



To Diagnose Abdominal Solid Organ Injury in poor population with limited resources and lack of Advanced Diagnostic Tools

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Abstract

Background: A prospective analysis of all patients aged 14 years and above with solid organ injury of abdomen secondary to blunt trauma, admitted in routine & emergency hours in General Surgery in Index Medical College Hospital & Research Centre, Indore in duration April 2016 – April 2017. The parameters analyzed were diagnostic modalities used, type of surgery (open or conservative) and outcome of surgery.

Result: 100 patients with blunt abdominal injury were studied. 11 % of patients with BAT (blunt abdominal trauma) came to hospital with features of shock (B.P. below 90mm of Hg). Maximum number of patients (75%) presented with localized tenderness localized at site of BAT. 8 % presented with head injury and with neurological signs and symptoms like unconsciousness, unequal pupils, vomiting etc. Only 8 % presented with respiratory distress as an associated complaint.

Conclusion: Improving the social morale of people particularly the younger generation by providing Good Education, Employment & Stopping Alcohol Abuse. Appropriate transportation of injured patient to hospital particularly by the local authorities, adequate recovery in the casualty room, sufficient supply of blood in blood banks in emergency. Control by skilled & experienced surgeons especially in mass casualties. Strict aseptic precaution during surgery & good post-operative care, cheaper cost beneficial CECT abdomen for unknown and very poor patient for better diagnosis.

Keywords: Abdominal, Organ Injury, Laparotomy & Diagnostic Tools.

Introduction

The term trauma encompasses a wide range of insults to body and it can also be described as "a physical wound or injury, such as a fracture or blow".^[1] Unintentional and intentional injuries were the fifth and seventh leading causes, accounting for 6.23% and 2.84% of worldwide mortalities, respectively in the 2002 World Health Organization estimates of causes of death by rate. The management of abdominal injuries has been

extensively discussed in literature and problems of diagnosis and treatment are well defined.

In civilian abdominal injuries are rapid acceleration and great momentum predominate. Solid, parenchymatous organs are more often wounded in civilian abdominal injuries. Concomitant injuries to multiple abdominal organ or to other major anatomical areas (brain/spine/facial/chest/pelvis/extremities) sharply increases mortality and morbidity in abdominal wounds.

Also delay in transport to hospital or indefinite treatment is reflected in greater mortality and morbidity.^[2]

Blunt abdominal trauma continues to account for a large number of injury related death. Although advances in resuscitation, evaluation and surgical technique have increased our ability to salvage people with blunt abdominal trauma to the various vital areas of the body and minimize or prevent death. The depth and severity would vary and depending upon the, type of accident, vehicle, the force with which it is introduced and the reaction of the host at the particular moment. Speed is critical factor. A 10% increase in impact speed translates to a 40% rise in the case fatality. Use of seat belts reduces risk of death or serious injury for front seat occupants by approximately 45%.^[3,4]

Study Designed: Prospective Observational study

Materials& Method

All solid organ injury of abdomen of above 14 yr age group by blunt trauma admitted in routine & emergency hours in General Surgery in Index Medical College Hospital & Research Centre, Indore, in duration April 2016–April 2017 with the help of the resident surgical officer looking after the admitted patients as prospective analysis.

Special focus on patient solid organ injury with reference type surgery; conservative or open surgery and outcome of surgery. Diagnostic methods applied and investigation of choice for the diagnosis.

The guidelines of AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA will be followed during this study. The diagnostic methods used in the study are DPL (Diagnostic peritoneal lavage), USG abdomen, CECT abdomen, X-RAY ABDOMEN ERECT & X ray chest.

Analysis of data includes period of hospitalization of the individual by Age distribution, Sex distribution & Mode of injury. 100 cases of blunt abdominal solid organ injury, Mode of Injury will be defined according to history taken from the

patient (if conscious) or relatives with history of blunt abdominal trauma causing injury to solid organs like spleen, kidney, pancreas etc. the records were collected from respective patient's treatment sheets, operative notes and R.S.O.'s note.

Indication of laparotomy in our series were

1. All injuries which showed parietal peritoneal breach.
2. Evisceration of either bowel or omentum.
3. Any foreign body felt per abdomen.
4. Common sign of peritoneal irritation particularly in the absence of bowel sound.
5. Persistent evidence of peritoneal irritation and shock.
6. Hemoperitonium with active bleeding from abdominal solid organ in USG finding.
7. Grade 4 or above abdominal solid organ injury (for liver spleen kidney according AAST grading) CT or USG finding and grade 3 or above injury for pancreatic injury.

Abdominal injuries were managed by appropriate method of repair, while other injuries and general status of the patient was simultaneously taken into account. In our study, we are following the American Association for the Surgery of Trauma (AAST) grading (as per CECT finding) for these organ injury and their management.

The management of patient (exploratory laparotomy or conservative) was planned according to clinical condition and diagnostic method used.

Results

Table 1: Age incidence

Age (years)	No. of Cases	Percentage
14-20	15	15
21-30	37	37
31-40	30	30
41-50	11	11
51-60	5	5
>60	2	2
Total	100	100

The table no. 01 shows the distribution of cases in various age groups. Highest number of cases (37) in the third decade i.e. 37% maximum number of cases are from 14-40yrs and it comprises about 82

cases i.e 82%. Minimum number of after 6th decade i.e. cases (2), 2%.

Table 2 Incidence of Conservative and Operative Treatment

	No. of Cases	Percentage
Conservative	74	74
Operative	26	26
TOTAL	100	100

In patient of BAT treated conservatively is 74, (74%) and operatively 26 (26%) out of 100 patients.

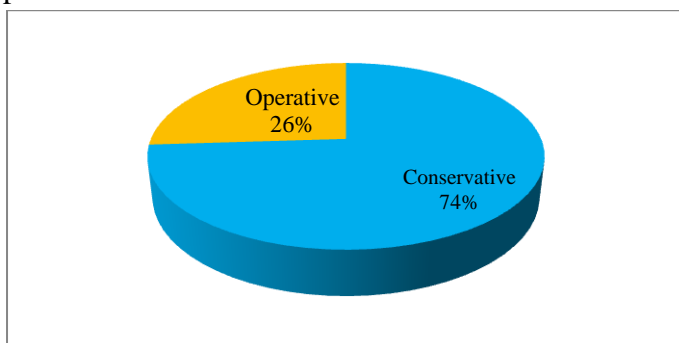


Fig 01: Incidence of Conservative and Operative Treatment

Table 3: Incidence of Clinical Feature

Clinical Presentation	No. of Cases	Percentage
Shock	11	11
P/A Guarding tenderness	25	25
Respiratory distress	8	8
Localized tenderness	75	75
Neurological sign	8	8

Table no. 3 shows that, 11 patients out of 100 patients i.e.11 % of patients with BAT came to hospital with feature of shock .shock was considered as B.P. below 90mm of Hg.Maximum numbers of patients (75) were presented with localized .tenderness localised at site of BAT i.e 75% .8 patients out of 100 patients i.e 8 % presented with head injury and with neurological sign and symptoms like unconciouness, unequal pupil,vomiting etc. There only 8 patients i.e 8 % which are presented with respiratory distress as associated complaints. 75 patients i.e 75 % of BAT presented as pain in abdomen and localised tenderness on clinical examination.

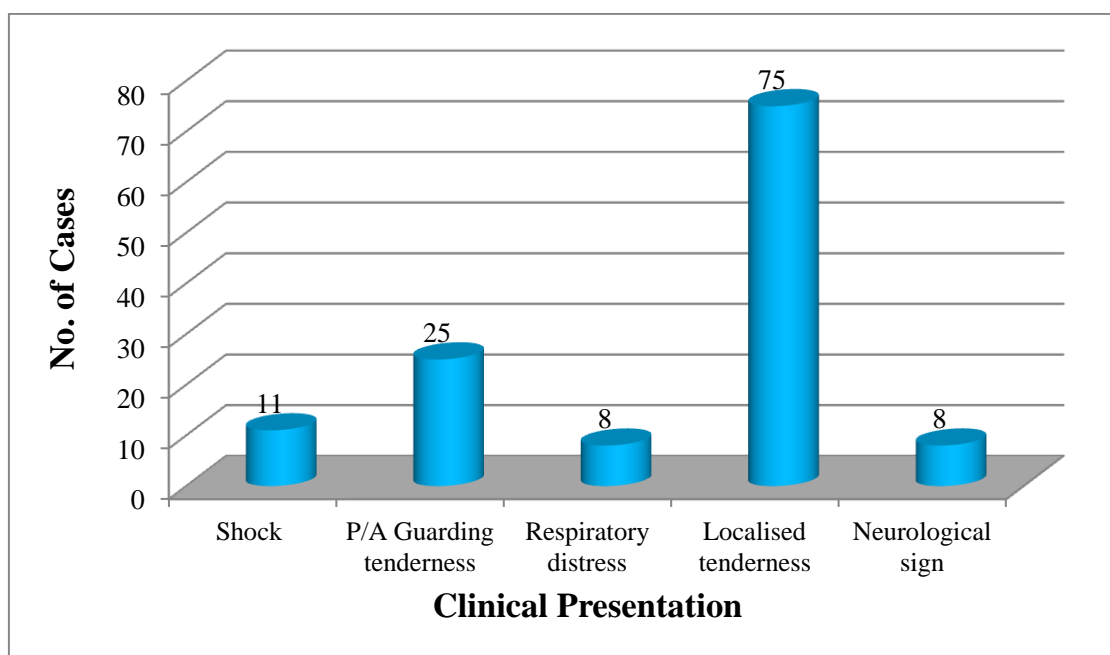


Fig 02: Incidence of Clinical Feature

Discussion

In patient of blunt abdominal solid organ trauma treated conservatively is, 74 (74%) out of 100, BAT treated operatively 26 (26%) out of 100. Study shows operative procedure done is

exploratory laparotomy in all patients. 10 cases 10% required emergency inter-coastal drainage (ICD). All case primarily diagnosed by USG & confirmed by means of CT scan. 35 case of liver injury USG finding same as CT finding out of 39

cases. 18 case of splenic injury USG finding same as CT findings out of 23 cases. 1 case of pancreatic injury USG finding same as CT finding out of 2 case. 3 case of renal injury same as CT finding out of 3 case. All USG diagnosis confirmed by CT scan. All USG diagnosis confirmed by CT scan. On comparison USG finding with CT finding for all grade of liver, spleen, kidney and pancreas injury. P value were non-significant that means USG finding almost equivalent to CT finding.^[5,6]

In Indian set up where low socio economic status people belong USG affordable. Sensitivity and specificity of USG for abdominal solid organ good. On comparison USG and CT finding of all different abdominal solid organ injury we found that for liver injury USG sensitivity 86.21 %, specificity 100%, PPV 100%, NPV 84.00% for splenic injury USG sensitivity 82.98, specificity 100%, PPV 100%, NPV 86.88 % for renal USG sensitivity 81.25 %, specificity 100%, PPV 100%, NPV 96.55 % for pancreatic injury USG sensitivity 30.00 %, specificity 100%, PPV 100%, NPV 92.78%.^[7]

Conclusion

Improving the social morale of people particularly the younger generation by providing Good Education, Employment & Stopping Alcohol Abuse. Appropriate transportation of injured patient to hospital particularly by the local authorities, adequate recovery in the casualty room, sufficient supply of blood in blood banks in emergency. Control by skilled & experienced surgeons especially in mass casualties. Strict aseptic precaution during surgery & good post-operative care, cheaper cost beneficial CECT abdomen for unknown and very poor patient for better diagnosis.

In our study non-operative management of solid organ injury have high success rate for low grade injuries by blunt abdominal trauma.

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