

Pattern of Abdominal Injuries, Organ Involved and Rate of Negative Laprotomy in Tertiary Care Hospital

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ABSTRACT

Objective: To evaluate the pattern of abdominal injuries the value of the surgery in assisting diagnosis, laparotomy and mortality rate.

Methodology: Out of 1923 total trauma patients 886 individuals were included in the study from a tertiary care hospital. Demographic, trauma-related traits, laparotomies with their indications, etiology and the organs affected were all collected. With SPSS 23 were used to evaluate data

Results: The mean age patients were 27.05 years mostly male. Mortality and negative laparotomy rate were 5.9 and 15.4 percent respectively. Blunt injuries were more than penetrating. Spleen was the frequent organ damage.

Conclusion: Blunt trauma with spleen was mostly involved organ. Mortality and negative laparotomy rate are comparable to other studies.

Key Words: Trauma, Abdomen Laparotomy, Mortality, Spleen,

Authors' Contribution:

^{1,2}Conception; Literature research; manuscript design and drafting; ^{3,4}Critical analysis and manuscript review; ^{5,6}Data analysis; Manuscript Editing.

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Introduction

Patients who have experienced blunt or penetrating trauma are frequently candidates for laparotomy.¹ Globally, blunt trauma injuries are thought to account for between 78.6 and 95.6% of all injuries, whereas abdominal trauma injuries account for between 9 and 15% of all reported injuries and have a high rate of morbidity.²⁻⁶ However, penetrating injuries are an uncommon occurrence in the majority of European nations.⁷⁻⁹ In contrast, exposure is higher in places like the USA and South Africa where trauma patients with penetrating abdominal injuries arrive in large numbers^{8,10-13}.

Hemodynamic instability or persistent bleeding during resuscitation from an intra-abdominal or retroperitoneal source was the most common reason for laparotomies.⁵ Patients who suffer a penetrating injury to the abdomen or diaphragm and present with hemodynamic instability, hemorrhage-mediated hypotension, organ damage, and peritonitis are frequently known candidates for an emergency laparotomy due to the injury. Laparotomy for trauma is linked to a significant incidence of early postoperative morbidities and fatalities.^{6,9,10} Negative laparotomies are also responsible for problems and extended hospital

stays¹⁴. In order to determine the pattern of abdominal injuries necessitating laparotomy and the value of the surgery in assisting diagnosis, this study was created.

Methodology

All patients who received an emergency laparotomy for trauma between January 2019 and January 2023 were included in this descriptive cross-sectional study that was carried out in the tertiary care hospital Peshawar and approved by the ethical council by using non probability consecutive sampling technique. The sample size was calculated by WHO calculator with 5% margin of error and 95% confidence level. Patients who were managed non operatively, had a history of multiple injuries, were hemodynamically stable, and had missing data were all disqualified from the study. Demographic information, trauma-related traits, laparotomies pattern with their indications, the etiology of the damage, and the organs affected were all collected. SPSS 25.0 was used to analyze the data, and the frequency tables were converted to percentages. Data that is categorical or dichotomous is displayed as percentages

Results

1923 trauma victims were admitted over the course of the 5-year study. Penetrating injuries made up 133 (15%), whereas blunt trauma made up 753 (85%). After screening all trauma patients during the study period and excluding the 1037 who did not undergo a trauma laparotomy, we found 886 patients who were eligible for study inclusion.

Trauma characteristics	Cause of Injury	Frequency (%)
Blunt	Accident	702 (79.23)
	Conflict	51 (5.75)
Penetrating	Accident	99 (11.17)
	Sharp object	22 (2.48)
	Fire Arm	12 (1.35)

The mean age of the patients were 27.5 years. Male to female ratio were 9:2 with a mortality rate of 5.9 %. It was found that the negative laparotomy rate was 15.4%. The most damaged organ was spleen followed by liver. Injury characteristics of 886 trauma laparotomy patients' data are presented in Table I and II.

Table II. Organ damage due to different trauma characteristics

Damage Organ	Blunt		Penetrating		
	Accident	Conflict	Accident	Sharp object	Fire Arm
Liver	134	14	29	05	03
Liver and associated organs	112	06	11	02	01
Spleen	154	16	33	05	04
Spleen and associated organs	124	05	09	03	01
Kidneys	04	01	02	00	00
Small Intestine	76	04	05	02	01
Colon	98	05	09	05	02
Others	00	00	01	00	00
Mortality rate. 7.9%					
Negative laparotomy rate. 15.4 %					

Discussion

Historically, 40% of patients who underwent trauma laparotomies died. The death rates between 7 and 21% in more recent literature are noticeably lower. Damage Control Surgery (DCS) and Damage Control Resuscitation (DCR), which are now essential components of the treatment approach for critically injured trauma patients to lower the risk of morbidity and mortality, may in part be responsible for these positive outcomes.^{8,14,15} In our research, our population, which consists mainly of younger males, is comparable to prior studies. A significant source of morbidity and mortality is still a major trauma. An estimated 10%

of injuries in Europe are due to abdominal trauma. Both blunt and penetrating injuries frequently necessitate surgical exploration in the form of a trauma laparotomy, despite the significance of the distinction between the two. 15% of the trauma population had piercing injuries. When compared to European and Scandinavian nations, this is greater, but it is on a level with other nations outside of Europe.⁷⁻⁹

Mortality rates associated with trauma laparotomies have been reported to range from 6 to 21% globally.^{5,16} We found that spleen, liver, and colon injuries were overrepresented among the injuries, and that the overall fatality rate was 5.9%. Here, we include auto accidents as the most frequent causes of blunt and penetrating trauma. The liver and spleen were the two most often affected organs. The use of laparotomy is not required due to its complications, according to recent findings, which also show that imaging modalities and a number of biomarkers can be utilized to diagnose trauma in the present era.^{6,8} This is yet further highlighted by the fact that our population is using this strategy more often, as seen by the fact that our negative laparotomy rates (15.4%) are far higher than the published rates of 3.9% from worldwide high-volume centers. However, other research has shown that negative laparotomy incidences can range widely, from 6 to 36%. One reason is that more patients with blunt liver or splenic damage trauma can avoid having a laparotomy because the increased access to interventional radiology.³⁻⁵ Depending on the surgical experience of the care team, both unfavorable laparotomy rates and overall results may be affected.

Conclusion

This study's overall rates, results, and outcomes of trauma laparotomies are comparable to those from comparable European trauma systems, but they are different from data from locations with higher incidence of penetrating traumas.

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