ORIGINAL ARTICLE

Laparoscopic Adhesiolysis – An Initial Experience of 15 Cases

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Abstract:

Post-operative adhesions frequently occur and can account for various symptoms like chronic abdominal pain and small bowel obstruction. Conventional adhesiolyšis by laparotomy results in an unacceptably high rate of recurrence. A minimally invasive procedure (laparoscopic adhesiolysis) might improve the outcome by inflicting less surgical trauma, but well-documented reports focusing on laparoscopic adhesiolysis for chronic abdominal pain and small bowel obstruction is lacking. The aim of this study was to evaluate the efficiency, safety, and outcome of laparoscopic adhesiolysis for recurrent adhesive small-bowel obstruction. Eighty nine patients (median age 48 years; range: 25–83 years) operated for small bowel obstruction and chronic abdomina! pain in the Department of General Surgery, Holy Family Red Crescent Medical College Hospital were included for the study. Pre-operative urgent blood tests and abdominal x-ray were done in all patients; 74 patients were treated with traditional laparotomy, while 15 selected patients underwent laparoscopy. For one (6.67%) of the 15 patients treated with laparoscopy a conversion was necessary because of the adhesion localization in the posterior abdominal wall. The median stay in hospital was 4.7 days for patients who underwent laparoscopy and 14.3 days for patients treated by traditional laparotomy. Only one (6.67%) case in laparoscopy group needed to be re-operated, while five (6.76%) cases in laparotomy group needed to be re-operated because of recurrence of obstruction by new adhesions. Overall number of complications contributing to morbidity were significantly lower in those who underwent laparoscopic adhesiolysis. Laparoscopic adhesiolysis is an effective treatment for small bowel obstruction, morbidity is lower, hospital stay is shorter, and resumption of a normal diet is faster.

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Introduction:

Post-operative adhesions occur after almost every abdominal surgery and are the leading causes of intestinal obstruction. Over 90% of patients undergoing abdominal operations develop post-surgical adhesions. This was not considered surprising, given the extreme delicacy of the peritoneum and the fact that apposition of two injured surfaces nearly always result in adhesion formation[1] (Fig.-1).

Fatal sequelae of intra-abdominal adhesions were reported as early as 1872 after removal of an ovarian tumour resulting in intestinal obstruction[2]. Adhesions are the most common causes of bowel obstruction and most likely result from gynecological procedures, trauma, appendectomies and other intestinal operations.[3] Adhesions have also been suggested to cause infertility and abdominal and pelvic pain. Many patients experience resolution of their symptoms after adhesiolysis [4-7].

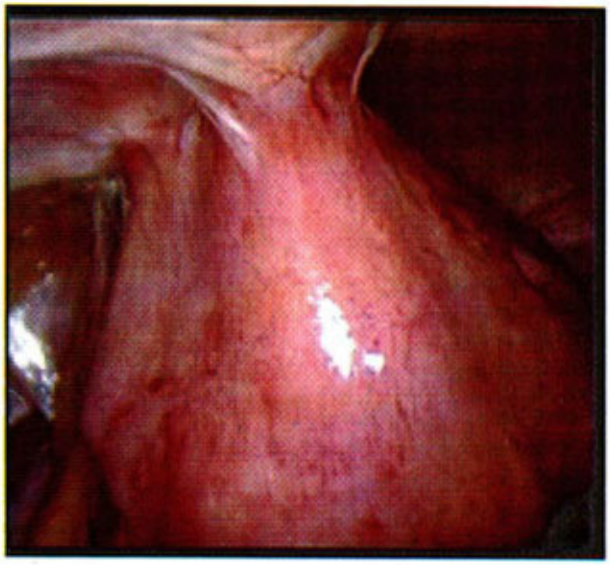

Figure-1: Laparoscopic view of intra-abdominal adhesion

Materials and method:

Patients undergoing operative management for chronic abdominal pain and small bowel obstruction at Holy Family Red Crescent Medical College Hospital from March 2007 to December 2009 were reviewed. Only patients that underwent surgery for adhesive small bowel obstruction were included in this study. All cases with tumour, obstruction, hernias, volvulus, anastomotic stenosis and so forth were excluded.

The pre-operative general assessment including urgent blood tests and abdominal x-ray for all the patients were done. Supine and upright abdominal radiography revealed dilated gas-filled loops of small bowel obstruction (Fig.-2).

All laparoscopic surgical procedures were done under general anesthesia. Endotracheal intubation and an orogastric tube was placed routinely to diminish the possibility of a trocar injury to the stomach and to reduce small bowel distention. A Foley catheter was inserted if bladder was distended or a long operation anticipated. A catheter was inserted near the end of the operation and removed in the recovery room when the patient was aware of its presence, to prevent bladder distention. The patient position was flat 0 degree during introducing the first trocar but after that a steep Trendelenburg position of 30 degrees, reverse Trendelenburg position and side to side rotation were used[8].

The operative procedures including type of surgery, intra-operative findings, need for bowel resection and duration of operation, age, gender, and type of previous abdominal surgery were also recorded. Length of post-operative stay was recorded. Complications including prolonged ileus, need for total parental nutrition (TPN), bowel resection and wound infection were recorded.

Results:

A total 89 patients were operated for chronic abdominal pain and small bowel obstruction by postoperative adhesions in the Department of General Surgery, Holy Family Red Crescent Medical College Hospital. Seventy four patients were treated with traditional laparotomy, while 15 selected patients

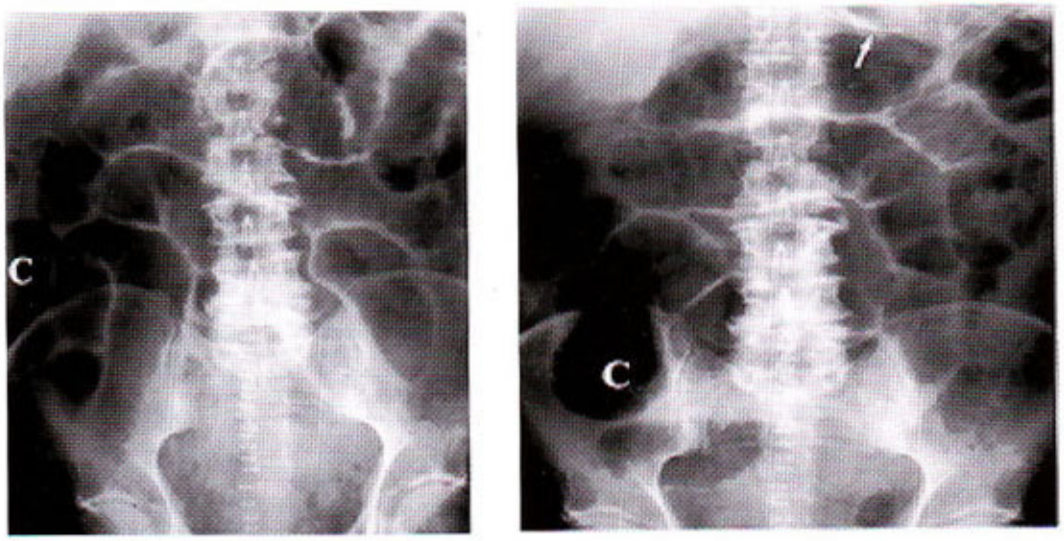

Figure-2: Radiological view of adhesive small bowel obstruction in 52 years old woman

underwent laparoscopy. The diagnostic accuracy of laparoscopy group was very high. Fourteen operations were completed entirely laparoscopically. Only in one (6.67%) of 15 patients treated with laparoscopy a conversion was necessary because of the adhesion localization in the posterior abdominal wall. Primary puncture site for insufflations of the abdomen was done by the Hassan technique in 10 patients and umbilical Veress needle placement in five patients. No immediate bowel injury was noted in any of the above methods.

The median stay in hospital was 4.7 days for patients who underwent laparoscopy and 14.3 days for patients treated with traditional laparotomy. Only one (6.67%) patient required re-operation within four days after laparoscopy for unidentified bowel injury, while five patients (6.76%) who underwent laparotomy needed to be re-operated because of recurrence of obstruction by new adhesions. Wound infections occurred in 5.2 percent in laparoscopic group and 19.1 percent in open group.

The mean age of the patients was 48 years (25–83 years). There were no significant difference in sex. The number of previous abdominal surgery was also recorded. One patient presented with small bowel obstruction without history of previous abdominal operation.

Overall number of complications contributing to morbidity were significantly lower in those who underwent laparoscopic adhesiolysis.

Discussion:

Peritoneal adhesions following open surgery account for 74% of all bowel obstructions[9]. Morbidity is associated with long incisions, prolonged post-operative pain, and long ileus who require surgery for adhesive small bowel obstruction. Usually, laparotomy results in incisional hernia formation and further adhesion formation, with a re-admission rate of at least 32% [10,11].

Laparoscopic surgery with reduced surgical trauma, hospital stay, morbidity such as post-operative pain, ileus, post-operative complication and subsequent incidence of

adhesions and incisional hernias, may offer advantages to patients undergoing surgery for adhesive small bowel obstruction.

Laparoscopy allows to perform the same surgical procedure as open surgery, or even to schedule the appropriate medical therapy in the presence of concomitant disease [12,13].

In some previous studies the results of laparoscopy for adhesive small bowel obstruction were retrospectively compared with those of laparotomy, and they found that the complication rate was significantly lower in laparotomy group. Wullstein et al reported a 26.9% rate of bowel injury in the laparoscopy group versus 13.5% in the laparotomy group[14].

It has been considered a relative contraindication in patients who have undergone previous abdominal surgery. However, at least 50 percent of patients with adhesive small bowel obstruction have a single obstructive band[15]. These patients are ideal candidates for laparoscopic lysis of adhesions. It has been suggested that laparoscopy reduces the post-operative adhesion formation when compared to laparotomy, further enhancing its appeal as an option in the treatment of small bowel obstruction [16,17].

The benefits of laparoscopy have to be weighed against the potential inability to achieve pneumoperitonium and the risk of bowel injury from initial trocar insertion or instrumentation. Trocar perforation has been reported to be as high as 3.7% with blind cannulation[18]. In this series, the Hasan technique as well as alternate needle site insertion allowed safe entry into the abdominal cavity.

The conversion rate of approximately 6.67% is well within the published rates of 6% to 52% [19]. Many of the studies with lower conversion rates have been criticized for a higher re-operation, due to inadequate adhesiolysis[20,21]. No patients in laparoscopic group required immediate re-operation. This result is markedly different than Bailey et al[22] who reported an early re-operation rate of 14% in those who were treated laparoscopically.

Additionally, it was found that those who were converted had no difference in morbidly when compared to the open group. Therefore, an attempt at laparoscopy did not harm the patients and it may be recommended as an initial therapeutic step.

The hospital stay after laparoscopy is shorter when compared with open controls, and the patients experience a faster recovery [23,24].

The absolute and relative contraindications to laparoscopy in treatment of abdominal emergencies are same as for elective procedures[25,26], which are uncorrected coagulopathy, haemodynamic instability, abdominal wall infection, severe cardiopulmonary disease, and multiple previous upper abdominal procedures.

The overall number of complications and length of hospital stay were significantly decreased in those treated laparoscopically compared to the traditional laparotomy group. Experiences from this study simulate with other studies by Freys et al[27] and Ibrahim et al[28] all of which support the concept of shorter hospital stays and fewer complications. Additionally, all emphasize, as it is done in this study, the need for careful patient selection, adequate technical skill, and prudent judgment regarding conversion to laparotomy.

Adhesion formation after operative surgery is common. When compared to laparotomy, laparoscopy has been shown to result in less adhesion formation. All studies have shown that laparoscopic management of adhesive small bowel obstruction is feasible and faster with a shorter hospital stay. Laparoscopic surgery with less post-operative analgesics and more rapid convalescence increase prompt recovery of gastrointestinal function and return to normal activities. Open adhesiolysis should be reserved for the worst possible cases where laparoscopic adhesiolysis has failed. It is therefore concluded that laparoscopy is an excellent diagnostic and therapeutic modality in adhesive small bowel obstruction, and the majority can be managed with minimum complications.

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