



A COMPREHENSIVE STUDY ON THE ROLE OF LAPAROSCOPY IN ABDOMINAL TRAUMA

General Surgery

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ABSTRACT

Explorative laparotomy has been the mainstay of management in patients with blunt abdominal trauma. The advantage of laparoscopy is that it can provide both diagnostic and therapeutic interventions for those hemodynamically stable abdominal trauma patients.

Methods: 30 patients of blunt trauma abdomen were retrospectively studied for whom laparoscopic intervention was done.

Results: In our study 30 patients with abdominal trauma were included of which 22 (76%) had penetrating trauma and 8 had blunt trauma (24%). Among penetrating trauma, seven patients (31.8%) underwent therapeutic laparoscopy whereas diagnostic laparoscopy was done for 10 patients (45.5%).

Conclusions: Laparoscopy can be safely performed in haemodynamically stable patients of abdominal trauma for both diagnostic and therapeutic purposes and can help in avoiding the negative laparotomies.

KEYWORDS

Blunt trauma, exploration, laparoscopic approach.

INTRODUCTION

Explorative laparotomy has been the mainstay of management in patients with blunt abdominal trauma [1]. Shafan was the first to challenge the idea of mandatory laparotomies for abdominal trauma [2]. In recent review, surgical exploration in the setting of penetrating abdominal trauma has been associated with negative laparotomy rates of about 56% [3]. Negative or non-therapeutic laparotomies are associated with 15% morbidity rate [4]. The advantage of laparoscopy is that it can provide both diagnostic and therapeutic interventions for those hemodynamically stable abdominal trauma patients [5]. The solid organ and visceral injuries can be reliably assessed by laparoscopy however identification of intestinal injury is more challenging. Diagnostic laparoscopy must be as effective as CT scan in identifying injuries. There is a large range of abdominal injuries that can be treated laparoscopically in trauma setting [6]. The group of penetrating trauma patients presenting with stable vitals and negative ominous sign demands more complex decision making [6]. It is in this subset of patient where laparoscopy constitutes an important tool in potential elimination of non-therapeutic laparotomies [7].

AIMS & OBJECTIVES

To determine the efficacy of laparoscopy in hemodynamically stable abdominal trauma patients.

MATERIALS & METHOD

A retrospective study was done on thirty patients of abdominal trauma for whom laparoscopic intervention was done by General Surgery department at Indira Gandhi Institute of Medical Sciences, Patna from Aug 2019. To Aug 2020. All patients underwent detailed history taking and complete clinical assessment followed by Focused Assessment with Sonography for Trauma (FAST) Scan, and Computed Tomography (CT) scan wherever required. All of the patients included for the research were haemodynamically stable. Operative interventions with laparoscopy were classified as therapeutic (which included hemostasis, repair or resection of any injured structure including solid organ or hollow viscus, and diaphragmatic repair) and diagnostic (not requiring hemostasis or repair as in retroperitoneal hematoma). Cases with no intra-op abdominal finding was termed as negative laparoscopy.

Laparoscopic exploration was performed in supine position after creating pneumo-peritoneum. First port (10mm) was usually placed supra-umbilical and used for telescope. Rest other ports location and number were made according to the intra-abdominal findings. Whole abdomen was explored systematically including solid organs, hollow viscus and diaphragm.

RESULTS

In our study 30 patients with abdominal trauma were included of which 22 (76%) had penetrating trauma and 8 had blunt trauma (24%). Among penetrating trauma, seven patients (31.8%) underwent

therapeutic laparoscopy whereas diagnostic laparoscopy was done for 10 patients (45.5%). Rest 5 cases had negative laparoscopy. Among therapeutic laparoscopy 2 cases had liver laceration in which haemostasis was achieved by using cauterization and intra-corporeal stitching, 2 cases of diaphragmatic injury were repaired by intra-corporeal stitching. Remaining 3 cases of small bowel perforation were repaired using intra-corporeal suturing. Out of 10 diagnostic laparoscopies 7 cases were converted to laparotomies due to severe liver injuries (2 cases), splenic injury (2 cases), diaphragmatic injury (1 case) and combined large and small bowel injury (2 cases), while the remaining 3 cases of diagnostic laparoscopy had retroperitoneal hematoma. In blunt trauma cases therapeutic laparoscopy was done for 3 cases (24%), diagnostic laparoscopy for 4 cases (50%), and negative laparoscopy for 1 case (12.5%). Among therapeutic laparoscopy, 2 cases of diaphragmatic injury were repaired using intra corporeal prolene sutures and remaining one case of grade 4 splenic injury underwent laparoscopic splenectomy. Among diagnostic laparoscopy 1 case of major liver injury was converted to open whereas 3 cases had non-expanding retroperitoneal hematoma.

(Figure 1, Figure 2).

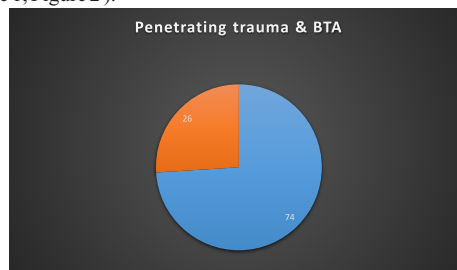


Figure 1-penetrating trauma & BTA

Figure 1: Type of injury. View Figure 1

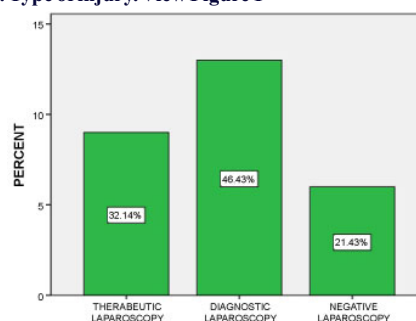


Figure 2: Classification of laparoscopic procedures.

DISCUSSION

The use and importance of laparoscopy is increasing with technical advancement in the field of trauma surgery [8,9]. Among the earliest work of laparoscopy in trauma, Gazzangia, et al. evaluated 37 patients in which they found negative laparotomy was avoided in 14 of the cases because of diagnostic laparoscopy [10]. In the largest study performed on role of laparoscopy in penetrating abdominal trauma, Ivatury's group [11] reported a multicenter retrospective study of 510 hemodynamically stable patients underwent diagnostic laparoscopy for penetrating trauma, negative or non-therapeutic laparotomy was avoided in 303 (59.4%) patients, and 26 patients received a therapeutic laparoscopic intervention [11].

In our study thirty patients with abdominal trauma were included in which 22 had penetrating trauma (74%), and 8 had blunt trauma (26%). In penetrating trauma therapeutic laparoscopy was done for seven patients (31.8%) whereas 10 patients had diagnostic laparoscopy (45.5%). 5 cases had no finding on laparoscopy. The most common penetrating abdominal injury was liver injury and was the same in [13]. In case of Blunt trauma abdomen 3 patients had therapeutic, 4 had diagnostic and 1 had negative laparoscopy.

Minimal invasive surgery has become a useful tool in the management of the abdominal trauma as laparoscopy has both diagnostic and therapeutic value. Further advantages are reduced morbidity, shortened hospital stay and lower cost.

CONCLUSION

Laparoscopy can be safely performed in haemodynamically stable patients of abdominal trauma for both diagnostic and therapeutic purposes and can help in avoiding the negative laparotomies.

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