

The Role of Laparoscopic Adhesiolysis in the Treatment of Patients with Chronic Abdominal Pain or Recurrent Bowel Obstruction

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ABSTRACT

Background: Major abdominal operations result in random and unpredictable scar tissue formation. Intraabdominal scar tissue may contribute to recurrent episodes of bowel obstruction, chronic abdominal pain, or both. Laparoscopic adhesiolysis may provide relief of symptoms in patients with prior abdominal surgery with chronic abdominal pain or recurrent bowel obstruction.

Methods: Between September 1996 and April 1999, 35 patients underwent laparoscopic adhesiolysis. Fifteen of the patients had adhesiolysis in conjunction with other major laparoscopic procedures and were excluded from the study. Twenty of the patients who underwent adhesiolysis only were retrospectively assessed for symptomatic relief as well as peri-operative morbidity and mortality.

Results: Two of 20 patients were not available for long-term follow-up. In the 18 remaining patients, laparoscopic adhesiolysis was performed on 13 patients with abdominal pain and 5 patients with recurrent bowel obstruction. The follow-up period ranged from 1 to 32 (mean 11) months. Sixteen of the 18 (88.9%) operations were completed laparoscopically. Two operations were converted to open for partial enterectomy. An additional enterotomy was repaired laparoscopically. All 3 operative complications were encountered in patients operated on during hospitalization for active bowel obstruction. No mortalities or blood transfusions occurred. One patient required rehospitalization for nonoperative management of an intraabdominal hematoma. Fourteen of the 18 (77.8%) had subjective improvement in their quality of life after operation. Only 1 patient has required repeat adhesiolysis.

Conclusions: Laparoscopic adhesiolysis is a safe and

effective management option for patients with prior abdominal surgery with chronic abdominal pain or recurrent bowel obstruction not attributed to other intraabdominal pathology. Laparoscopic intervention in patients with active bowel obstruction may increase the risk of operative complications.

Keywords: Laparoscopy, Adhesiolysis, Lysis of adhesions, Abdominal pain.

INTRODUCTION

Major abdominal operations often result in random and unpredictable intraabdominal scar tissue formation. Intraabdominal scar tissue may result in symptomatic bowel obstruction. Diagnostic laparoscopy is often used to identify specific intraabdominal pathology as the cause for chronic abdominal and pelvic pain.¹⁻⁶ However, few studies have determined that laparoscopic adhesiolysis, as the only operative intervention, ameliorates a significant amount of chronic abdominal pain.^{7,8} Furthermore, only anecdotal reports of the role of laparoscopic adhesiolysis in the setting of acute or chronic bowel obstruction have been published.^{9,10} Our study was designed to investigate the role of laparoscopic adhesiolysis in the treatment of patients with chronic abdominal pain or recurrent bowel obstruction, not attributed to other obvious pathology.

METHODS

Between September 1996 and April 1999, hospital records of 35 patients who underwent laparoscopic adhesiolysis were retrospectively reviewed. Fifteen patients, who had other major abdominal procedures in conjunction with adhesiolysis, were excluded from the study. These procedures included cholecystectomy (7), repair of incisional hernia (2), appendectomy (2), gastrotomy (2), colon resection (1), and Nissen fundoplication (1). The extensive adhesiolysis in these 15 patients who were operated on for other specific pathologies was considered incidental. Therefore, these patients were excluded from our study. After obtaining approval from the institutional review board, the inpatient and outpa-

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tient medical records of the remaining 20 patients were reviewed. Additionally, questionnaires were sent to these 20 patients. Assessment of symptomatic relief was determined by the questionnaire, and peri-operative morbidity and mortality were assessed by reviewing the inpatient and outpatient charts as well as through the review of the responses to the questionnaires.

RESULTS

Of the 20 patients who underwent adhesiolysis only, 2 patients were lost to follow-up. The remaining 18 patients were available for long-term follow-up. Patients comprised 17 females and 1 male, with a mean age of 52 years (range 35 to 78). All operations were completed by 1 surgeon experienced in laparoscopy, at a major medical institution under general anesthesia. Thirteen operations were undertaken for chronic abdominal/pelvic pain, and 5 for bowel obstruction. Of the 5 patients with bowel obstruction, 3 were hospitalized with acute bowel obstruction; and 2 were operated on electively for treatment of chronic, intermittent bowel obstruction. All patients had prior abdominal operations. The average number of previous abdominal procedures was 2.6 (range 1-4; **Table 1**). Preoperatively, patients were worked up extensively with a combination of computerized tomography of the abdomen and pelvis, upper and lower gastrointestinal contrast studies, and upper and lower gastrointestinal endoscopies. These studies were obtained to rule out obvious intraabdominal/visceral pathology that would explain the patient's chronic abdominal pain, intestinal obstruction, or both. Only when all studies were considered negative for such processes were the patients considered for laparoscopy and adhesiolysis. **Table 2** summarizes the preoperative workup for all patients.

Postoperatively, 14 of the 18 patients had complete resolution of their symptoms, and an additional 2 patients had partial resolution of their symptoms (overall 88.9% response to adhesiolysis). Seven of these 16 patients reported recurrence of some of their symptoms from 1 week to 6 months following their adhesiolysis. After a mean follow-up period of 11 months (range 1 – 32 months), overall, 14 patients (77.8%) reported an improvement in their quality of life and responded that they would have the adhesiolysis again. Three patients continue to require intermittent use of medications for pain control.

Of the 18 operations performed, 3 resulted in enterotomies, 2 of which required conversion to laparotomy for resection of devitalized bowel. The 3 enterotomies were encountered in the 3 patients hospitalized preoperatively with acute bowel obstruction. The 15 patients who did not suffer enterotomies were all discharged within 24 hours after their operations. The remaining 3 patients were discharged from 10 days to 21 days following their operations.

All 18 patients were discharged without requiring a blood transfusion. No peri-operative deaths occurred.

Cholecystectomy	12
Appendectomy	9
TAH +/- BSO	9
Lysis of adhesions	4
Partial colonic resection	3
Exploratory laparoscopy	2
Nissen fundoplication	1
C-section	1
Bladder suspension	1
Abdominal wall mass excision	1
Partial nephrectomy	1
Right salpingoophorectomy	1

CT scan of the abdomen and pelvis	19
UGI/EGD	14
LGI/Colonoscopy	16
All 3 studies	13

ERCP	2
Nissen fundoplication	1
Breast biopsy	1
Intra-abdominal hematoma	1

One patient was readmitted postoperatively for nonoperative management of intraperitoneal hematoma. Another patient who required laparotomy for bowel resection underwent a subsequent laparotomy for recurrent bowel obstruction. Six other patients have been hospitalized for unrelated medical and surgical conditions (**Table 3**).

DISCUSSION

Postoperative intestinal adhesion formation is random and unpredictable. Intestinal obstruction is commonly attributed to intraabdominal scar tissue, a claim that is frequently substantiated by operative findings in patients requiring surgical intervention. Abdominal and pelvic pain in association with intraabdominal scar tissue are not as well understood. Mueller⁷ and Kresch¹¹ have suggested that adhesions can be the cause of pain if they limit the movement or distensibility of peritoneum or bowel. Stretching pain secondary to adhesions attached to the liver, intestine, or other organs may also contribute to chronic abdominal pain;¹² and the adhesions can partially or intermittently cause intestinal obstruction. One study noted that small adhesions appear to cause recurrent pain without other symptoms, whereas large adhesions produce pain in combination with symptoms indicative of intermittent bowel obstruction.¹³

Enthusiasm for elective adhesiolysis is often limited by the concern about subsequent scar tissue formation following major laparotomy. Although the etiology for intraabdominal scar tissue formation is likely to be multifactorial, the inflammatory response, which is decreased in laparoscopy versus laparotomy,¹⁴⁻¹⁶ has been considered a cause for subsequent scar tissue formation. Many studies suggest a lower incidence of scar tissue formation following laparoscopic procedures.¹⁷⁻²¹ Therefore, it is possible that laparoscopic adhesiolysis would result in immediate resolution of symptoms attributed to intraabdominal adhesions, with less likelihood of subsequent recurrence of adhesions and symptoms.

Our operative technique includes complete lysis of all adhesions that have resulted in fixation of the small and large intestine to the abdominal wall. Except in those patients with operative findings of an obvious transition from dilated to decompressed bowel, we do not routinely inspect the entire length of the small intestine, searching for interloop adhesions. We believe excessive manipulation of the small intestine may increase the risk of

enterotomies. So far, with a mean follow-up of 11 months, the only patient who has required repeat abdominal surgery for recurrent symptoms is 1 of the 3 patients who required major bowel resection at the time of her initial adhesiolysis, supporting the adequacy of our technique of adhesiolysis.

Identification of other intraabdominal pathology through the extensive use of less-invasive preoperative testing should result in a low incidence of nontherapeutic adhesiolysis. Fifteen patients excluded from our study had other major abdominal procedures performed at the time of their adhesiolysis. All of these patients were extensively evaluated preoperatively and found to have other possible sources for their chronic abdominal pain. During their operations, however, all 15 patients underwent similar extensive adhesiolysis to prevent a future operative procedure. We believe that an extensive preoperative workup should be used before attributing symptoms of chronic abdominal pain to intraabdominal scar tissue. Additionally, we believe that patients with unusual preoperative abdominal pain should undergo adhesiolysis at the time of their laparoscopy for other preoperatively detected intraabdominal pathology.

As early as 1992, several authors suggested that laparoscopy in the setting of bowel obstruction may yield inadequate enterolysis, and is likely to be dangerous.^{22,23} More recently, other authors have demonstrated acceptable results with laparoscopic lysis of adhesions in the setting of acute intestinal obstruction.^{24,25} In our study, all 3 patients who underwent adhesiolysis after hospitalization for acute bowel obstruction sustained enterotomies. One was repaired laparoscopically, but 2 required conversion to laparotomy for resection of devitalized bowel, and 1 of the 2 patients has since required another operative procedure for recurrent bowel obstruction. In contrast, the 2 patients who underwent adhesiolysis for management of chronic bowel obstruction had no operative morbidities. Based on this experience, we conclude that laparoscopic adhesiolysis performed for management of acute bowel obstruction may result in a high incidence of operative complication.

Long-term effectiveness of laparoscopic adhesiolysis remains unknown at this time. An overall 77.8% improvement in symptoms following laparoscopic adhesiolysis supports liberal use of diagnostic laparoscopy and lysis of adhesions in patients with chronic abdominal pain, bowel obstruction, or both, who have previously under-

gone major abdominal surgery. To improve the yield of such an approach, all appropriate noninvasive studies should be exhausted before laparoscopy is considered.

CONCLUSION

In conclusion, laparoscopic adhesiolysis for chronic abdominal pain, recurrent bowel obstruction, or both, is safe and effective and results in minimal peri-operative morbidity. In the setting of acute bowel obstruction, however, laparoscopic intervention may increase the risk of operative complications.

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