

A STUDY OF PENETRATING TRAUMA TO ABDOMEN IN RURAL AREAShantanu Kulkarni¹, Vijay Kanase², Naseema Kanase³, Vasundhara Varute⁴**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: Abdominal trauma whether blunt or penetrating is on the rise and accounts for a large number of trauma related injuries and death. **STUDY:** Prospective study. **AIM & OBJECTIVE:** To study penetrating trauma to abdomen in rural area. **MATERIAL & METHOD:** 32 consecutive patients of penetrating trauma to abdomen admitted to referral hospital in rural area over a period of two years were studied. Detailed history, thorough clinical examination & proper investigations were done. Once diagnosed patients were either treated surgically or conservatively according to individual merit. **OBSERVATION & RESULT:** Maximum incidence of penetrating trauma to abdomen was in third decade of life with male preponderance. It was most common in farmers & students. Stab and bull gore were commonest cause. Stomach and liver commonly injured. Maximum patients required surgery. Mortality is seen in multi-organ injury and haemorrhage leading to shock & death. **CONCLUSION:** Cattle have followed humans in violence. Males are more exposed to violent crime & injury. Simple primary closure of hollow viscus perforation was effective treatment. Early admission to hospital and proper in transit resuscitation will help to prevent mortality.

KEYWORDS: Abdominal trauma, Penetrating abdominal trauma.

INTRODUCTION: Abdominal trauma is on the rise due to easy availability and use of motor vehicles, crime & violence. The incidence of penetrating abdominal trauma is increasing as a consequence of rising frequency of armed & civil conflicts and crimes of passion. However, most avoidable deaths result from failure to resuscitate and operate on surgically correctable injuries.¹

AIMS AND OBJECTIVES:

1. To study penetrating trauma to abdomen in rural area.
2. To study aetiology & organs involved in penetrating abdominal trauma.
3. To study mortality in relation to various factors.

MATERIAL AND METHOD: 32 consecutive cases of penetrating trauma to abdomen 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 done. Routine blood and urine examinations were done. Special blood investigations, plain x-ray erect abdomen, 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.

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OBSERVATION AND RESULT: Age/Sex: Maximum incidence of penetrating abdominal trauma was seen in the age group of 21-30 years. Youngest patient was 2 years old while eldest patient was 70 years old. Male preponderance was seen and the male to female ratio was 5.4: 1. In Horwell & Roger series, the peak age range was between 20 to 30 years in penetrating trauma to abdomen.² (See Table No. 1)

| Penetrating injury | Age in years | | No. of cases | Percentage |
|--------------------|--------------|--------|--------------|------------|
| | Youngest | Eldest | | |
| Male | 2 | 70 | 27 | 84.4% |
| Female | 11 | 50 | 5 | 15.6% |

Table 1: Age & Sex distribution in penetrating trauma to abdomen

Occupation: Penetrating abdominal trauma was most common in farmers and students.

Mechanism of Injury: Commonest cause of penetrating abdominal trauma was stab injury (47%). Other causes were bull gore injury (44%), gunshot injury (3%) misc. (6%) Bull gore injury commonly occurs in the region from thigh to umbilicus.

Interval between Injury and Admission: 100% patients were admitted to hospital within 12 hours of trauma of which 65% (21/32) were admitted within 2hrs. of trauma.

Clinical Presentation: All (32)100% patients had pain in abdomen. Retention of urine (15), vomiting (9), distention of abdomen (9), hypotension (11), haematuria (4) & constipation (1) were other clinical presentation.

Diagnosis: Was obvious in penetrating abdominal trauma. Plain x-ray erect abdomen & USG abdomen were helpful in diagnosis and treatment.

Mode of Treatment: 28/32 patient (87.5%) required surgery while 3 patients were treated conservatively. One patient died within 1 hour during resuscitation in surgical ICU. It is safer to look & see than to wait and see – Sir Cuthbert Wallace.³

Interval between Admission and Surgery: 23 out of 28 patients (82%) requiring surgery were operated within 4 hrs. of admission.

Viscera Involved in Penetrating Abdominal Trauma: Stomach & liver were the most commonly injured hollow viscus & solid organ while mesentery was the commonest soft tissue injured. The small intestine and colon respectively are the most prevalent abdominal organs damaged.⁴ we had 10/32 cases with injury to small & large bowel in our study. (See table 2 & 3).

| Involved hollow viscus | No. of cases |
|------------------------|--------------|
| Stomach | 6 |
| Small bowel | 5 |
| Large bowel | 5 |
| Urethra | 2 |
| Peritoneal tear | 1 |

Table 2: Viscera involved in penetrating abdominal trauma

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| Involved organ/soft tissue | No. of cases |
|----------------------------|--------------|
| Liver | 5 |
| Kidney | 2 |
| Lung | 1 |
| Mesentery | 5 |
| Omentum | 3 |
| Mesocolon | 2 |
| Diaphragm | 1 |

Table 3: Viscera involved in penetrating abdominal trauma

Penetrating Abdominal Trauma & Associated Extra-Abdominal Injuries: Chest trauma was the commonest associated injury. It was seen in 7 cases.

Penetrating Abdominal Trauma & Hospital Stay: Minimum hospital stay was one day while maximum hospital stay was 81 days with average hospital stay of 11.8 days.

Penetrating Abdominal Trauma & Mortality: 2 out of 32 patients died (6.25%) of which one died within an hour of admission during resuscitation in surgical ICU due to haemorrhagic shock due to ruptured liver by bull gore.

DISCUSSION: Motor vehicle accidents (75%) and urban violence are the leading causes of blunt and penetrating trauma to this area of the body.⁵ Abdominal trauma continues to account for large number of trauma related injuries and death.⁶ Penetrating abdominal trauma is on the rise and was most common in the third decade of life. Male preponderance was seen in our study as males are more exposed to outdoor activities and farming whereas females are still the home makers in our rural area. In India, bull gore injuries are frequently observed in villages. The commonest site of injury in bull horn cases is the abdomen and perineal region.⁷ Goring is taken when the bull horn penetrates deeply in the muscles as well as body cavity.⁸ Thus wounds produced due to bull horn impact vary from contusions, lacerations and penetrating wounds involving internal organs to fractures.⁹ In this series even cattle have followed humans in violence. This is seen in the form of increase in the incidence of bull gore injuries which has almost same percentage as that of penetrating abdominal trauma due to stab injury. This is because of huge population of farm workers allowing larger human-cattle interaction. Diagnosis of penetrating abdominal trauma is obvious hence patients are taken up for surgery earlier. Also X-ray erect abdomen & USG of abdomen examinations were very helpful in diagnosis and aided in treatment. Most patients (87.5%) were treated surgically. Most of the patients with perforation of hollow viscus were treated with simple primary closure. Laparotomy was done to locate & repair injured organ/viscera, inspect abdominal cavity for other injuries, clean peritoneal cavity, control contamination and also to give the patient a definite treatment. Stomach is the most commonly injured hollow viscus & liver the solid organ commonly injured. The commonest associated injury was to the chest as most of the cases of penetrating abdominal trauma are due to stab and bull gore where chest is in close proximity to abdomen & holds major organs damage to whom can be fatal. Mortality is seen in multi-organ injury due to violent crime, delay in admission and haemorrhage leading to shock and death.

CONCLUSION:

- Penetrating abdominal trauma is on the rise.
- Stab and bull gore are the common causes of penetrating abdominal trauma.
- Penetrating abdominal trauma is common in the third decade of life and in males.
- Diagnosis is obvious but sono-radio diagnosis helps in arriving at a conclusive diagnosis & aids in treatment.
- Stomach and liver are commonly injured.
- Simple primary closure of perforated hollow viscus was effective enough.
- Mortality is seen due to violent trauma to multiple organs and haemorrhage.
- Early admission to hospital & hence early surgical intervention & proper intransit resuscitation will help to reduce mortality.

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