



ORIGINAL ARTICLE

THE ROLE OF LAPAROSCOPY IN THE MANAGEMENT OF ACUTE BOWEL OBSTRUCTION

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Abstract

Aim: Adhesions are a common sequela after abdominal surgery. Adhesions are an important etiology of acute or chronic intestinal obstruction. The aim of this prospective clinical trial study is to evaluate the use of laparoscopy in management of clinically diagnosed adhesive intestinal obstruction

Methods: Fifty six patients with adhesive small bowel obstruction underwent laparoscopic adhesiolysis between April 2008 to April 2100 in Suez Canal University Hospital.

Results: Laparoscopic adhesiolysis was done to 40 men and 16 women, with a mean age of 43.5 years. Thirty six patients had one and 18 patients had two prior abdominal or pelvic operations. The types of adhesions were identified laparoscopically in all patients: isolated bands were found in 13 patients, entero-peritoneal angulation, in 14; entero-enteral angulation, in 19; and extensive dense and matted intra-abdominal adhesions, in 10 patients. Fifty two patients (92.9%) were successfully treated laparoscopically; Conversion was required in 4 cases (7.14%). The mean procedural time was 60 minutes in laparoscopic procedure and 82 minutes in laparotomy. Intestinal serosal injury occurred during laparoscopic adhesiolysis in 3 patients (5.4%) that were successfully repaired laparoscopically by ser-serous suturing. Two patients underwent laparotomy had had wound infection that responded well to antibiotic, There was no mortality.

Conclusion: Laparoscopic adhesiolysis is the preferred approach for treating adhesive small intestinal obstruction.

Keywords: Laparoscopy, intestinal obstruction, adhesion.

INTRODUCTION

Small bowel obstruction (SBO) is a commonly encountered condition leading to surgical consultation worldwide. In western countries, postoperative adhesions are the most common cause of (SBO)⁽¹⁾ followed by hernias, primary and metastatic tumors, and inflammatory disorders.⁽²⁾ The incidence of an

adhesive SBO after open abdominal surgery is between 12 to 17%.⁽³⁾

Historically, laparotomy and open adhesiolysis have been the treatment for patients requiring surgery for the SBO. Unfortunately, this often leads to further formation of the intra-abdominal adhesions with approximately 10% to 30 %of patients requiring another

laparotomy for recurrent bowel obstruction.⁽⁴⁾

Laparoscopy has revolutionized the field of general surgery. Laparoscopic adhesiolysis for SBO was first reported by Bastug et al⁽⁵⁾ in 1991 in 1 patient was single adhesive band. As experience and technology in laparoscopy have improved, historical contraindications (morbid obesity, previous laparotomy, and so on) have become relative to the surgeon's level of proficiency in minimally invasive techniques.

Although there is an inherent appeal for laparoscopy in its potential to minimize short and long term wound complications and peri-operative morbidity related to laparotomy and to theoretically induce fewer subsequent adhesions than a traditional laparotomy incision, the adoption of laparoscopy in the treatment of SBO has become concerns for iatrogenic bowel injury and working space issues related to bowel distention.⁽⁶⁾

PATIENTS AND METHODS

Fifty six patients with adhesive small bowel obstruction underwent laparoscopic adhesiolysis between April 2008 to April 2100 in Suez Canal University Hospital. Patients with SBO of non-adhesive-related etiologies and patients with colonic obstruction were excluded. SBO was diagnosed on the basis of clinical examination and confirmed by plain abdominal radiography and/or abdominal-pelvic computed tomography. Informed consent for laparoscopy with possible conversion was obtained.

Data obtained included demographic factors (age, gender), previous medical and surgical history, clinical and radiographic parameters, intra-operative parameters (type of adhesion, procedure time, conversion) and reasons for conversion if needed. Post-operative parameters include overall morbidity, day of the first bowel movement and duration of hospital stay. The study was approved by the Faculty of Medicine, Suez Canal University Research Ethics Committee.

Laparoscopic Procedure: Pneumoperitoneum was established with an open technique. For the safe insertion of trocars, the initial trocar was inserted under direct vision away from the scars in an attempt to avoid adhesions. After detailed inspection of the abdominal cavity; division of adhesions was performed with sharp scissors. Dense adhesions between the abdominal wall and bowel loops were removed by dissecting the preperitoneal space. If all obstructive adhesions cannot be lysed then conversion to an open procedure was strongly considered.

Post-operative: The patients were admitted in the surgical ward for postoperative care. Nasogastric tube was inserted to all patients, nothing per mouth, and I.V. fluids with fluid balance chart until restoration of bowel

movements. Antibiotics and appropriate analgesics were given. After presence of good bowel movement, nasogastric tube was removed and oral fluid intake was started. Discharge from the hospital when general condition permits. Follow up of the patient in the out patients clinic for 12 months.

RESULTS

The patients who underwent laparoscopic adhesiolysis comprised 40 men and 16 women, with a mean age of 43.5 years (range 27-60years). Thirty six patients had one and 18 patients had two prior abdominal or pelvic operations. The list of prior surgical interventions is outlined in Table 1. The majority of the initial diseases (89.3%) necessitating the first operation were benign. The most common procedure that had been performed previously was appendectomy. This was followed by prior small intestine surgical intervention (n=11) then colorectal surgery (n=9).

The types of adhesions were identified laparoscopically in all patients: isolated bands were found in 13 patients, entero-peritoneal angulation, in 14; entero-enteral angulation, in 19; and extensive dense and matted intra-abdominal adhesions, in 10 patients.

Fifty two patients (92.9%) were successfully treated laparoscopically without conversion to laparotomy. Conversion was required in 4 cases (7.14%) because of dense adhesion and /or lack of working space.

The mean procedural time was 60 minutes in laparoscopic procedure and 82 minutes in laparotomy. Intestinal serosal injury occurred during laparoscopic adhesiolysis in 3 patients (5.4%). That was successfully repaired laparoscopically by ser-serous suturing. Two patients underwent laparotomy had had wound infection that responded well to antibiotic. There was no mortality. Patients started oral intake after initial bowel movements. Mean time for initial bowel movements was 2 days in laparoscopy and 3 days in laparotomy. Average hospital stay was 8 days (range 6-14 days) and 13 days (10-18 days) in patients with laparoscopy and laparotomy, respectively.

During follow-up for 12 months, one patient who had a laparoscopic procedure developed recurrent small bowel obstruction and he improved with nil orally and intravenous fluids for a few days and has not had any further episodes of obstruction. One patient in the conversion group also had recurrent obstruction and reopened.

Table 1. Historical and clinical details of patients who underwent laparoscopic adhesiolysis.

	No. of patients (n=56)
Age (years)	
<40	26 (46.4%)
≥40	30 (53.6%)
Sex	
Male	40 (71.4%)
Female	16 (28.6%)
No. of previous operations	
1	36 (64.3%)
2	20 (35.7%)
Types of previous abdominal operations	
Appendectomy	20 (35.7%)
Small intestine surgery	11 (19.6%)
Colorectal surgery	9 (16.1%)
Gynecological surgery	7 (12.5%)
Liver, biliary, pancreatic surgery	4 (7.1%)
Gastric surgery	3 (5.4%)
Hernia surgery	2 (3.6%)
Location of obstruction	
Proximal	24 (42.9%)
Distal	32 (57.1%)
Types of adhesion	
Isolated band	13 (23.2%)
Entero-peritoneal angulation	14 (25%)
Entero-enteral angulation	19 (33.9%)
Dense and matted	10 (17.9%)

Table 2. Surgical treatment results of the fifty-six patients.

	Laparoscopy n=52	Laparotomy n=4
Mean operative time(min)	60 (range45-100)	82 (range60-110)
Average post-operative stay (days)	8 (range6-14)	13 (range10-18)
Mean time for bowel movement (days)	2 (range1.5-4)	3 (range2-4)
Intra-operative complications	3 (5.4%)	0 (0%)
Post-operative complications	0 (0%)	2 (3.6%)
Recurrent attack of OBS	1(1.8 %)	1(1.8 %)
Mortality	0 (0%)	0 (0%)

DISCUSSION

The precise role of laparoscopic surgery in the treatment of adhesive SBO remains intensely debated. A number of reports clearly demonstrate its usefulness and safety in the hands of experienced laparoscopic surgeons, yet concerns remain as to whether this technique may be recommended as a standard treatment in affected patients.⁽⁷⁾

In the present study, conversion rate of 7.14% compares favorably to existing reports in which conversion rates range from 6.7% to 43%.⁽⁷⁻⁹⁾ Conversion was required because of dense adhesion and /or lacking of working space. Grafen et al⁽¹⁰⁾ reported conversion rate of 30% because of inadequate laparoscopic control due to intestinal distension, extensive adhesions, iatrogenic intestinal perforation whether small intestine or colonic perforation and the presence of necrotic segments of the small bowel necessitating secondary open resection. These reasons of conversion were also reported by Borzellino et al,⁽¹¹⁾ Suter et al,⁽⁶⁾ Levard et al,⁽¹²⁾ and León et al.⁽¹³⁾

Operative time ranged from 45-100 minutes for laparoscopy cases and up to 110 minutes in converted cases. This is comparable with many other reports.^(10,13-15)

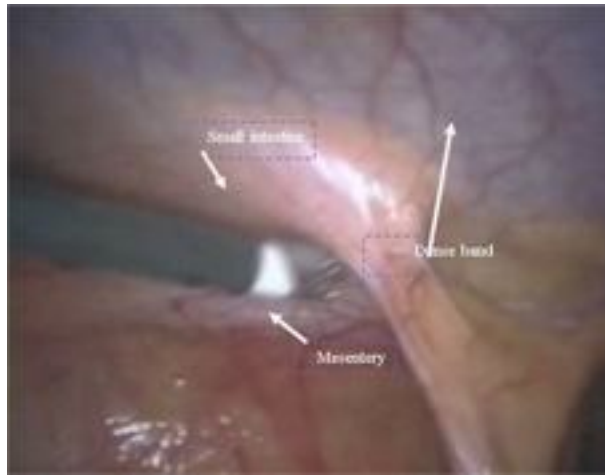


Fig 1. Shows small intestinal obstruction due to dense band which. The band is attaching the small intestine to the right lateral wall.



Fig 2. Shows adhesions during adhesionolysis of adhesions using hook and diathermy.

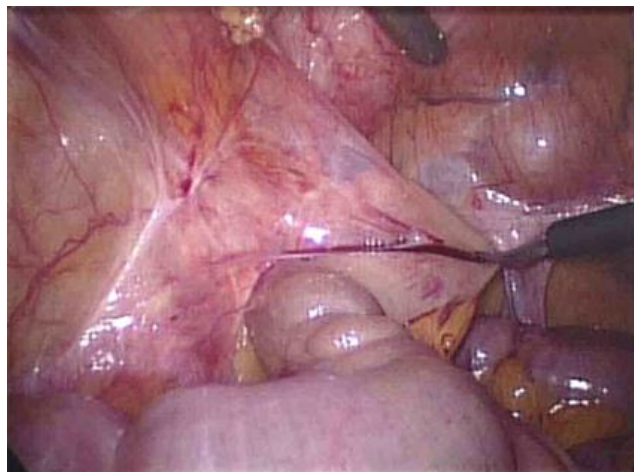


Fig 3. Shows adhesive intestinal obstruction due, extensive adhesions in the right lower quadrant being lysed with the use of bipolar scissors.

Literature data reported a rate of intra-operative complications of 0-16.5% and the rate of post-operative complications was 4.5-31%.^(5,6,12,14,16) The most severe intra-operative complication is small bowel perforation, which may occur at the time of first trocar placement, during manipulation of the bowel, or during lysis of the adhesion. Intra-operative complications in our study occurred in three patients (5.4%) of intestinal serosal injury which was managed laparoscopically. None of them included bowel perforation.

Two patients (3.6%) in converted group had wound infection post-operatively which responded well to antibiotics.

Post-operative hospital stay in the present study is within values reported in other series; 6-12 days for the laparoscopy group and 11-20 days for the converted group.^(6,10,13,16-19)

Mean time for post-operative bowel movements was 2 and 3 days for laparoscopy and converted group, respectively. This matches results of Zerey et al,⁽⁹⁾ Grafen et al,⁽¹⁰⁾ Borzellino et al,⁽¹¹⁾ and Wang et al,⁽¹⁶⁾ reports. We concluded that laparoscopic adhesiolysis may be a worthwhile procedure in patients with acute intestinal obstruction. A quicker recovery in terms of hospital stay, bowel movement, and lower postoperative complications had also been observed and reported. Also laparoscopy can assist in making the diagnosis and for pinpointing the pathology.

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