



Original Research Article

## A Study of 100 Consecutive Cases of Abdominal Trauma in Rural Area

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Received: 04/06/2015

Revised: 23/06/2015

Accepted: 24/06/2015

### ABSTRACT

**Background:** Abdominal trauma continues to account for large number of trauma related injuries and death.

**Aim & objective:** To study abdominal trauma in rural area.

**Material & Method:** A prospective study of 100 consecutive cases of abdominal trauma admitted to referral hospital in rural area over a period of 2 years was done in detail and treated as per individual merit, after investigation.

**Result:** Abdominal trauma predominated in males, in third decade of life & in farmers. Blunt abdominal trauma is more frequent. Road traffic accident, stab and bull gore were the common mechanism of injury. GIT, spleen, liver and mesentery commonly injured. Mortality was more in blunt abdominal trauma and maximum within 1<sup>st</sup> hour of admission due to haemorrhagic shock.

**Conclusion:** Abdominal trauma is on the rise because of easy availability and use of motor vehicles, increase in crime and violence along with higher human-cattle interaction. Mortality and morbidity can be reduced by reducing injury-admission interval, in transit resuscitation of patient and prompt treatment.

**Key words:** Abdominal trauma; Blunt abdominal trauma; Haemorrhagic shock; Penetrating abdominal trauma.

### INTRODUCTION

Since high speed surface travel is becoming more universally available, it is certain that blunt trauma will continue to comprise an important fraction of the major injuries which the surgeon is called upon to treat. <sup>[1]</sup> The incidence of penetrating abdominal trauma is increasing as a consequence of rising frequency of armed

and civil violence and conflicts. However, most avoidable deaths result from failure to resuscitate and operate on surgically correctable injuries. <sup>[2]</sup>

#### **Aims and objectives:**

1. To study aetiology of abdominal trauma in this area.

2. To do comparative study of blunt verses penetrating trauma to abdomen.
3. To study the different organs injured when a person sustains abdominal trauma.
4. To study mortality in relation to various factors.

## MATERIALS AND METHOD

100 consecutive cases of abdominal trauma admitted to a referral hospital in rural area over a period of two years were studied in detail. Detailed history, time of injury, type of injury, cause of injury, site of injury over abdomen, injury to admission interval was noted and thorough clinical examination was carried out in all 100 patients. Routine blood and urine examinations were done. Special blood investigations, plain X-ray abdomen erect, abdominal paracentesis, USG of abdomen, X-ray chest, spine, pelvis, IVP & CT scan were done as required. Patients in shock were resuscitated initially. Line of treatment was then decided upon whether conservative or operative. When there was rising pulse

rate, increasing abdominal distention & tenderness, patients were shifted onto surgical line of treatment.

Results were computed as percentages of total participants. Also data was internally compared for age and gender and outcomes were also compared accordingly and were tabulated.

## OBSERVATION AND RESULT

### Incidence:

68% patients had blunt abdominal trauma while 32% had penetrating abdominal trauma.

### Age/Sex:

Maximum incidence of abdominal trauma (both blunt abdominal trauma & penetrating abdominal trauma) was seen in the age group of 21-30 years. The youngest patient was 2 years old while oldest was 70 years old. In the series by Richard A. Currie et al, their patients varied from 3 years to 63 years of age. [3] They had studied only blunt abdominal trauma. Both blunt abdominal trauma and penetrating abdominal trauma showed male preponderance in this study. See table 1.

Table – 1 – Age & Sex Distribution In Abdominal Trauma

Abdominal Trauma	Sex	Age in years		No. of cases	Percentage	Ratio M : F
		Youngest	Eldest			
Blunt	Male	2.5	63	64	94.1	16
	Female	16	35	4	5.8	1
Penetrating	Male	2	70	27	84.4	5.4
	Female	11	50	5	15.6	1

### Occupation:

Abdominal trauma was most common in farmers who were closely followed by students.

### Mechanism of injury:

Commonest cause of blunt abdominal trauma was road traffic accident (59%). Other causes were fall from height (26%), assault with stick/lathi (6%), object fallen from height (3%) and miscellaneous (6%). The commonest cause of penetrating abdominal trauma was stab injury (47%).

Other causes were bull gore injury (44%), gunshot (3%), RTA (6%). Similar findings were observed by S. Jolly et al in their study of 100 cases of blunt abdominal trauma in G.R. Medical College, Gwalior (M.P.). [4] Bullgore injuries commonly occur in the region from thigh to umbilicus.

### Interval between injury and admission:

76% patients of abdominal trauma came to the hospital within 4 hours 65% patients with penetrating abdominal trauma came within 2 hours while only 45%

patients with blunt abdominal trauma came within 2 hours of trauma. Earliest was a patient with blunt abdominal trauma who came to hospital within 15 minutes while one patient came after 4 days of trauma.

**Clinical presentation:**

Pain in abdomen and tenderness (generalised / localised) were the commonest clinical presentation. (See table 2).

**Table 2 – Clinical presentation in abdominal trauma**

Clinical presentation	No. of cases		Total
	Blunt trauma	Penetrating trauma	
Pain	62	32	94
Retention of urine	29	15	44
Distention	26	9	35
Vomiting	20	9	29
Hypotension	18	11	29
Haematuria	10	4	14
Constipation	12	1	13
Tenderness	57	28	85
Rebound Tenderness	18	11	29
Guarding	38	16	54
Rigidity	13	12	25
Obliteration of liver dullness	13	13	26
Peristalsis absent	22	15	37
Peristalsis present	28	9	37
Peristalsis sluggish	18	8	26

**Diagnosis:**

Was obvious in penetrating abdominal trauma. Erect X-ray abdomen was done in 62 patients of which 34 (55%) were normal while 28 (45%) showed abnormal findings. Gas under diaphragm was the commonest finding. 68% of patients showed positive findings on USG in blunt trauma abdomen. Abdominal paracentesis was true positive in 18 cases, true negative in 12 cases and false negative in 2 cases, so its diagnostic accuracy was 93.75%. Joginder Singh et al got 95% positive result in cases of perforated viscus for abdominal paracentesis in their study. [5]

**Mode of treatment:**

72% (49) patients of blunt abdominal trauma were treated conservatively, while 87.5% (28) patients of penetrating abdominal trauma required surgery. Most of

the patients with perforation of hollow viscus were treated with primary closure.

**Interval between admission and surgery:**

9 out of 19 patients (47%) of blunt abdominal trauma were operated within 4 hours of admission while 23 out 28 patients (82%) of penetrating abdominal trauma were operated within 4 hours of admission.

**Viscera involved in abdominal trauma:**

In this study small bowel was the most commonly injured hollow viscus (9%) followed closely by large bowel (8%) and stomach (8%). Spleen was the most commonly injured organ in blunt abdominal trauma (12%) while liver was the most commonly injured organ in penetrating abdominal trauma (16%). Mesentery is the commonest soft tissue injured in our study (10%).

**Abdominal trauma and associated extra abdominal injuries:**

Head injury was an associated injury in 24% patients, while chest trauma was seen in 21% cases. Both were more common in blunt abdominal trauma (53%) than penetrating abdominal trauma (28%).

**Abdominal trauma & hospital stay:**

Minimum hospital stay was 1 day for both blunt abdominal trauma & penetrating abdominal trauma patients while maximum hospital stay was 32 days for blunt abdominal trauma and 81 days for penetrating abdominal trauma with average hospital stay of 8 days for blunt abdominal trauma & 11.8 days for penetrating abdominal trauma patients.

**Abdominal trauma and mortality:**

12% overall mortality was seen in this study. 10 out of 68 patients with blunt abdominal trauma (14.70%) died while 2 out of 32 patients with penetrating abdominal trauma (6.25%) died. 7 patients (7%) died within 1 hour of admission due to massive haemorrhage and shock.

## DISCUSSION

Abdominal trauma continues to account for large number of trauma related injuries and death. [6] Blunt abdominal trauma accounted for more than 2/3<sup>rd</sup> cases of abdominal trauma in this study. So, does study done by Williams and Zollinger (Robert H. Kennedy) [7] on 200 cases of abdominal trauma. Similar findings were also seen in study of abdominal trauma in Massachusetts General Hospital. [8] Abdominal trauma was most common in the third decade of life and in males, as males are more exposed to outdoor activities and farming than females. Road traffic accident is the commonest cause of blunt abdominal trauma. Motor vehicle accidents (75%) and urban violence are the leading cause of blunt and penetrating trauma to this area of body. [9] Stab injury and bullgore injuries were the leading cause of penetrating abdominal trauma. Due to huge population of farm workers allowing larger human cattle interaction, bullgore injuries were common in this study. The danger of visceral or fatal haemorrhage in blunt abdominal trauma makes it one of the most important types of trauma and one for which the doctor's decision as to the early correct diagnosis and early proper intervention may make the difference between life and death for the person concerned. During this study 29 patients came in shock. All were promptly resuscitated in the surgical ICU but 7 patients expired inspite of all our efforts. Diagnostic accuracy was 100% for erect X-ray abdomen, 93.75% for abdominal paracentesis. According to Trivedi abdominal paracentesis is more accurate & sensitive than any other diagnostic aid in abdominal trauma. [10] So it can be very easily done, even in rural area hospital like ours to come to a diagnosis and aid in treatment. Patients of penetrating abdominal trauma were operated much earlier than blunt abdominal trauma. Laparotomy was

carried out to locate and repair injured visceral organ, inspect abdominal cavity for other injuries, clean peritoneal cavity and control contamination and also to give the patient a definite treatment. Small bowel is the most commonly involved viscera in abdominal trauma. [11,12] So also in our study. Spleen was the most commonly injured organ in blunt abdominal trauma and liver in penetrating abdominal trauma. Associated trauma to head and chest were more common in blunt abdominal trauma while muscle deep abdominal trauma was more common in penetrating abdominal trauma. Mortality was higher in victims of violent trauma, usually with multi-organ involvement, delay in admission from site of injury, haemorrhage and associated injuries. Mortality is higher in blunt abdominal trauma due to the hidden nature of trauma while hospital stay is longer in penetrating abdominal trauma cases.

## CONCLUSION

- Blunt abdominal trauma is more common than penetrating abdominal trauma.
- Road traffic accident commonest cause of blunt abdominal trauma while stab and bullgore injuries common causes of penetrating abdominal trauma.
- Abdominal trauma is commonly seen in the third decade of life.
- Male preponderance is seen.
- Diagnosis is difficult in blunt abdominal trauma but, sonoradiodiagnosis and old cheap and simple diagnostic method like abdominal paracentesis are very helpful to arrive at a conclusive diagnosis & aid in treatment in rural area hospitals.

- Small bowel, spleen, liver and mesentery are commonly injured in abdominal trauma.
- Mortality is more in blunt abdominal trauma. Commonest cause of mortality was massive haemorrhage and shock.
- Mortality can be reduced by early admission and proper resuscitation during transfer to hospital and prompt management.

### ACKNOWLEDGEMENT

Authors would like to express their gratitude towards Dept. of Surgery, KIMSUDU, Karad for providing constant support for the research. Institutional ethical committee approval was also taken before starting the study.

*Source of funding: Self*

*Conflict of interest: Nil*

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How to cite this article: Kulkarni S, Kanase V, Kanase N et. al. A study of 100 consecutive cases of abdominal trauma in rural area. Int J Health Sci Res. 2015; 5(7):106-110.

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