



## A PROSPECTIVE STUDY ON PENETRATING INJURIES TO THE ABDOMEN

<b>Dr. Venkata Sandeep Menta</b>	MS, Assistant Professor of Surgery, NMC, Nellore
<b>Dr. Chaitanya Kumar Reddy P</b>	MS, Assistant Professor of Surgery, NMC, Nellore
<b>Dr. Venkata Harish Nimmagadda</b>	MS, Assistant Professor of Surgery, NMC, Nellore
<b>Dr. Dilip Kumar Soren*</b>	M.S, Associate Professor of Surgery, GSL, Rajahmundry *Corresponding Author
<b>Dr. M. Prudhvi</b>	Post Graduate of Surgery, NMC, Nellore

**ABSTRACT** The penetrating injuries form an essential component of a surgical emergency. The importance of this category becomes further apparent when one realises that most of such trauma victims are mostly healthy people and in the prime of their life with an associated high risk of morbidity and mortality and has influenced to undertake this surgical problem. **AIMS & OBJECTIVES:** To study the aetiology, the extent of organ involvement in the penetrating injury and organs most commonly involved. To assess patient, for surgical intervention and avoid negative laparotomy. To assess the morbidity rate, due to different organs involved. To evaluate modalities of treatment, complications and prognosis. **METHODOLOGY:** A prospective study on 40 patients with penetrating injuries to the abdomen admitted in Narayana Medical College And Hospital, Chinthareddy Palem, Nellore during October 2017-2019. **CONCLUSION:** Productive middle-age male between 31 -50 age groups are predominantly affected. The patients are from low socioeconomic status, The most common mode of injury is by stab wounds to the abdomen. Majority of the patients with peritonitis, the evisceration of bowel and omentum, peritoneal penetration with collection in the peritoneum need laparotomy, but this was a poor indicator for significant intraabdominal trauma. Evaluation of the patient with DPL, CT, FAST will help in reducing the rates of negative laparotomy.

**KEYWORDS :** Penetrating Injuries, Laparotomy, FAST, DPL

### INTRODUCTION

Penetrating abdominal injuries can also result from stab injuries, due to communal riots, political rivalry, business conflicts and family disputes. Other causes of penetrating trauma being fall from a height on a sharp object, industrial accidents, bull gore injuries, impalement injuries, bullet injuries.

Over the past century, significant advances in the field of imaging, assessing the scoring system, a more selective approach applied to the treatment of traumatic injuries. This approach is also being used to the treatment of abdominal trauma secondary to penetration. Because of increased rates of negative laparotomy with penetrating injuries, various studies suggested selective management.

The incidence of penetrating injury is difficult to estimate, but it is believed to be in rise<sup>2</sup>. No data can determine the exact number of penetrating abdominal injuries because, in a country like India where a majority of the population reside in rural areas and trauma centres available in cities, the care of injured is far from satisfactory.

### METHODOLOGY

This study is a prospective study on 40 patients with penetrating injuries to the abdomen admitted in Narayana Medical College And Hospital, Chinthareddy Palem, Nellore during October 2017-2019.

**Inclusion criteria:** Patients > 13 years, with penetrating injury to abdomen either suicidal, assault or accidental giving has written informed consent.

**Exclusion criteria:** Patients <13 yrs, Penetrating injuries due to blast injuries, patients with severe cardiothoracic and head injuries who are hemodynamically unstable.

### RESULTS

- 47.5% was in the age group of 31-50 years.
- Males comprised 80% of the study.
- Stab injury to the abdomen accounts for 60% of the cases of penetrating abdominal trauma, homicidal being more than suicidal
- Extremities are commonly involved and Left lumbar region is the most common site of insult indicating assailants to be right-handed.

- Peritoneal penetration was present in 90% patients.
- Radiographs were abnormal in 35% of cases.
- 77.5% were operated within hours of injury.
- 67.5% of cases underwent exploratory laparotomy but therapeutic in 60% cases.
- Common organ injured in order is small bowel, liver, mesentery, omentum, mesocolon, spleen, diaphragm.
- None of the conservative group needed delayed laparotomy. An accurate and vigilant repeated examination is most valuable.
- 25% developed postoperative complications. Wound infection is a common postoperative complication.
- The average duration of stay is around 10 days. Mortality is not seen due to proper resuscitation and case selection.

### DISCUSSION

In the present study, 19 cases (47.5%) of patients belong to 31 -50 years, followed by 21-30 years 9 cases (22.5%). Nance FC et al.<sup>3</sup> 1974 study people in the age group of 21-30 years were commonly affected with 45%. In Nagy K et al<sup>1</sup> 1999 study, the majority of patients with penetrating trauma were in 20-35 years age group.

In the present study of the 40 cases, 32 cases are male (80%), and 8 were female (20%). In Nagy K et al<sup>1</sup> 88% of cases were male, and 12% were female. In Nance FC et al.<sup>3</sup> male comprised 85% cases and female 15% of cases. In Leppaniemi AK et al<sup>1</sup> 1999, 87% were male, and 13% were females.

The most frequent mode of penetrating abdominal injury in the present study was stabbing, Nance FC et al.<sup>3</sup> stabs to abdomen accounted for 53% of all penetrating injuries while gunshot wound accounting to remaining 47%.

Most of the patients, 31 (77.5%) in the present study were operated within 1-5 hours of injury, which correlates well with Allen B.R. series<sup>6</sup>. Nance FC et al.<sup>3</sup> reported 49% complication rate in those operated less than 6 hours and 50% complicate in those with a delay exceeding 6 hours.

In our study, the extra-abdominal injuries were present in 16 cases (40%), in which extremities were commonest. But in Nance FC et al<sup>1</sup>

1974 chest injury was 42% and head injury 32%.

In the present study, 64% of injuries were inflicted in the upper abdomen, and in Crech et al<sup>7</sup> 1962, 75% of wounds occur in the upper abdomen. In the present study, peritoneal penetration was noted in 36 cases (90%). In Nance FC et al<sup>3</sup> also peritoneal penetration was observed in 82% of stab wounds to the abdomen.

In the present study, X-ray was abnormal in 14 (35%) cases of penetrating abdominal trauma in contrast with Kester et al<sup>8</sup> 1986, where 8% of cases had abnormal X-ray.

In the present study, 27 (67.5%) cases of penetrating abdominal injury underwent exploratory laparotomy. In Leppaniemi AK et al<sup>5</sup>, the number of operated cases constituted 68%. Similarly in Nance FC et al.<sup>3</sup> 75% of cases underwent laparotomy.

In the present study, peritoneal penetration, generalized peritonitis and evisceration were prime indicators for exploratory laparotomy. In 10 (37%) cases, peritoneal penetration was noted. In Leppaniemi AK et al<sup>5</sup> peritoneal penetration was present in 72% cases. In another study, Nagy K et al<sup>4</sup> evisceration constituted 73% of cases and was the indication for laparotomy.

In our research, omentum and bowel evisceration occurred in 8 (30%) cases. In the present study 10% of cases presented with generalized peritonitis. In a review by Nagy K et al<sup>4</sup>, generalized peritonitis was present in 9 (33%) cases. In the present study, hemodynamically unstable cases were excluded. In Nagy K et al<sup>4</sup> 9% of patients were in shock.

In the present study, the laparotomy was therapeutic in 24 (60%) cases and in the remaining 3 (7.5%) it was negative. In Nance FC et al.<sup>3</sup> in 78% of cases, the laparotomy was therapeutic. Even in Nagy K et al<sup>4</sup>, 78% of all cases required laparotomy for the repair of intraabdominal injury.

In the present study, omental evisceration was present in 4 (10%) of cases and in Nagy K et al<sup>4</sup> where 75% of cases had an omental protrusion.

In Nance FC et al.<sup>3</sup> liver and small bowel are the commonest organs to be injured. In Lowe RJ et al<sup>9</sup> gunshot wounds to abdomen commonly cause injury to the small bowel, colon and liver.

In the present study, the most frequent complication is wound infection accounting for 16%. In Ivatury RR et al<sup>10</sup> 1988, 17% of the colonic trauma cases developed intraabdominal sepsis. In Croce MA et al<sup>11</sup> 1992 intraabdominal sepsis developed in 5 to 20% of cases after penetrating stomach and small bowel injury

In the present study, the duration of stay of patients in the hospital ranged from 3 - 30 days, with an average of 10 days. In Leppaniemi AK et al<sup>5</sup>, the duration of stay ranged from 1 – 38 days with an average of 6 days. In Nance FC et al.<sup>3</sup> mortality rate is 1.4%

## CONCLUSION

Productive middle-age male between 31 -50 age groups are predominantly affected. The patients are from low socioeconomic status, The most common mode of injury is by stab wounds to the abdomen. Majority of the patients with peritonitis, the evisceration of bowel and omentum, peritoneal penetration with collection in the peritoneum need laparotomy, but this was a poor indicator for significant intraabdominal trauma. Evaluation of the patient with DPL, CT, FAST will help in reducing the rates of negative laparotomy.

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