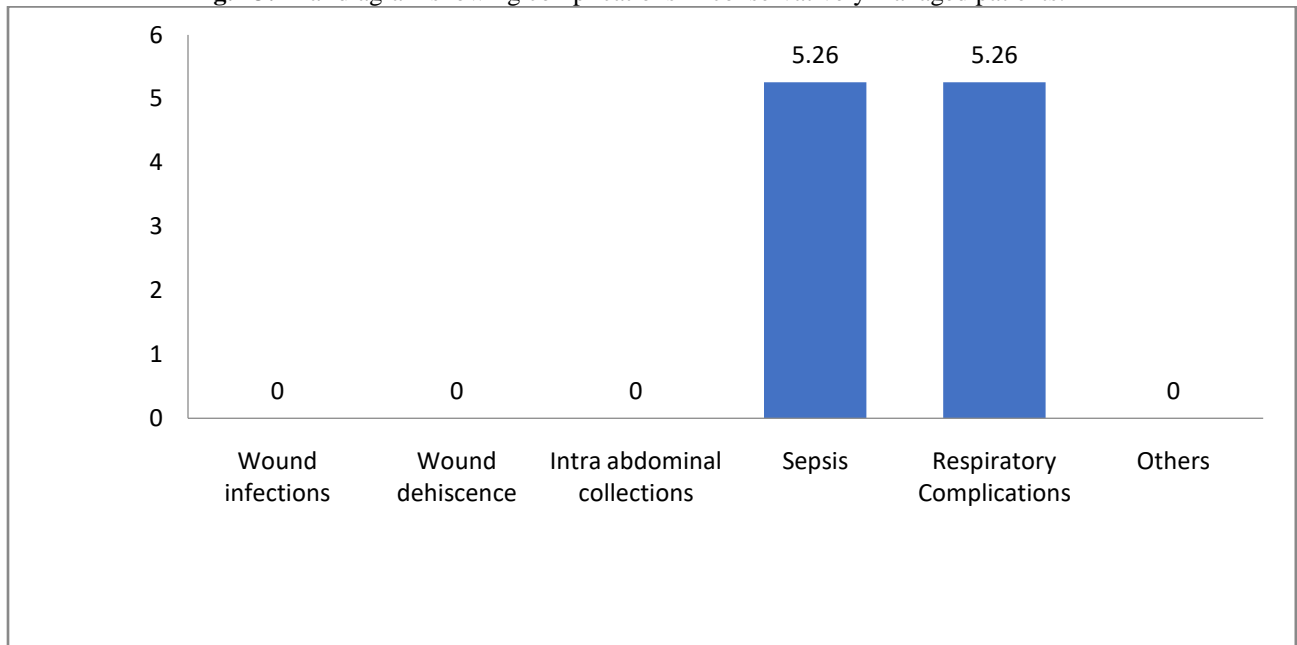


**(B) Complication In Patient Managed Conservatively:**

COMPLICATIONS	NUMBER (n)	PERCENTAGES (%)
Wound infections	0	0
Wound dehiscence	0	0
Intra-abdominal collections	0	0
Sepsis	1	5.26
Respiratory Complications	1	5.26
Others	0	0

**Complications In Patients Managed Conservatively**

**Fig. 13:-** Bar diagram showing complications in conservatively managed patients.

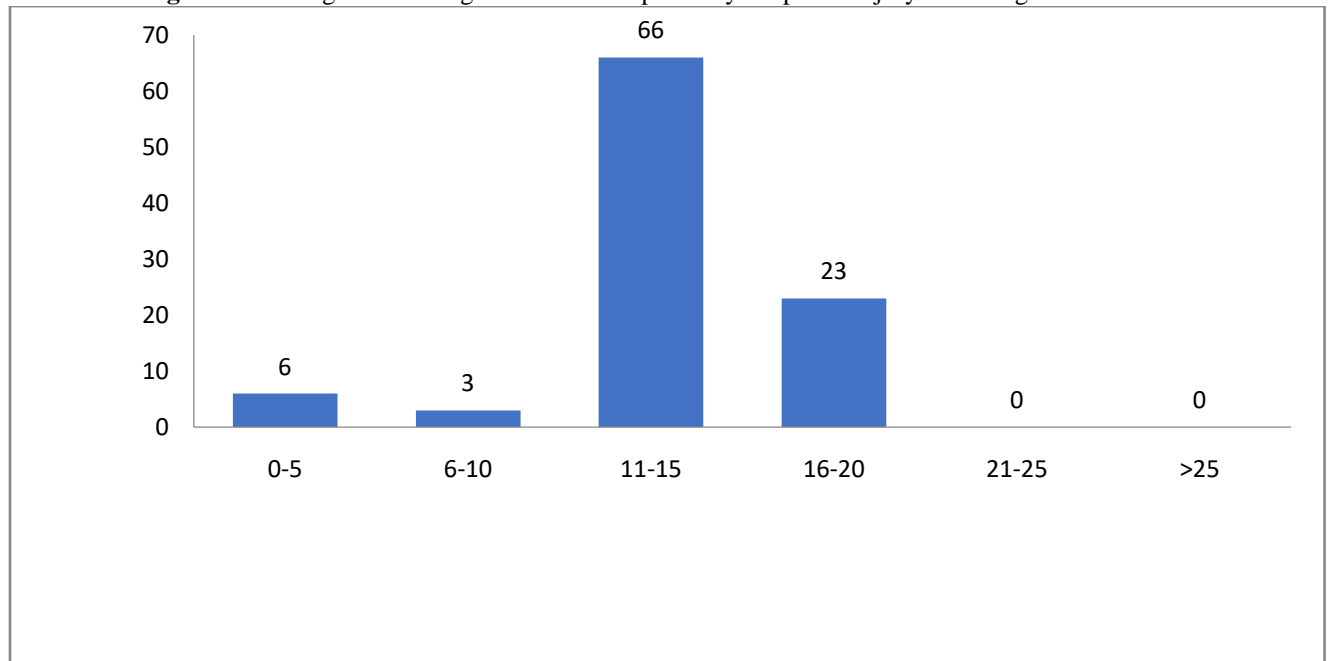


**Table14:-** Hospital Stay:

HOSPITAL STAY IN DAYS	NUMBER(n)	PERCENTAGES (%)
0-5	2	6
6-10	1	3
11-15	20	66
16-20	7	23
21-25	0	0
>25	0	0

Table-14 shows duration of hospital stay in splenic injury following trauma

#### Duration Of Hospital Stay

**Fig. 15:-** Bar diagram showing duration of hospital stay in splenic injury following trauma.**Table 15:-**Average Days Of Hospitalization In Non-Operative And Operative Group:

GROUP	AVERAGE DAYS
Non-Operative	13.73
Operative	15.72

Table 15 shows average days of hospitalisation in the non-operative and operative groups of splenic injury following trauma.

**Table 16:-**ICU Admission Rate In Non-Operative And Operative Groups:

GROUP	NUMBER OF CASES	PERCENTAGE (%)
Operative	7	63
Non-Operative	5	26.31

Table 16 shows the ICU admission rate for splenic injury following trauma.

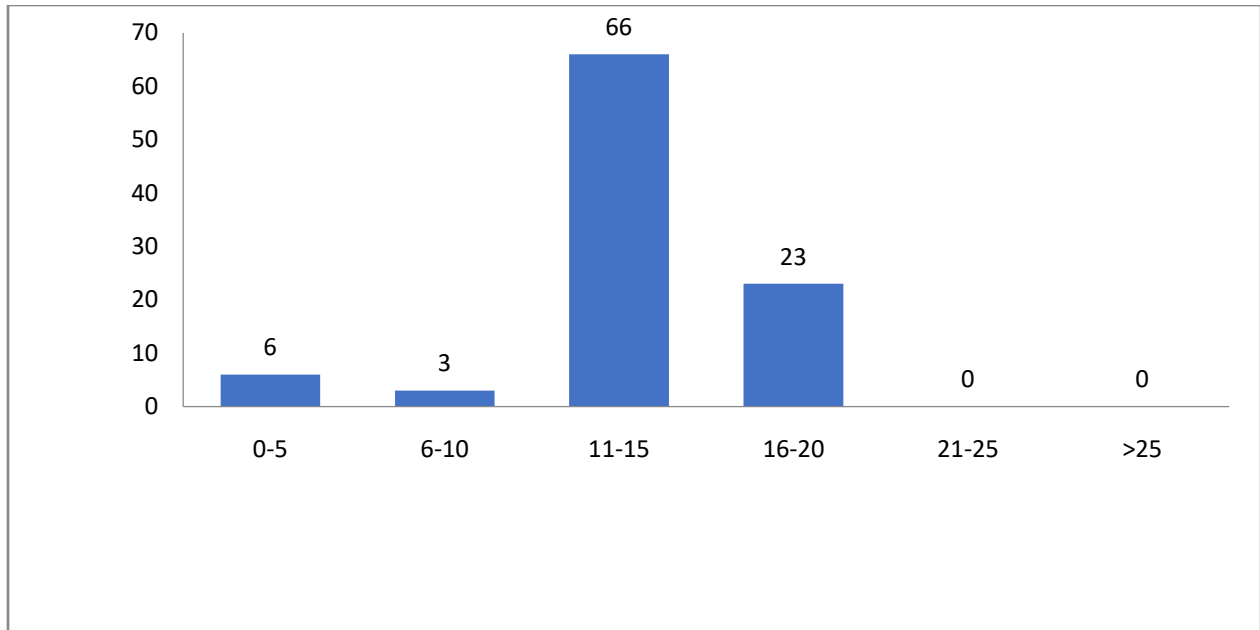


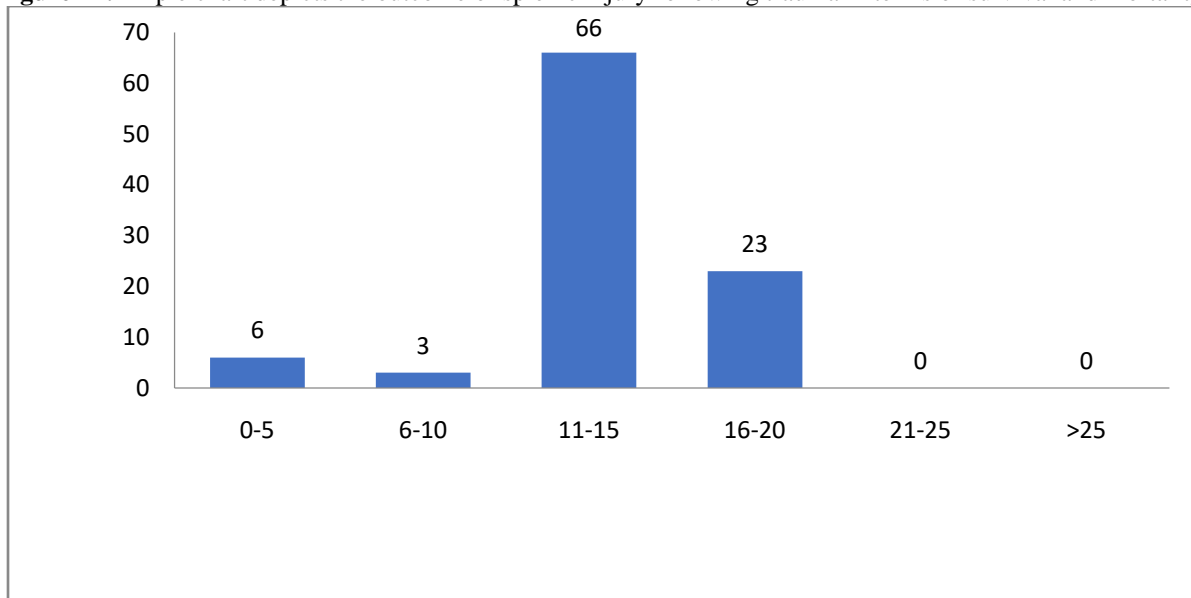
Table – 16: Bar diagram shows the ICU admission rate in splenic injury following trauma

Table 17:- Outcome:

OUTCOME	NUMBER (n)	PERCENTAGE (%)
Survival	27	90
Mortality	3	10
TOTAL	30	100

Table 17 shows the outcome of splenic injury following trauma in relation to survival and mortality.

Figure 17:- A pie chart depicts the outcome of splenic injury following trauma in terms of survival and mortality.



**Discussion:-**

In our series, abdominal pain was the most common presenting symptom, accounting for 83.44% (25 cases). In Pinjala N et al[4] (2016) and Ahmed H et al[5] (2015), pain was the most common presentation, accounting for 90% and 56.66%, respectively.

In the present study, out of 30 cases with splenic injury, 19 cases (63.33%) were managed non-operatively, with a success rate of 100%. Raza et al[7](2013) reported a success rate of 90% in non-operative management of intra-abdominal solid organ injury.

In the present study, 11 cases (33.67%) were operated out of 30 patients with splenic injury. In Pinjala N et al[4](2016) study, 17.5% of patients underwent splenectomy.

A total of 3 patients died in our study after splenectomy, making the overall mortality 10%. The mortality rate in Abhilash KPP et al[6] (2017) is 10%.

### **Conclusions:-**

The spleen is one of the commonest intra-abdominal organs to be injured in abdominal trauma. On initial clinical examination, if patients were found to have tachycardia, hypotension, tachypnea, guarding, rigidity, and respiratory distress, it was seen to indicate severe splenic injury with a high probability of operative intervention. Careful clinical examination is therefore the key to early diagnosis. Early hospitalization, appropriate methods of diagnosis, proper timely surgical intervention, availability of blood transfusion, thorough and repeated clinical examination and monitoring, and skilled nursing care are important contributory factors for a reduction in mortality resulting from blunt splenic trauma.

### **Financial support and sponsorship –**

Nil.

### **Conflicts of interest –**

None.

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