



## MANAGEMENT OF SPLENIC INJURIES IN ABDOMINAL TRAUMA

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## KEYWORDS :

## INTRODUCTION:

With economic growth, industrialization road traffic accidents are sharply on the rise in India. The abdomen is a very vulnerable site for injuries. Blunt trauma abdomen accounts for 79%<sup>1,2,3</sup> and spleen and liver are the most commonly injured intra-abdominal organs following blunt trauma.<sup>4,5,6</sup> In up to 60% of patients, the spleen is the only organ injured, with a mortality rate of roughly 8.5%.<sup>2,3,4</sup>

Operative management by splenectomy was the standard of care for blunt splenic trauma till recent years. However, with the realization of immunological function of spleen in adults, recognition of overwhelming infections occurring post splenectomy and the advancement in imaging and monitoring modalities, conservative management of blunt splenic trauma has gained considerable acceptance.<sup>6,7</sup>

Non-operative approach has now become the recommended mode of treatment in hemodynamically stable patients as it avoids the surgical and post-surgical complications of splenectomy.<sup>8,9,10</sup>

## AIMS AND OBJECTIVES:

- To study clinical presentations of splenic injury and management options, their outcome on follow up for a period of 3 months.

**METHODOLOGY:** It is a Prospective observational study done on 25 patients admitted to General Surgery with splenic injuries after abdominal trauma in Narayana Medical College, Nellore from December 2016 to August 2018. Demographic data, clinical examination, radiological and haematological investigations and appropriate operative, non operative methods were noted in proforma. Intra operative findings, post operative complications were noted. Cases were followed up for 3 months.

## Inclusion criteria:

- Patients above 15 years admitted with history of abdominal trauma and subsequently diagnosed as having splenic injury shown by CECT abdomen.

## Exclusion criteria:

- Patients <15years, with head injury or with other visceral injuries than spleen.

Institute ethical committee clearance has been obtained before starting the study.

## OBSERVATIONS AND RESULTS

Table No 1: Age distribution in the study population (n=25)

Age group in years	No of cases	Percentage (%)
15-25	6	24
26-35	10	40
36-45	5	20
46-55	3	12

56-65	1	4
>65	0	0
Total	25	100

- Mean age of presentation was 33.52 years.
- In this study males were 24 and only 1 case was female.
- Road traffic accident was the most common cause of splenic 18 (72%), fall from height in 2 (20%) and assault 1 (8%)
- Blunt trauma accounts for 100% of the cause of abdominal injury in our study
- All (100%) patients presented with pain abdomen. Vomiting was present in 10 (40%) cases and distension of abdomen in 5 (20%).
- Most common sign on admission was tenderness (100%) followed by guarding 20 (80%) and Rigidity 10 (40%).
- Rib fracture was the most common associated injury 15 (60%) extremity injuries in 8 (32%)
- CT-scan abdomen was most sensitive investigation to grade the splenic injuries. Grade II in 7 (28%), Grade I in 6 (24%), Grade III,IV in 5 each (20%), Grade V in 2 (8%)
- 9 cases (36%) were managed operatively whereas 16 (64%) cases were managed nonoperatively. All the 9(36%) cases who underwent splenectomy were vaccinated
- Wound infection was noted in 3(33%), wound dehiscence in 2 (22%), pneumonia in 1 (11%) were post-operative complication.
- In the study 64% of cases had a hospital stay of around 6 to 15 days.

## DISCUSSION

In the present study, the maximum number of cases was in second (24%) and third decade ((36.6%). Sinha S et al (2008)<sup>11</sup> reported similar findings with more than 3/4<sup>th</sup> of victims in first four decades of life and majority belonging to 15-45 years age group.

In the present study, 24 were males and 1 was females. In Sinha S et al (2008)<sup>11</sup> reported a ratio of 6:1 and Garber BG et al (2000)<sup>12</sup> reported a ratio of 7:1.

In the study, presentation was pain abdomen (100%), Vomiting 10 (40%). In Forsythe R.M et al<sup>13</sup> also reported pain abdomen in 91% of their patients.

In our study abdominal tenderness was noted in all cases. Guarding in 20 (100%), shock in 5 (20%), Rigidity in 10 (40%), abdominal distension in 4 (16%). Forsythe R.M et al<sup>13</sup> also reported tenderness as most common sign.

A Road traffic accident (72%) was the common cause in this study. Sinha S et al<sup>11</sup> also reported 62% cases of blunt injury abdomen were due to RTA.

In a 3 year study conducted by Ting-Min Hsieh et al<sup>14</sup> 150 patients presented with high-grade blunt hepatosplenic injury, of whom 91 and 59 had blunt hepatic injury and blunt

splenic injury respectively. The majority of the study subjects were men (62%), with a mean age of  $31.9 \pm 16.3$  years. The most common causes of high-grade blunt hepatic injury were motorcycle collision (55, 60.4%), motor vehicle collision (18, 19.8%), falls from height (7, 7.7%) or from own height (4, 4.4%), pedestrian struck (3, 3.3%), assaults (2, 2.2%), and bicycle collision (2, 2.2%).

In another study conducted by John L. Kendall et al<sup>15</sup> during a 2-year study period, 7,369 patients were admitted to the observation unit. Of these, 1,277 (17%) were observed specifically for BAT. The median age of the study sample was 31 years, and 715 (66%) were male. The most common mechanisms resulting in BAT were motor vehicle collision (73%).

In the study, duration of stay varied from 1-23 days with a mean duration of 12.4 days. Mean duration for operated cases was 11.5 days and that for nonoperated cases was 20 days.

Mean duration of stay in our study was little higher as compared to other studies (Sinha S et al)<sup>11</sup> which reported mean hospital stay of 13.9 days for the nonoperated group and 8.4 days for the operative group.

In the study, rib fracture 15 (67%) was commonest associated injury. 8 (20%) cases had associated external injuries which were managed conservatively.

In a study conducted by Bhattacharya B et al<sup>16</sup>, it was mentioned that rib fractures remain as markers for increased likelihood of solid organ injuries.

In the study, x-ray erect abdomen was done in 25 cases. It detected rib fracture in 15 cases. In our study USG abdomen was done in 25 cases. In 18 cases it diagnosed splenic laceration, but in 7 cases it failed to diagnose splenic laceration which was subsequently diagnosed using CT-scan.

In our study CT-scan was done in all 25 cases, and it was positive in all the cases and was found to be the best modality to diagnose and subsequently to select method of management.

Out of 25 cases in our study 9(36%) were managed surgically and 16 (64%) were managed conservatively. that is by observation. Among 9 cases of splenectomy 2 cases had grade V, 5 cases grade IV, 2 cases grade III injuries.

16 cases managed conservatively of these 6 cases had grade I, 7 cases had grade II and 3 cases had grade III splenic injuries. There was no mortality in operative group whereas 6 patients had morbidity in the form of post operative complications. The results were comparable to a study by Sinha S et al.<sup>11</sup>

In our study it was observed that most of the patient who underwent surgical management had higher grades of splenic injury with haemodynamic instability. A study by Sinha S et al<sup>11</sup> showed that incidence of operative management increases as grades of splenic injury increases. In the present study, 36% of patients were treated operatively and all of them underwent splenectomy. High incidence of splenectomy in our study is attributed to number of patients with higher grades of splenic injury.

## CONCLUSION:

Spleen is most commonly solid organ injured organ after blunt and penetrating trauma. Focussed Assessment with Sonography for Trauma, Abdominal Computed Tomography has allowed reliable identification of splenic injury. Nonoperative management (NOM) has evolved to be the

standard of care in haemodynamically stable patients. Only the most severe splenic injuries are taken for operative management.

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