

BLUNT TRAUMA TO ABDOMEN, INCIDENCE OF SPLENIC INJURY

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ABSTRACT

Development of abdominal wall begins in the earliest stages of embryonic differentiation from the plate of the embryonic mesoderm,⁽¹⁾ retroperitoneum, covered with peritoneum, only terminal part suspended by the mesentery and it is mobile. The incidences of hollow organ injury is rare compared to non-hollow organ i.e. 1% to 3% of abdominal trauma cases.⁽²⁾ In that splenic injury, nonoperative protocols result in a significant improvement in splenic salvage in both children and adults.⁽³⁾ Injuries of the gastrointestinal tract may give rise to a wide variety of presenting symptoms and signs a careful history and physical examination essential in diagnosis and avoid over-investigations.⁽⁴⁾ Physical examination is not enough for diagnosis and it was reliable in 30% of blunt trauma injuries,⁽⁵⁾ early presentation decreases the mortality and morbidity of cases. In study, we observed spleen is commonly involved organ and incidence is 40% of blunt trauma.

OBJECTIVE

To compare the incidence of splenic injury to other organs involved after blunt trauma abdomen.

METHODOLOGY

This study was undertaken at S.V.R.R.G. Hospital during the year January 2014 to December 2015 on patients who attended the casualty with blunt trauma to abdomen.

RESULTS

During one year period, 24 cases were met with blunt trauma to abdomen. In those, 9 cases were noted as splenic trauma, incidence rate is 40%. Commonly liver is the most commonly involved organ, but in my study, observed that spleen is most commonly involved than other organs.

CONCLUSION

There is less morbidity and mortality after splenic trauma in early presentation of the patient to hospital and automobile (RTA) the main reason of the blunt trauma. If the patient vaccinated during postoperative period the OPSI infections is rare all the patients diagnosed as more than grad 3 injuries so all patients under went splenectomy not possible to treat the patient conservatively.

KEYWORDS

Blunt injury to abdomen, Splenic trauma, OPSI, RTA.

HOW TO CITE THIS ARTICLE: Kumbha KRR, Manohar K. Blunt trauma to abdomen, incidence of splenic injury. J. Evid. Based Med. Healthc. 2016; 3(31), 1472-1474. DOI: 10.18410/jebmh/2016/333

INTRODUCTION: Blunt abdominal trauma is a leading cause of morbidity and mortality among all age groups. Identification of serious intra-abdominal pathology is often challenging. Intestinal disruptions can be due to a variety of blunt trauma; with automobile being the most common aetiological agent. Geill in 1899 reported an 11% incidence of major intestinal injury among the study sustaining blunt abdominal injury. The intestine is the third most commonly injured organ in blunt trauma. This report reviews experiences with splenic injury in S.V.R.R General Hospital, Tirupati.

This study with an analysis of total general surgery patients during the year 2015-2016 patients with blunt injury abdomen brings forward the observations of incidence of splenic trauma management and complications. The torso is generally regarded as the area between the neck and the groin, made up of the thoracic and abdomen, largest area of the body and is commonly injured following both blunt and penetrating trauma.

Spleen is a wedge shaped organ lying mainly in left hypochondrium along the long axis of tenth rib. It is suspended by

- a. Lienorenal ligament
- b. Gastrosplenic ligament⁽⁶⁾

Splenic trauma, severe degree of injury, requires splenectomy mild splenic trauma may be managed with splenic conserving surgery⁽⁷⁾ a variety of haematological disorders benefit from splenectomy.⁽⁸⁾ During the 17th and 18th centuries, Malpighi Glisson, Harvey and Morton

Financial or Other, Competing Interest: None.

Submission 11-03-2016, Peer Review 24-03-2016,

Acceptance 01-04-2016, Published 18-04-2016.

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DOI: 10.18410/jebmh/2016/333

described the structure of spleen. Spleen primordium appears during the fifth week of development.⁽⁹⁾

MATERIALS AND METHODS: During the period of 2015 to 2016, 47827 general surgery minor and major cases were admitted. In that emergency cases which are operated were 3576. Among those, 24 cases are for blunt abdominal trauma who underwent laparotomy. A study was conducted and patients were analysed with respective age, sex, cause of injury, presentation, location of injury, associated injuries, treatment and mortality and morbidity.

Inclusion Criteria: All modes of injuries including RTA, accidental falls and assaults are included.

Exclusion Criteria: Stab wounds are excluded.

RESULTS: During this period, 24 patients were admitted for blunt abdominal injury. In those, 22 required laparotomy. During laparotomy, we found that 9 cases had major injuries to the spleen. The average was 40%. Most of the 18 patients (75%) were injured in road traffic accidents (RTA). The intestinal disruption can be due to variety of types of blunt trauma with automobile as the most common aetiological agent.

19 male patients were involved (79%) and female patients were only 5(21%). All patients presented with pain in abdomen (100%). With vomiting, pain in abdomen, distension-16 patients presented. Along with above and constipation-5 patients presented. Only 3 patients presented early, no gross symptoms. In treatment, we observed the following:

Sl. No.	Organ	Count	Percentile
1	Splenic Injury	9	37.5
2	Liver Laceration	1	4.16
3	Ileal Perforation	2	8.33
4	Retroperitoneal haematoma	1	4.16
5	Abdominal Wall Contusion	2	8.33
6	Jejunal perforation	2	8.33
7	Traumatic Pancreatic Fistula with splenic injury	1	4.16
8	Mesenteric Tear	4	16.66
9	Bladder Injury	1	4.16
10	Sigmoid Perforation	1	4.16

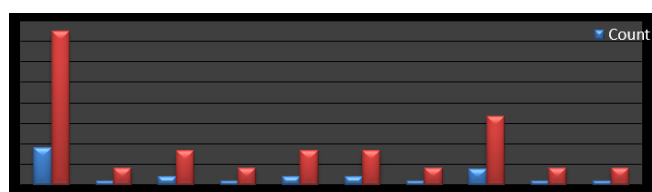


Figure 1

Associated other organ injuries along with spleen are:

Sl. No.	Organs involved	Percentile
1	Left lobe liver injury	Nil
2	Tail of Pancreas Injury	01
3	Left kidney, left colonic injury	Nil
4	Small bowel injury	Nil
5	Diaphragm and left lung injury	Nil
6	Fracture lower ribs	01
7	Left-sided haemothorax	Nil
8	Large bowel	01

All the patients underwent USG abdomen, the polytrauma patients underwent CT scan. Postoperatively, only 1 patient died who attended causality with unstable vitals (4.16%) and the diagnosis was retroperitoneal haematoma.

DISCUSSION: Injury to the intra-abdominal structure can be classified into two primary mechanisms of injury: i.e. compression forces and deceleration forces. Compression are concussive forces, may result from direct blows, external compression against a fixed object (e.g. spinal column or lap belt), pressure, resulting in rupture. Deceleration forces cause stretching and linear shearing between relatively fixed free objects. Most of the injuries were associated with haemoperitoneum which was next to the pyoperitoneum. Delayed presentations are large leakage of bowel contents into the peritoneal cavity.

Diagnostic tests can be used to evaluate patients with blunt abdominal trauma. These include ultrasonography (US) and diagnostic laparoscopy (DL). Ultrasonography is convenient, cheap and non-invasive. A positive test is defined as evidence of free fluid or solid organ parenchymal injury. Diagnostic peritoneal lavage (DPL) was the diagnostic method of choice for evaluating blunt abdominal injury in the past, but recently has been often replaced by CT imaging. DPL is an important adjunct in cases where bowel injury is suspected. Although DPL is sensitive in identifying haemoperitoneum and associated hollow viscus injury, it has been criticised for its higher rate of nontherapeutic laparotomy.

Dauterve et al. in his study told that mesenteric injuries are more frequent, but in my study mesenteric injuries are less. Mortality rate in Madhumitha Mukhopadhyay was 6.38% but in this series is 15.4% who presented with more than 6 hours. Regarding treatment, exploratory laparotomy, drainage of septic peritoneal fluid and wound saline lavage are very important. Prophylactic antibiotics are required. In splenic injury, all are presented with acute emergency and haemoperitoneum with grade 3 to 5 which required splenectomy. It is not possible to follow either conservative measures or splenorrhaphy. All patients are vaccinated with Pneumovac vaccine within 72 hours. The vaccine was provided through Arogyasri scheme which is very beneficial to the patient. No patient suffered with overwhelming post-splenectomy infection (OPSI) within one year period in our O.P. All are splenic lacerations Grade III & above only.

CONCLUSION: Following are the conclusions made from the prospective study of 24 cases of blunt injury trauma studied at S.V.R.R General Hospital, Tirupati, Chittoor (Dist) A.P during the period 2015 to 2016. In my study, where 24 blunt abdominal injury patients presented, the incidence of splenic injuries were found to be first most common injury, i.e. next to the mesenteric tear. Though in other studies it has been documented to be the second most common injury following the blunt trauma to abdomen.

In my study, spleen is most commonly involved part of the abdomen. Mortality and morbidity has been increased with delayed presentation. It has been found male patients were involved in all. Almost common associated organs involved are mesentery, small bowel and liver in other studies. The mode of injury is also same as other studies, i.e. road traffic accidents. Only one patient died because of late presentation and associated with huge retroperitoneal haematoma who attended the causality with unstable vitals. Splenic injury associated with tail of the pancreatic injury in one patient was notified. And left lower rib fracture observed. Postoperatively, patients are discharged without any complications except in one patient where we observed respiratory tract infection with wheezing for which he stayed at hospital for three weeks. Most of the times, splenic injuries were reported at causality in acute emergency conditions, thus laparoscopic splenectomy is not possible in view of patient safety. At the same time, patient's general condition did not fit for anaesthesia.

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