

International Journal of Medical Science and Current Research (IJMSCR) Available online at: www.ijmscr.com Volume2, Issue 2, Page No: 485-488 March-April 2019



# A clinical study of hollow viscus injury due to blunt trauma abdomen

DR TALLA SRINIVAS

Senior Specialist/Assistant Professor, Department Of General Surgery, RVM Institute of Medical Sciences & Hospital, Lakshmakkapalli, Mulugu, Siddpet, Telangana

#### \*Corresponding Author: DR TALLA SRINIVAS

Senior Specialist/Assistant Professor, Department Of General Surgery RVM Institute of Medical Sciences & Hospital, Lakshmakkapalli, Mulugu, Siddpet, Telangana

Type of Publication: Original Research Paper Conflicts of Interest: Nil

#### ABSTRACT

**Background:** Abdominal injury is leading cause of morbidity and mortality at present due to great improvement in man's lifestyle and development of industries.

**Methods:** A total 100 cases of abdominal trauma were studied in the present study in our institute for period of 18 Months.

**Results**: Males belonging to young age group of 21-30 were most commonly affected. Road traffic accident is most common mode of injury. Results were analysed and discussed.

**Conclusions**: Young males are most commonly affected due to road traffic accident. Conditions such as, female gender, long interval between injury and operation, presence of shock on admission, and small bowel injury worsen the prognosis in penetrating abdominal trauma.

Keywords: Abdominal injury, abdominal trauma, Complications of abdominal trauma, Hollow viscus, Road traffic accident.

# INTRODUCTION

Trauma is the leading cause of death and disability in developing countries and the most common cause of death under 45 years of age.(1) World over injury is the 7th cause of mortality and abdomen is the third most common injured organ. Abdominal injuries require surgery in about 25% of cases. 85% of abdominal traumas are of blunt character.(2) The spleen and liver are the most commonly injured organs as a result of blunt trauma. Clinical examination alone is inadequate because patients may have altered mental status and distracting injuries. Initial resuscitation along with focused assessment with sonography in trauma (FAST) and computed tomography (CT) abdomen are very beneficial to detect those patients with minimal and clinically undetectable signs of abdominal injury and

are the part of recent management guidelines. Approach to trauma should be systemic and prioritized. (3) About 10% of patients have persistent hypovolemic shock as a result of continuous blood loss in spite of aggressive fluid resuscitation and require an urgent laparotomy. Damage control laparotomy is a life saving procedure for such patients with life-threatening injuries and to control hemorrhage and sepsis.(4)

Early diagnosis and effective management of hollow viscus injury following blunt trauma abdomen help in decreasing morbidity and mortality. Hollow viscus injury following blunt trauma abdomen represent a real diagnostic and therapeutic challenge to surgeon, thereby representing importance of this study. Prehospital transportation, initial assessment, thorough

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resuscitative measures and correct diagnosis are of utmost importance in trauma management.

#### **Methods:**

This is a retrospective study of the patients who had blunt trauma abdomen and above 21 years of age. The patients who were diagnosed to have hollow viscus injury were included in the study, irrespective of the outcome of the treatment. The patients presenting with associated major injuries and with penetrating trauma were excluded. The data collection included identification; history, clinical findings, diagnostic test, operative findings, operative procedures and complications during the stay in the hospital were all recorded on a proforma specially prepared. Demographic data collected included the age, sex, occupation and nature and time of accident leading to the injury. Indications for surgical intervention in our study were haemodynamic instability from suspected intraabdominal injury, clinical features of peritonitis, clinical deterioration while on conservative therapy. Statistical analysis : Data are presented as mean and proportions as appropriate. Descriptive analysis was used for the study.

# **Results:**

A total of 100 patients were included in the study. Majority of patients belonged to 21-30years (40%) age group followed by 31-40 years (28%) age group. Individuals of the age group 50-60 years were least affected. Among these patients 82% were males and 18% females. Road traffic accidents are most common mode of injury. Abdominal pain is most common symptom (93%) followed by abdominal distension (76%), and most common sign is abdominal tenderness (92%). 44% of patients were taken for clinical management between 1 to 6hrs hours of time of presentation. 26 of patients managed between time of presentation 6-12 hours (26%). Among 100 patients of hollow viscus injury 44% of patients having ileal injury, 36% of patients have jejunal injury, duodenal injury in 3% of patients. All the patients underwent emergency laporatomy after initial resuscitation and all relevant investigations, following procedures are done. Results shows wound infection in 14%, Wound dehiscence in 7%, anastomotic leak in 5%, respiratory complications in 11%, fecal fistula in 2%. Average duration of stay was 25 days. Total deaths are 7, septicaemia is cause

of death in 4 (71%) patients, ARDS in 1(14.2%) patient and sudden cardiac arrest in 1(14.2%) patient. Out of 7 deaths 3 (42%) of death due to ileal injury, 2 (28%) was due to jejunal injury, 14% was due to injury to stomach and large intestine each. Septicaemia was in 4 patients. Morbidity is 33% and mortality is 42% in ileal injury. 14% mortality in stomach injury. 33% morbidity and 28% mortality in jejunal injury.

### **Discussion:**

The incidence of bowel injury following blunt trauma abdomen ranges from 3-18%.(5) The frequency of hollow viscus injury post blunt abdominal trauma in our study is 15%, which is comparable to studies in literature. Most common age group affected is the younger age group and the usual cause being road traffic accident.6 other causes of bowel injury are fall from height and assault over abdomen. It's being reported that bowel injury is 3 rd most commonly injured organ in blunt trauma abdomen.(7) There are two primary mechanisms by which intraabdominal organs gets injured, these are 1) compression forces 2) deceleration forces. There is compression of abdominal organs and bowel between abdominal wall and vertebral column. Raised intra-abdominal pressure results in bursting of bowel.(8) The time interval between the trauma and admission to hospital varies, and its detrimental factor in prognosis. In our study almost 60% patients presented within 12 hours and there was delay in presentation of remaining patients. The reasons for delay being transportation from distant places, delay in referral of patients from peripheral centers and relatively feeble peritoneal irritation by perforation.(9) It has clearly been demonstrated that delay in presentation as little as 8 hours adversely affects the outcome of small bowel perforation.3

All patients with blunt trauma abdomen present with severe pain in abdomen, guarding. In such situation to diagnose perforation solely on clinical basis is difficult. And hence Gastrointestinal perforation should be suspected in all cases of blunt trauma abdomen.(10) Various diagnostic tests are used to evaluate suspected patients of GI perforation following blunt trauma abdomen; these include X-ray erect abdomen, ultrasonography (USG), diagnostic peritoneal lavage (DPL), CT scan abdomen, and diagnostic laparoscopy. X-ray erect abdomen being

cheap, readily available and easy test to interpret. Free gas under diaphragm is diagnostic finding in cases of GI perforation. The most common site of perforation was ileum followed by jejunum, colon, and duodenum in or study, similar results are observed in other studies.(11) Majority of small bowel injury are frequently associated with mesenteric injury. It has been seen that colonic injury were less compared to small bowel injury, it has also been reported in literature.(12) All patients underwent exploratory laparotomy with drainage of collection, peritoneal lavage and repair. The type of repair depends upon local factors like vascularity, extent, whether single or multiple, time of peritoneal contamination, presentation, general condition of patient. For hollow viscus perforation the procedure of choice is simple closure. This was most commonly performed repair in present study consistent with other studies. (13,14) In case of multiple perforation or segmental avulsion of bowel, resection and anastomosis was considered. And for colonic perforation primary closure with covering proximal colostomy was done. Postoperative complications were seen in 55.55% of patients, of which wound infection was most common due to peritonitis. Other complication seen were wound dehiscence in 2 patients, entero-cutaneous fistula and anastomotic leak in each patient. The patient with anastomotic leak second look laparotomy and patient with fistula were managed conservatively. In literature the mortality rate for blunt intestinal trauma quoted ranges from 10-30% in our study it was 22%, which were comparable. The most common cause for mortality was septicemia. (15)

# **Conclusion:**

In present study males are most commonly affected. People belonging to young age group i.e. 21-30 were most commonly affected. Road traffic accident forms the most common mode of injury. Abdominal pain is the most common symptom and tenderness is the most common presenting sign. X-Ray chest was sensitive in detecting hollow viscus injuries but absent gas under diaphragm does not rule out possibility of hollow viscus perforations. Four quadrant aspirations are a simple and an important tool for diagnosis, but better results are given by diagnostic peritoneal lavage. Ultrasound examination gives a clear picture of solid organ injury and free fluid rather than hollow viscus. The most common injured viscera in the present study is small bowel and they were managed by simple suturing and closure of perforation and resection and anastomosis. Postoperative complications like wound infection, wound dehiscence, respiratory complications, pelvic abscess and faecal fistula were seen. The duration of stay for most of the patients in this study was between 11-20 days with mean of 15 days. Mortality in this study was 7%. Conditions such as, female gender, long interval between injury and operation, presence of shock on admission, and small bowel injury worsen the prognosis in penetrating abdominal trauma. Measures should be taken to prevent these accidents and care of the victims at the accident site. Well established trauma care centers should be established at least at every district hospital. Measures for early transport of the patients from the accident site to the trauma center should be undertaken.

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