

## Study of 255 Laparotomies for Abdominal Injuries

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### Abstract:

Blunt abdominal trauma is a leading cause of morbidity and mortality among all age groups. We retrospectively reviewed 255 laparotomies for abdominal injuries admitted to trauma department, Tripoli Central Hospital in a period of 2 years 1998-1999. The age group affected and the cause of trauma, our results match well with others, sex incidence in our study, 90% Males and only 10% Female, other studies 70% Males and 30% Females. The rate of negative laparotomies is 9%. The spleen was the most frequently injured organs 31.3% followed by liver injury 21.9%. About 84% of patients operated within 6 hours from the time injury. The comparison between the suspected injuries and finding at surgery showed that clinical decision alone is not very accurate and we need to make use of the available investigation. This study showed a lacking of good case note documentation, and the very limited use of available investigative procedures in the management of abdominal injuries.

### Introduction:

Trauma is the 3<sup>rd</sup> leading cause of death in developed countries and abdominal trauma accounts for 20% of events in urban areas.<sup>1</sup> Blunt abdominal trauma is a leading cause of morbidity and mortality among all age groups.<sup>2</sup> A review from Singapore described trauma as a leading cause of death in those aged (1-44 years). Road traffic accidents, stab wounds and falls from high were the leading modes of injuries. Blunt abdominal trauma accounted for 79% of cases.<sup>3</sup> Similar reviews from adult trauma data bases reflect that blunt trauma is the leading cause of intra abdominal injuries, and that motor vehicle collisions are the leading mode of injuries. Blunt injuries account for approximately two thirds of all injuries.<sup>4</sup> Penetrating abdominal trauma affects approximately 35% of those patients admitted to urban trauma center and (1-12%) of those admitted to sub urban and rural centers, according to National center for injuries prevention and control (NCICP).<sup>4</sup> Identification of serious intra-abdominal pathology is often challenging, many injuries may not manifest during the initial assessment and treatment period. Mechanisms of injury often result in other associated injuries that may divert the physician's attention from potentially life-threatening intra-abdominal pathology.<sup>2</sup>

### Aim of the study:

This study was carried out to assess the incidence of abdominal trauma, its management in our setting, trying to learn lessons to improve our performance.

### Material and Methods

The case notes of 500 consecutive patients undergone laparotomies for abdominal injury over a period of 2 years between 1998 and 1999 at trauma department in Tripoli Central Hospital were retrospectively studied. 245 cases were excluded due to lack of full information. The remaining 255 form the basis of this study. The case notes documentation were reviewed for the cause and type of injuries sustained, the age and sex distribution, the methods of diagnosis used, the speed of investigation and treatment, the accuracy of clinical diagnosis and the rate of negative laparotomies.

### Results:

The most common age group affected is 21-30 years of age 132 (51.8%) cases, and 91.3% cases were below age 40 (233 cases). Out of total number 232 cases were males (90%) and 23 cases female (10%).

The most common cause of trauma was RTA 117 cases (45.8%), followed by stab wounds 97 cases (38%). (Table 1)

**Table 1: Causes of trauma**

Cause of trauma	Number of cases	Percentage
RTA	117	45.8%
Stabs	97	38%
Fall from high	25	9.8%
Fire arms	5	
Fight	2	
Animal attack	1	
Iatrogenic	1	
Others	5	

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On admission 149 patients (58.4%) were stable and conscious, 91 patients (35.6%) were shocked and 11 patients (4.3%) stable and unconscious. 79.2% of cases sustained other injuries; head injuries in 58 cases (22.7%), chest injuries in 55 cases (21.5%), extremities in 60 cases (23.5%), pelvic injuries in 26 cases (10%), spinal injuries in 3 cases (1.1%).

Regarding the investigation, complete blood count (CBC) was done for all cases, plain abdominal X-ray for 96 cases (37.6%), paracentesis for 29 cases (11.3%), ultrasound scanning for only 8 cases (3.1%), peritoneal lavage for (105) cases (41.1%), CT scanning for only one case and laparoscopy for only one case. (Table 2)

**Table 2: investigation**

Investigation performed	Number of cases
CBC	230
Plain x-ray abdomen	96
Paracentesis	29
Diagnostic peritoneal lavage (DPL)	11
Ultrasound	8
CT scan	1
Laparoscopy	1

Decision for laparotomy was taken on clinical grounds only in 101 cases (39.6%), and after specific investigation in 154 cases (60.4%).

The pre laparotomy suspected injuries of Liver in 102 cases (40%), spleen 118 cases (46.2%), intestine 76 cases (29.8%) kidney 15 cases (5.8%), retroperitoneal haematoma 55 cases (21.5%), Bladder 3 cases (1.1%), diaphragm 3 cases (1.1%).

**Table 3: finding at operation**

Injured organ	Number of cases	Percentage
Splenic injury	80	31.3%
Liver injury	56	21.9%
Retroperitoneal haematoma	52	20.3%
Small bowel injury	36	14.1%
Mesenteric injury	24	9.4%
Large bowel injury	17	6.6%
Diaphragmatic injury	10	3.9%
Renal injury	5	1.9%
Urinary bladder injury	4	
Vascular injuries	4	
Gastric injury	2	
Other injuries	14	
Negative laparotomies	23	9%

216 cases operated within 6 hours from the time injury (84.7%).

The spleen was the most common injured organ 31.3% (80 of 255) of cases, followed by liver injury 21.9% (56 of 255) of cases. Negative laparotomies in 9% (23 of 255) of cases (Table 3).

**Discussion:**

Road traffic accident (RTA) in Libya are very common and most of blunt abdominal injuries as a result of that. About 200-300 laparotomies carried out each year in trauma department, Tripoli Central Hospital, representing about 16% of total trauma case, of which 60% blunt trauma and 40% penetrating trauma.<sup>10</sup> The sex incidence in most of the studies is 70% male and 30% female, however our result showed 90% male and only 10% females. This is due to fact that females in our society are not so involved in driving, violence, and not at all involved in construction jobs. With regard to the age incidence, type of injury sustained, and causes our result match well with others.<sup>1,2</sup>

Following stabilization of the patient certain investigation help in the assessment and diagnosis of injury sustained. X-ray view order depends on the cause and mechanism of trauma and on the physical examination. Generally trauma suit views include a cervical spine, chest after primary survey. Additional views may be indicated after secondary survey.<sup>2</sup> Our results showed only 40% of cases had abdominal X-rays and no enough documentation about other X-ray views without obvious reason to explain this limited number of cases underwent X-ray studies. Bedside ultrasound in the form of Focused Abdominal Sonogram for Trauma (FAST) is being used in evaluation of trauma patients in Europe for more than 10 years.

Generally FAST diagnostic accuracy is equal to the diagnostic peritoneal lavage, even Novice operators can identify free intra-abdominal trauma. The sensitivity and specificity of these studies range from 85%-95%.<sup>7,8</sup> In our series only 8 patients out of 255 cases underwent abdominal ultrasound scanning. This shows that we were very limited in using non-invasive investigation. Again only one patient out of 255 cases underwent CT scanning. Although expensive and potentially time consuming, it often provides detailed image of traumatic pathology and may assist in determination of operative intervention. Although injuries to diaphragm and perforation of G.I.T may be missed on initial CT Scan, these injuries are generally identified on subsequent examinations

performed on high-risk patients. The primary advantage of CT scanning is its high specificity, but the drawbacks of CT scanning related to the need to transport the patient from the resuscitation area and the additional time required to transport to perform CT scanning. Only haemodynamically stable patients should be transported to CT scanning.<sup>6,7,8</sup> Encouraging results in assessment of intra-abdominal injuries have been obtained with laparoscopy. Recent reports show that mini laparoscopy with a (45mm) cannula can be successfully carried out under local anaesthesia. This technique has the advantage of being fast, and capable of being performed in emergency room, it permits direct visual assessment of peritoneal cavity especially in the severely injured unconscious patient.<sup>11</sup> In the current study only one case underwent laparoscopy. In a recent retrospective study of 100 deaths from injury, 43% of death not related to central nervous system were judged to have been potentially preventable, among the most common missed diagnosis were those of ruptured liver and ruptured spleen. Though initial assessment and repeated re-evaluation with appropriate investigations are of prime importance for detecting those injuries, - our study showed that ruptured liver and ruptured spleen were over diagnosed clinically, which may lead to unnecessary laparotomies, and that is a natural result of lack of using available investigation. Again we can see mixing in diagnosis of retroperitoneal organ injuries e.g.

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renal injuries, depending on clinical suspicion and finding at laparotomy and lack of using proper investigation e.g. IVP in suspected renal injuries.<sup>12</sup> Common recommended laboratory investigations include blood glucose, CBC, urea and electrolytes, amylase, urinalysis, coagulation studies, blood grouping and match, ABG, blood ethanol screens, and urine pregnancy test (for females of childbearing age). It is not mandatory to ask for all of these investigations but referred to the clinical judgment of Doctors examining the injured case.<sup>2</sup>

In our study no enough documentation about deferent types of investigation listed above.

#### Conclusion:

- Our study showed we lack good documentation.
- The use of Hematology, Biochemistry, X-ray, Ultrasound scanning, C.T Scan and Laparoscopy for the diagnosis of injuries is Limited.
- The rate of negative laparotomies is a 9% which is acceptable compared with others.
- The most frequently injured organs correlates well with other series except for retroperitoneal haematomas and renal injuries.
- The comparison between the suspected injuries and finding at surgery showed that clinical decision alone is not very accurate and we need to make use of the available investigation.

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