

## REVIEW ARTICLE

### LAPAROSCOPY FOR ABDOMINAL INJURIES: A REVIEW STUDY

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**ABSTRACT:** Abdominal injuries are the commonest patients presenting in a surgical emergency. Diagnostic laparoscopy is a newer technique for analyzing and treating these patients who are hemodynamically stable. This article reviews the various techniques for diagnosing and treating abdominal injuries.

**KEYWORDS:** Laparoscopy, injuries, abdomen.

**INTRODUCTION:** The diagnosis and treatment of patients of abdominal injuries is evolving and newer techniques are emerging. Focused abdominal sonography is indicated for unstable patients. Laparoscopy could be appropriate for patients with seat belt injuries where intestinal injuries are suspected. A thorough diagnostic laparoscopy for identifying intestinal injury and exclude intraabdominal pathology. Laparoscope should be inserted through umbilicus. Stab injury entrance site should be closed for allowing creation of pneumoperitoneum. Diagnostic laparoscopy from gunshot is generally performed for excluding peritoneal breach.

For laparoscopy, patient should be placed supine, x-ray chest should be seen prior to patients of penetrating injuries chest. An occult pneumothorax with positive pressure ventilation could cause tension pneumothorax. The evaluation of patient with penetrating abdominal trauma is evolving and used for stable patients. Diagnostic laparoscopy could be used for select patients for anterior abdominal stab injuries.

Laparoscopy has an important role for thoracoabdominal stab injuries especially on left where there is diaphragmatic injury which could develop diaphragmatic hernia. The purpose of laparoscopy is to exclude or confirm intra-abdominal injury. Appropriate use of diagnostic laparoscopy reduces the incidence of non-therapeutic celiotomies. For penetrating injury, diagnostic laparoscopy could be used for excluding peritoneal breach or diagnose enteric injury.

**DISCUSSION:** A review study was searched in pubmed for patients having diagnostic laparoscopy for abdominal injuries. Numerous studies have shown that diagnostic laparoscopy for evaluation of abdominal injuries is safe, sensitive (94%) and specific (98%) procedure.<sup>1,2</sup>

Multicentre retrospective analysis of 510 patients with penetrating injuries (316 stab injuries, 194 gunshot injuries) were diagnosed by laparoscopy.<sup>3</sup> Laparoscopy is highly accurate in diagnosing peritoneal penetration. Thoracoscopy and laparoscopy has become a diagnostic tool of choice for diaphragmatic injuries.<sup>4, 5, 6</sup> The shortcomings of diagnostic laparoscopy are retroperitoneal and hollow viscus injuries.<sup>7,8</sup> The ability of laparoscopy for dissecting bowel, mobilizing colon, evaluation of pancreas and posterior gastric surface has been described.<sup>9</sup> Choi and Lim reported zero missed injuries in their diagnostic and therapeutic evaluation of 78 trauma patients.<sup>10</sup>

Their success was attributed to advanced skills in laparoscopy and their ability to carry out extensive abdominal exploration. Patients with left thoracoabdominal penetrating injuries have 24%

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diaphragmatic injuries. Laparoscopy has<sup>i</sup> selective advantage in evaluation of penetrating abdominal injuries. When fascial penetration is there, then there is negative laparotomy rate of nearly 50%.<sup>11</sup> Diagnostic laparoscopy has clear advantage with respect to predictive value in evaluation of penetrating injuries. With specificity and predictive value of 100%, diagnostic laparoscopy is followed by therapeutic laparoscopy.

Largest initial experience with therapeutic laparoscopy was reported where authors reported 26 of 28 patients had successful therapeutic procedures. Repair and resection of gastric injuries, small bowel, colonic injuries, splenectomies and pancreatectomies have been reported.<sup>12</sup> Taner found that 1.78 fold increase in hospital costs for patients undergoing non therapeutic laparotomy compared with diagnostic laparoscopy.<sup>13</sup> Studies showing decrease hospital stay, lesser cost have been reported by several authors with diagnostic laparoscopy.<sup>14, 15</sup>

We did laparoscopy for abdominal injuries mainly for blunt injury abdomen. Liver laceration was present for 6 patients and splenic hematoma for 2 patients. Laparoscopy for penetrating injury was done for 2 patients. There was mesenteric hematoma for which peritoneal lavage was done and bleeder was cauterized. Post-operative results were better for patients for patients who underwent laparoscopy rather than conventional. There was lesser pain and better cosmesis. The use of laparoscopy for abdominal trauma prevented unnecessary laparotomies.

Diagnostic laparoscopy could be used for select patients for anterior abdominal stab injuries. Diagnostic laparoscopy could greatly minimize unnecessary laparotomies. Therapeutic laparoscopy is feasible for abdominal injuries. Competency in basic laparoscopy is minimum requirement before attempting therapeutic laparoscopy. Trauma management and advanced laparoscopic skills are essential. Laparoscopy has an important role for thoracoabdominal stab injuries especially on left where there is diaphragmatic injury which could develop diaphragmatic hernia.

The purpose of laparoscopy is to exclude or confirm intra-abdominal injury. Appropriate use of diagnostic laparoscopy reduces the incidence of non-therapeutic celiotomies. Diagnostic laparoscopy is cost effective procedure for diagnosing penetrating injuries. For penetrating injury, diagnostic laparoscopy could be used for excluding peritoneal breach or diagnose enteric injury.

**CONCLUSION:** Injury is the commonest cause of death among younger people aged 14-44 years with male/female ratio of 2:1. Death from injury was predicted to rise by 65% by year 2020. Primary prevention aims to prevent an injury. Primary prevention should be educational with anti-drunk campaigns, legislative enforcement of speed limits.

Secondary injury prevention lessens the consequences of injury. These are designing safer cars, installing smoke detectors, making roads and vehicles safer. Tertiary prevention is when injury has occurred and aims to minimize the effect of injury on the person by improving delivery of health care by individuals and by systems.

The use of laparoscopy for abdominal injury is tertiary prevention which aims to improve the health system which gives better diagnosis, lesser pain, and better cosmesis and prevents unnecessary laparotomies. Appropriate use of laparoscopy for trauma may reduce the incidence of nontherapeutic celiotomies. The purpose of laparoscopy for trauma is to exclude or confirm intra-abdominal injury and therapeutic procedure required.

Laparoscopy for abdominal injuries for acute abdomen requires consideration of technical expertise of surgeon, available resources and other diagnostic tests available. Laparoscopy has

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become a useful tool for diagnosing and treating select cases of abdominal injuries. These studies and outcomes conclude cost effectiveness of diagnostic laparoscopy for evaluation of hemodynamically stable patient.

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