

Pattern of Abdominal Trauma in a Tertiary Care Centre

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Abstract

Background: To study the clinical presentations, pattern, modes of management and outcome in a patient with abdominal trauma. **Setting and design:** Retrospective observational study conducted in a tertiary care hospital. **Methods:** The study was done in the department of general surgery in a tertiary care centre that has round the clock availability of all radiological investigations. A total 100 cases of abdominal trauma diagnosed by Focussed Abdominal Sonography in Trauma (FAST) or CT Scan or per operatively were enrolled in the study. **Results:** Maximum number (25%) of patients were aged between 21-30 years of age. Most of the patients (86%) presented with blunt abdominal trauma. RTA (41%) and fall (35%) were the common causes of abdominal trauma. Maximum patients (32%) had splenic injury followed by liver injury (29%). 37% of the patients were managed conservatively while 63% underwent surgical intervention. **Conclusion:** RTA forms the most common mode of abdominal trauma. Blunt abdominal trauma is more common than penetrating abdominal trauma. Spleen is the most common organ to be injured in abdominal trauma.

Key Words

Blunt Abdominal Trauma, Penetrating Abdominal Trauma, FAST, Solid Organ Injury, Hollow Viscus Injury

Introduction

Abdominal injuries are frequently seen in the management of trauma patients. Trauma remains the most common cause of death in the first forty years of life and is the third most common cause of death regardless of age.^[1] The vital nature of the organs contained within the abdomen makes evaluation and management a priority. Abdomen is the third most common injured region.^[2] Abdominal trauma is classified as either blunt abdominal trauma or penetrating abdominal trauma. Penetrating abdominal trauma is mostly diagnosed reliably and easily whereas blunt abdominal trauma is often missed because clinical signs are less obvious.^[3] Road traffic accidents have become one of the most common problems in the world, which is resulting in loss of large number of

untimely human lives.^[1] Most common cause of blunt abdominal trauma is automobile accidents and falls. Patients with blunt abdominal trauma had higher mortality rates than those with penetrating abdominal trauma because of lack of early diagnostic modalities and optimal management.^[4] The most common organ to be injured in blunt abdominal trauma is spleen.^[5]

Aims and Objectives:

To study the clinical presentations and pattern in patients with abdominal trauma.

To study the modes of management in patients with abdominal trauma.

To analyse the outcomes of different modes of

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management of abdominal trauma.

Materials and Methods:

The study was done in the department of general surgery in a tertiary care centre that has round the clock availability of all radiological investigations. The study was performed according to the guidelines of the ethical committee of the institute.

Design: This is a retrospective observational study.

Inclusion Criteria: All cases of abdominal trauma diagnosed by Focussed Abdominal Sonography in Trauma (FAST) or CT Scan or per operatively, presented to the hospital.

All the patients who presented in surgical emergency with abdominal trauma were included in the study. Data was collected from patient's records. After initial assessment and resuscitation, patients were subjected to FAST. Patients who were haemodynamically stable were subjected to CECT Abdomen for grading solid organ injury and rule out other associated injury. Patients who were vitally unstable or had hollow viscus perforation were subjected to laparotomy.

Results

A total of 100 patients were included in the study. Age of the patients varied from 02 years to 70 years. Maximum incidence was seen in 21-30 years age group (25%) followed by 11-20 age group (23%). Male patients (87) were affected more than female patients^[13] with male to female ratio of 6.7:1. In our study, road traffic accident accounted for 41% of the patients, fall accounted for 35% of the patients, assault accounted for 13%, 06% were hit by animal and other modes accounted for 05%. (*Table 1*)

In our study out of 100 patients, 86 presented with blunt abdominal trauma while 14 presented with penetrating abdominal trauma. In our study spleen (32%) was the most common organ involved in patients with abdominal trauma followed by liver (29%). Similar pattern was observed in patients with blunt abdominal trauma. In patients with penetrating abdominal trauma, small bowel (50%) was most commonly involved followed by stomach (28.5%). (*Table 2*)

In our study, thoracic injury was the common associated injury with abdominal trauma accounting for 22%. Head injury was seen in 11% while pelvis and spine trauma both accounting for 7% each. (*Table 3*)

Patients with abdominal trauma were managed by both conservative management and surgical intervention. All the patients with penetrating abdominal trauma were managed surgically. While patients with blunt abdominal trauma, were managed both by conservative (37) management and surgically (49). (*Table 4*)

In our study, 95% of the patients were discharged after management while 05% of the patients were expired. Mortality in patients with blunt abdominal trauma was 4.6% while in patients with penetrating abdominal trauma is 7.6%.

Discussion

In our study, maximum incidence of abdominal trauma was found in age group of 21-30 years of age with male preponderance (M:F : 6.7:1). These findings are comparable to the previous studies who reported similar findings. A study by Chalya et al showed most common age group 21-30 years (46.5%).^[6] In another study by Reddy N B *et al* showed similar results in which 21-40 years age group was most commonly involved (50%).^[7] Because this age group is socioeconomically most active globally in all societies is reason for most common involvement of this age group. In our study, most common mode of injury was road traffic accident accounted for 41% of the patients, fall accounted for 35% of the patients, assault accounted for 13%, 06% were hit by animal and other modes accounted for 05%. In the study by Panchal HA *et al*, road traffic accident accounted for 48% while fall accounted for 32%.^[8]

In our study, 86% presented with blunt abdominal trauma while 14% presented with penetrating abdominal trauma. Findings are consistent with the studies in the past which reported similar findings. In a study by Saleem et al, BAT was seen in 77.5% while PAT was seen in 22.5%.^[9] In another study by Kundlas et al, BAT was seen in 87% while PAT was seen in 13% of the patients.^[10] Similar findings were reported by Gad *et al*.^[11]

In our study, solid organ injury was found to be more common than hollow viscus perforation. Similar findings were seen in patients with blunt abdominal trauma. In patients with penetrating trauma, hollow viscus perforation was found to be more common. Similar findings were reported by Panchal HA *et al* and Balamurugan *et al*.^[8,12] In a study by Maske AN et al both solid organ injury and hollow viscus injury were present in 50% cases each.^[13] Spleen (32%) was the most common organ injured in our study followed by liver (29%). In the study by Panchal HA et al, liver was the commonest organ injured.^[8] Most common hollow viscus injury in our study was small bowel (20%). In a study by Panchal HA et al similar findings were reported with small bowel involvement of 24%.^[8] Most of the patients with lower grade solid organ injury, haemodynamically stable are managed conservatively. While patients with high grade solid organ injury, hollow viscus perforation, haemodynamically unstable underwent surgical Intervention. In our study, 63% of the patients underwent surgical Intervention while 37% of the patients

Table.1 Distribution of Patients According to Mechanism of Injury

S.NO.	MODE OF INJURY	MALE	FEMALE	TOTAL
1.	Road Traffic Accident	38	03	41
2.	Fall	31	04	35
3.	Assault	09	04	13
4.	Hit by animal	05	01	06
5.	Other modes	04	01	05
	Total	87	13	100

Table.2 Distribution of Patients According to Intra-Abdominal Organ Injured

S.NO.	ORGAN INVOLVED	BLUNT	PENETRATING	Total
1.	Liver	29	-	29
2.	Spleen	30	02	32
3.	Kidney	11	-	11
4.	Pancreas	04	01	05
5.	Stomach	02	04	06
6.	Small Bowel	13	07	20
7.	Large Bowel	04	01	05
8.	Urinary Bladder	04	-	04
9.	Diaphragm	01	01	02
10.	Mesentry	07	03	10
11.	Retroperitoneum	07	03	10
12.	Abdominal Wall	02	-	02

Table.3 Distribution of Other Injuries Associated with Abdominal Trauma

S.NO.	ASSOCIATED INJURY	FREQUENCY
1.	Thoracic	22
2.	Head injury	11
3.	Pelvis fracture	07
4.	Extremity	06
5.	Spine	07

Table.4 Distribution of Patients According to Management

S.NO.	Management	Blunt	Penetrating	Total
1.	Surgical	49	14	63
2.	Conservative	37	-	37
	Total	86	14	100

Table.5 Distribution of Patients According to Type of Surgical Procedure Performed

S.NO.	SURGICAL PROCEDURE	BLUNT	PENETRATING	TOTAL
1.	Hepatorrhaphy	11	-	11
2.	Splenectomy	19	02	21
3.	Primary repair of small bowel	10	04	14
4.	Small bowel resection with ostomy	02	02	04
5.	Large bowel repair	01	01	02
6.	Diaphragm repair	01	01	02
7.	Gastric repair	01	04	05
8.	Mesenteric repair	02	-	02
9.	Urinary bladder repair	01	-	01

managed conservatively. All the patients with penetrating injury were managed by surgical intervention. Similar findings were reported in study by Thapa *et al.*^[14] In the patients with blunt abdominal trauma, 57% were managed surgically while 43% were managed conservatively. In

the study by Chalya *et al* 49% of the patients with blunt trauma were managed surgically.^[6] All of the patients who were managed by conservative management had uneventful hospital stay and were discharged. Mortality was common in patients with shock and patients with

associated injuries. Mortality in patients with blunt abdominal trauma was 4.6% while in patients with penetrating abdominal trauma is 7.6% with overall mortality in abdominal trauma of 5%. Kundlas et al in his study reported 3.3% mortality while Thapa et al reported 9.3% mortality.^[10,14]

Conclusion

Abdomen is one of the common injured region in patients with trauma. Road traffic accident was the most common mode of abdominal trauma followed by fall. Abdominal trauma is more common in males than females with most of the patients in the age group of 20-40 years of age. Blunt trauma abdomen is more common than penetrating abdominal trauma. Spleen was the most common organ injured followed by liver. Small bowel is the commonly involved hollow viscus in patients with abdominal trauma. Thoracic injury is the most common associated injury with abdominal trauma. Mortality is higher in patients with other associated injuries and in patients who presented in shock.

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Conflicts of Interest

There are no conflicts of interest.

References

1. Haagsma JA, Graets N, Bolliger I, Naghavi M, Higashi H, Mullany EC, *et al*. The global burden of injury: incidence, mortality, disability -adjusted life years and time trends from global burden of disease study 2013. *InjPrev* 2015;0:1-16.
2. Delany HM, Jason RS. General perspectives on Abdominal Injury. In: *Abdominal Trauma: Surgical and Radiological Diagnosis* by Springer Science and Business Media Newyork, 2012, pp1-8.
3. Pimentel SK, Sawczyn GV, Mazepa MM, Nars A, Collaca IA. Risk factors for mortality in blunt abdominal trauma with surgical approach. *Rev Col Bras Cir* 2015;42:259-64.
4. Memon MR, Sanghi AG, Abbasi SA, Memon AA. Role of laparoscopy in blunt abdominal trauma. *RMJ* 2013;38: 40-3.
5. Edino ST. Pattern of abdominal injuries in Aminu Kano Teaching Hospital, Kano. *Niger Postgrad Med J* 2003; 10: 56-9.
6. Chalya PL, Mabula JB. Abdominal trauma experience over a two year period in tertiary hospital in northwestern Tanzania: a prospective review of 396 cases. *Tanzan J Health Res* 2014;15(4):7-11
7. Reddy NB, Reddy NN, Reddy CS, Hanumantha, Madithati P. An epidemiological study on pattern of thoraco-abdominal injuries sustained in fatal road traffic accidents of Bangalore: Autopsy- based study. *J Emerg Trauma Shock* 2014;7:116.
8. Panchal HA, Ramanuj AM. The study of abdominal trauma: patterns of injury, clinical presentation, organ involvement and associated injury. *Int Surg J* 2016;3:1392-8.
9. Saleem A-E-A, Abdul Raheem O, Abdallah H, Yousef Am. Epidemiological evaluation and outcome of pure abdominal trauma victims who underwent surgical exploratory laparotomy. *Al-Azhar Assuit Med J* 2016;14:24.
10. Kundlas R, Rajagoplan G, Alexis J, Sadasivan J, Elamurugan TP. Clinico-epidemiological profile, pattern and outcome of abdominal trauma in a level 1 trauma centre in South India. *Int J Contemporary Medical Research* 2020; 7(5):E1-E5.
11. Gad MA, Saber A, Farrag S, Shams ME, Ellabban GM. Incidence, patterns and factors predicting mortality of abdominal injuries in trauma patients. *North Am J Med Sci* 2012;4:129-34.
12. Balamurugan R, Kumar S, Lakshmana R, Prasath SA. Intra-abdominal Organ Injuries in blunt injury abdomen in SRM Medical College , Potheri: A Prospective Study. *IJSS J Surg* 2016;2:6.
13. Maske A, Deshmukh S. Traumatic abdominal injuries: our experience at rural tertiary care centre. *Int Surg J* 2016;3(2):543-8.
14. Thapa BB, Gurung R, Basnet R, Thapa N. Predictors of surgical outcome of abdominal trauma in tertiary care centres of Nepal. *Med J Sree BirendraHosp* 2017;15:54.