

RETROSPECTIVE AND PROSPECTIVE STUDY OF MANAGEMENT AND OUTCOME OF BLUNT ABDOMEN TRAUMA IN TERTIARY HEALTH CENTER IN LAST 5-YEAR 2009-2014

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ABSTRACT: AIMS: 1. To study the incidence of various intra-abdominal and extra-abdominal injuries in blunt abdominal trauma in tertiary health care center in five year (2009-14). 2. To study the relationship between mode of injury, severity of injury and clinical presentation and its outcome, mortality and morbidity. 3. To study modalities for evaluating the abdomen after blunt abdominal trauma. 4. To evaluate the major indication for operation in each cases. 5. To study of outcome, mortality and morbidity. **SETTINGS AND DESIGN:** This study carried out in the Department of Surgery, MGM Medical College, M.Y. Hospital Indore and Trauma Department, M.Y. Hospital Indore both retrospectively and prospectively in patients with Blunt abdominal trauma over the period of from 2009 to 2014 with co-operation of the staff of Medicolegal section, Central record room and residents looking after the admitted patients. **MATERIALS AND METHODS:** On admission to hospital patient's name, age, sex, address, registration number and date and time of admission, length of delay in treatment taken noted and mode of trauma also noted. Patient's presenting complaint, detail history and time of trauma noted. **RESULTS:** During this study total 250 admission were included 170 (Prospective) and 80 (Retrospective). There were over all 201 males (80.4%) and 49 female (19.6%). Mortality was maximum due to RTA 64.52%. Highest number of cases (65) in the third decade i.e. 26%. Among these injuries hemoperitoneum was found in 94 cases i.e.37.6%. Small intestine (ileal>jejunal) injury 45 cases i.e., 18% was most common hollow viscous injury. In solid organ injury there was maximum incidence of liver injury 34 cases. i.e., 13.6%. **CONCLUSION:** This study concludes that young males are more prone to trauma and maximum blunt trauma is associated with RTA. Almost half of patients required laparotomy and found injury to liver and small intestine in max cases. Overall incidence and mortality can be reduced by improving the social morale of people especially the younger generation by providing good education, employment, preventing alcohol abuse, proper law enforcement and some form of penalty regarding proper vehicle driving, good transportation, adequate resuscitation, modernized trauma center and coordination with emergency response team.

KEYWORDS: Blunt trauma; blunt trauma abdomen; accident.

INTRODUCTION: Trauma defines as cellular disruption caused by an exchange with environment energy that is beyond the body resilience. Blunt abdominal trauma has become frequent in our society. It may be accidental, suicidal and homicidal also however, first one is very frequent, and all can lead to death. Injury by blunt object group include patient who sustained injury due to assault by fists and blows, lathi, iron rods/kicks or received accidental animal kicks over abdomen or got injured due to fall of some heavy object like log, gravel, got buried in mine or had rolled down the stairs or stumbled over some blunt object.

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Prevalence mortality is highly variable around the world. This makes general management rules difficult to establish, especially for regions where those injuries are relatively rare. The incidence of accidental has a great variability throughout the world ranging from 0.07 to 141 per 100000 inhabitants per year. Indore is a city with the population more than 2.5 million and this study was done to assess various aspect of accidental who are admitted in the M.Y. hospital which is center to above population. Despite these huge differences, unfortunately prone to increase in India and in Indore as well. Of all patient in 2009 NTDB, 13% sustained abdominal injuries associated with an overall mortality rate of 7.7%.

A retrospective analysis of 71 patients of BAT who were admitted in Kempegowda Institute of Medical Sciences hospital (KIMS, Bangalore, India) within a span of 18 months was done. Trauma is the second largest cause of disease accounting for 16% of global burden. The World Health Organization estimates that, by 2020, trauma will be the first or second leading cause of years of productive life lost for the entire world population.⁽¹⁾

Blunt abdominal trauma is quite common since previous time and increasing day by day in emergency clinics. Many of time this injury is life threatening and require urgent treatment. Blunt abdominal trauma can result in laceration of solid organ usually causing bleeding which in its most severe form manifest as hemorrhagic shock or as visceral perforation of GI tract. Abdominal compartment syndrome is now recognized as a frequent confounder of surgical critical care following blunt abdomen trauma.

The present study, a statistical survey, was to describe and assess the population of patients admitted to our Emergency department (ED) because of a blunt abdominal trauma. We particularly addressed the circumstances and characteristics of the patients and their observed injuries. The medical procedures to manage this blunt abdominal trauma were also assessed.

Organ Involved in Blunt Abdominal Trauma:

1. Spleen (m c).
2. Liver.
3. Kidney.
4. Small intestine.
5. Large intestine.
6. Pancreas.
7. Urinary bladder and prostate.

SUBJECTS AND METHODS: This study carried out in the Department of Surgery, MGM Medical College, M.Y. Hospital Indore and Emergency Surgery & Trauma Department, M.Y. Hospital Indore both retrospectively and prospectively in patients with Blunt abdominal trauma over the period of from 2009 to 2014 with co-operation of the staff of (1) Medicolegal section (2) Central record room and the help of the residents looking after the admitted patients.

The study comprises 2 year (1/9/2012 to 30/9/2014) prospective study and 3 year (2009-2012) of retrospective study covering a period of 4 year and 8 months. The present study includes 250 cases of blunt abdominal trauma admitted to M. Y. Hospital Indore and Emergency Surgery & Trauma Department, M. Y. Hospital Indore.

On admission to hospital patient s name, age, sex, address, registration number, and, date and time of admission, length of delay in treatment taken noted and Nature of weapon also noted.

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Patient who reported to hospital with history of blunt abdominal trauma but on examination showed no distant symptoms and sign of abdominal injury and/or give conservative line of treatment, and in due course showed improvement, without any deterioration and not admitted in hospital are excluded from study.

On admission to hospital resuscitation and evaluation of injured patient began simultaneously. If patient was in the state of shock often with internal injury present, his cardio respiratory status was assessed and recording of vital sign was made immediately and in order of priority, establishment of adequate ventilation, control of major hemorrhage done.

Indication of Laparotomy in our series was:

1. All injuries which showed parietal peritoneal breach.
2. Evisceration of either bowel or omentum.
3. Any foreign body felt per abdomen.
4. Usual sign of peritoneal irritation especially in the absence of bowel sound.
5. Persistent evidence of peritoneal irritation and shock.

DISCUSSION: The study comprises 2 years (1/9/2012 to 30/9/2014) prospective study and 3 year (2009-2012) of retrospective study covering a period of 3year and 8 months. In this study blunt injury of abdomen cases accounted for Total 250 cases i.e. (.683%) total admission on surgical side. The incidence of blunt injury of abdomen in the prospective and retrospective group was 170(.706%) and 80(.647 %) respectively. Incidence of this nature more obvious in a civilian institution like our in this country. One of the most baffling problems of surgery can be a patient suspected of having blunt injury of abdomen that requires surgical intervention as a life saving measure.

Incidence: In this study, blunt injury of abdomen cases accounted for Total 250 cases i.e. (.683%) total admission on surgical side. The incidence of blunt injury of abdomen in the prospective and retrospective group was 170(.706%) and 80(.647%) respectively. Incidence of this nature more obvious in a civilian institution like our in this country.

Higher incidence in the retrospective group was simply because; there is marked reduction in total admission in surgical beds in the year 2012 and 2013.

Retrospective study has been done at Department of Emergency Surgery, Clinical Centre of Serbia, during the period from January 2004. Until January 2009. Blunt trauma (41.7%), gunshot wounds (30.5%), and stab injuries (27.8%). In 24(66.7%) patients on admission Article in Serbian].⁽²⁾

Age Group: In our study highest number of cases (65) in the third decade i.e. 26% maximum number of cases is from 11-40yrs and it comprises about 183 cases i.e. 73.2%. In retrospective study 11-40 yrs. age group comprised 126 cases, 74.1% and in prospective group 11-40 yrs. age group comprised 58 cases, i.e., 72.5%. Minimum number of patient is after 6th decade i.e., cases (6), 2.4%. This shows that young are more exposed to blunt injury of abdomen.

A prospective descriptive study Hospital-based cohort over a nine year period in Jos University Teaching Hospital, Jos, Nigeria a total of 8,970 trauma victims with a mean age of 28.5 years.⁽³⁾

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Male to Female Ratio: There were over all 201 males (80.4%) and 49 female (19.6%). In retrospective study 130(76.47%) male and 68(85.0%) female. In prospective study 25(21.765%) male and 5(15.1%) female.

This shows that females are not subjected to, especially blunt injury of abdomen. The male being the victim of, a fight for money, land, woman, alcohol intoxication and in some cases very trivial reason. The female were mostly victim of domestic violence. According to national and international data, blunt abdominal trauma is more common in men. The male-to-female ratio is 60:40.⁽⁴⁾

Mode of Injury: Our study shows that majority of the blunt injury of abdomen were accidental in nature comprising 154 cases i.e., 61.6%. Second common injury are fall from height comprises 45 cases i.e. 18 % and least common are assault by hard and blunt object and falling hard and blunt object over body comprises 18-18 cases i.e. 7.2 respectively %.

In retrospective group accidental cases were 49 i.e. 61.25 % in prospective groups accidental cases were 105 i.e., 61.765 %.

Estimates indicate that by 2020, injuries from traffic collisions will be the third most common cause of disability worldwide and the second most common cause in the developing world.

Extra-Abdominal Body Region Injuries: In our study shows an assessment of various region of body commonly injured. There were 51 out of 250 patients (20.4%) of head injury in BAT patient, 53 out of 250 patients (21.2%) of chest injury, and 17 out of 250 patients (6.8%) of Extremity injury, 16 out of 250 patients (6.4%) of facial injury, and 15 out of 250 patients (6.0%) of pelvis injury. So it is clear that maximum associated extra abdominal injury in BAT patients is chest> head injury and minimal associated extra-abdominal injury in BAT patients are pelvis injuries.

A total of 926 patients were treated for blunt trauma by the Pietermaritzburg metropolitan services in South Africa during the period September 2006 - September 2007 were included for review There were 10 pelvic fractures, 5 lower limb fractures, 2 spinal injuries, 4 femur fractures and 2 upper limb fractures.⁽⁵⁾

Presentation of Patients: Our study shows that 35 patients out of 250 patients i.e., 14 % 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 (88)were presented with P/A Guarding, tenderness localised at site of BAT i.e 35.2% 51 patients out of 250 patients i.e 20.4 % presented with head injury and with neurological sign and symptoms like unconciouness, unequal pupil, vomiting etc. There only 50 patients i.e 20 % which are presented with respiratory distress as associated complaints. 76 patients i.e 30.4 % of BAT presented as pain in abdomen and localised tenderness on clinical examination. This shows blunt injury of abdomen and complaints lead difficulty in to asses the intenal injury.

8-year period from January 1, 1974 to December 31, 1982, a total of 1412 patient's significant intra-abdominal injuries. From blunt abdominal trauma. Five of the six patients (83.3%) complained of severe abdominal pain on admission and had bloody returns from subsequent peritoneal lavages.⁽⁶⁾

Surgical Interventions: In patient of BAT treated conservatively is 134,(53.6%) out of which 99 (58.2%) in retrospective group and 35(43.75%) in prospective group. In patient of BAT treated operatively 116(46.4%) out of which 71(41.76%) in retrospective group and 45(56.2%) in

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prospective group. In our study shows that there were operative procedure done is exploratory laparotomy in all patients. 6 cases 5.17% required emergency inter-coastal drainage (ICD) along with laparotomy i.e., 2.4% of total admission.

Four years (April 2004 to December 2008) 12 patients with blunt small bowel and mesenteric injuries, with trauma. All were managed initially following the Advanced Trauma Life Support (ATLS) guidelines. Emergency room ultrasound was positive for blood in 5/7 cases (71%) and CT scan in 2/4 (50%). Diagnostic peritoneal lavage (DPL) was performed in one case and was positive for blood.⁽⁷⁾

CONCLUSION: The study comprises 9 month (1/1/2014 to 30/9/2014) prospective study and 4 year (2009-2013) of retrospective study covering a period of four year and 9 months. The present study include 250 cases of blunt abdominal trauma admitted to M.Y. Hospital Indore and Emergency Medicine & Trauma Department, M.Y. Hospital Indore can be summarized as follows:

Maximum number of cases in our study (65) in the third decade i.e., 26% and maximum number of cases are from 11-40yrs means young and males are more prone to trauma. RTA is the most common mode of injury in the blunt abdominal trauma. Extra-abdominal body region injuries i.e., chest (21.2%), head (20.4%) are also associated with blunt trauma abdomen. On examination Localized P/A Guarding, tenderness was the most common 88(35.2%) presentations whereas feature of shock is 2nd most common. Emergency laparotomy was most common surgical procedure 116 (46.4%) and Most of laparotomy was therapeutic and hemoperitoneum, 94 cases i.e. 37.6% was the most common, intra-op finding. Following are the common internal organ injury in descended order Small intestine (ileal >jejunal) injury 45 cases i.e. 18% was most common hollow viscous injury in BAT patient pancreas is least common hollow viscous injury. In solid organ injury there was maximum incidence of liver injury 34 cases. I.e. 13.6% followed by spleen 26 cases i.e. 10.4% and kidney & ureter 11 cases. i.e., 4.4%. Most extra-abdominal body region injuries were managed conservatively. Overall Mortality is 14.4 %.

After this study we conclude that incidence of blunt abdominal trauma can be reduced by:

1. Improving the social morale of people especially the younger generation by providing good education, employment, preventing alcohol Abuse.
2. Proper law enforcement and some form of penalty regarding proper vehicle driving.

Mortality can be reduced by: Prompt transportation of injured patient to hospital especially by the police.

- Adequate resuscitation in the casualty room,
- Adequate supply of blood in blood banks during emergency hours.
- Supervision by skilled and experienced surgeons especially in mass casualties.
- Strict aseptic precaution during surgery and good post-operative care.

Owing to the enormous impact of road traffic accidents on health and economy in our country, a multidimensional approach is suggested to minimize such incidents. They include:

1. Imparting road safety education to all persons with special emphasis on educating young persons. School children can be taught about the use of sidewalks, road crossing techniques, traffic signals, reaction time, braking distance and hazards of Alcoholic drinks.

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2. At the time of giving license to the public transport drivers (Bus and Trucks), they can be given training in first-aid skills so that victims are attended immediately in the post-accident period.
3. Speed limits should be strictly implemented near populated areas, residential areas and schools.
4. Maintaining existing roads, improving road surface, removing obstacles, constructing guards, rails, proper signs and widening or narrow sections of roads, zebra crossings for pedestrians at appropriate traffic points, building flyovers and subways wherever required to reduce traffic congestion.
5. The vehicles should be properly checked with regard to their maintenance, brakes and tyres and improving vehicle designs to minimize damage in event of a crash.
6. Citizens should change their attitudes positively, stop reckless driving, obey traffic rules, prohibit use of mobile phones while driving, and use of protective devices like helmet for two wheelers and safety seat belts in four wheelers. Attempts should be made to reduce travel and if travel is necessary public transport system should be used.
7. Trauma centres should be modernized and fully equipped with emergency drugs and surgical instruments along with adequate manpower.
8. Help line and support centres should be established in coordination with emergency response teams to prevent death/morbidity.
9. Government authorities should enforce traffic rules strictly. Breath analysers must be used regularly for testing drunken drivers and those found positive must be heftily fined with cancellation of license in cases of repetitive offence.

Partnerships need to be formed with public, private and non-governmental organizations to address more visibly the problems and press harder for improvements.

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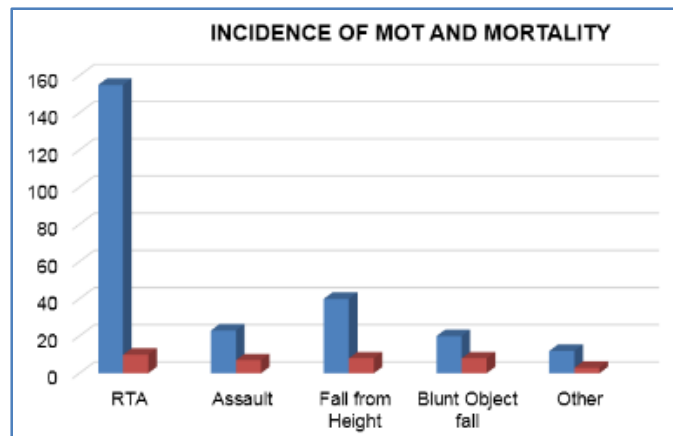
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MOT	No. of Cases	Mortality
RTA	155	10
Assault	23	7
Fall	40	8
Falling blunt object over body	20	8
Other	12	3
TOTAL	250	36

Table 1: Relative Incidence of MOT and Mortality

Table shows over -all mortality 14.6% in the period of study. Out of those patients who were discharged or had improved, 214, i.e. 85.6% of cases were improved. Mortality maximum in patient BAT due to RTA 64.52% and Mortality minimum in patient BAT due to fall from height 20%.

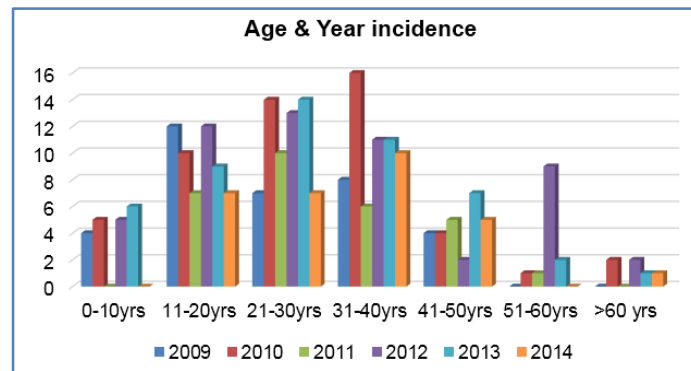


Year Age	2009	2010	2011	2012	2013	2014	Total
0-10	4	5	--	5	6	--	20
11-20	12	10	7	12	9	7	56
21-30	7	14	10	13	14	7	65
31-40	8	16	6	11	11	10	62
41-50	4	4	5	2	7	5	27
51-60		1	1	9	2		13
>60		2	--	2	1	1	6
Total	35	52	29	54	50	30	250

Table 2: Age Incidence

The table shows the distribution of cases in various age groups. Highest number of cases (65) in the third decade i.e., 26% maximum number of cases are from 11-40 yrs and it comprises about 183 cases i.e., 73.2%. In retrospective study 11-40 yrs age group comprised 126 cases, 74.1% and in prospective group 11-40 yrs age group comprised 58 cases, i.e., 72.5%. Minimum number of after 6th decade i.e., cases (6), 2.4%.

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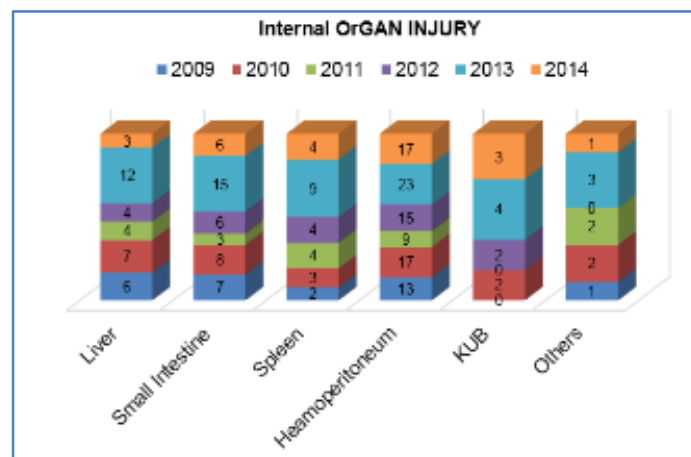


Internal Organ Injuries	2009	2010	2011	2012	2013	2014	TOTAL
Liver	6	7	4	4	12	3	34
Small intestine	7	8	3	6	15	6	45
Spleen	2	3	4	4	9	4	26
Hemoperitoneum	13	17	9	15	23	17	94
KUB	--	2	--	2	4	3	11
Other(stomach,pancreas, Colon)	1	2	2	--	3	1	9
Total	29	39	22	31	66	34	219

Table 3: Incidence of Internal Organ Injuries

In 116 laparotomy patients in blunt abdomen injury there were 219 internal organ injuries founded. Among these injuries hemoperitoneum, 94 cases i.e., 37.6% was the most common, intr-op finding in BAT patient. Small intestine (ileal>jejunal) injury 45 cases i.e., 18% was most common hollow viscous injury in BAT patient and pancreas is least common 1 cases. i.e., 0.4%. Involved organ in BAT. In solid organ injury there were maximum incidence of liver injury 34 cases. I.e., 13.6% followed by spleen 26 cases i.e., 10.4% and kidney & ureter 11 cases. i.e., 4.4%.

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