

Laparoscopic Adhesiolysis and Relief of Chronic Pelvic Pain

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ABSTRACT

Objective: To evaluate the short- and long-term results of laparoscopic enterolysis in patients with chronic pelvic pain following hysterectomy.

Methods: Forty-eight patients were evaluated at time intervals from 2 weeks to 5 years after laparoscopic enterolysis. Patients were asked to rate postoperative relief of their pelvic pain as complete/near complete relief (80-100% pain relief), significant relief (50-80% pain relief), or less than 50% or no pain relief.

Results: We found that after 2 to 8 weeks, 39% of patients reported complete/near complete pain relief, 33% reported significant pain relief, and 28% reported less than 50% or no pain relief. Six months to one year postlaparoscopy, 49% of patients reported complete/near complete pain relief, 15% reported significant pain relief, and 36% reported less than 50% or no pain relief. Two to five years after laparoscopic enterolysis, 37% of patients reported complete/near complete pain relief, 30% reported significant pain relief, and 33% reported less than 50% or no pain relief. Some patients required between 1 and 3 subsequent laparoscopic adhesiolysis. A total of 3 enterotomies and 2 cystotomies occurred, all of which were repaired laparoscopically.

Conclusion: We conclude that laparoscopic enterolysis may offer significant long-term relief of chronic pelvic pain in some patients.

Key Words: Laparoscopy, Adhesiolysis, Pain relief, Complications.

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INTRODUCTION

Chronic pelvic pain is a complex subject that presents a difficult management challenge. The difficulty in evaluation of pain lies in the premise that while pain often has underlying physical pathology, pain is subjective, and pain thresholds vary among people. Endometriosis and adenomyosis are organic diseases believed to cause chronic pelvic pain.¹ Pelvic adhesions are physical pathologies that also seem to be responsible for some forms of chronic pelvic pain.²

Our practice is a referral center, and many of our patients have undergone multiple prior surgeries. Patients have often inquired about the amount of pain relief they can expect after operative laparoscopy for adhesiolysis and enterolysis. This study was undertaken to help answer this question. In this study, we examined the efficacy of laparoscopic enterolysis in providing pain relief in women with bowel adhesions after hysterectomy. Patients found to have other causes possibly responsible for their chronic pelvic pain were excluded. All patients had undergone prior hysterectomy therefore excluding any uterine source of pain, such as adenomyosis. The study objective was to evaluate subjective relief of chronic pelvic pain after laparoscopic lysis of dense postoperative bowel adhesions.

MATERIALS AND METHODS

Forty-eight women, age 26 to 59 (median 41), with chronic pelvic pain, who at the time of laparoscopy were found to have dense bowel adhesions, were included in this study. All patients had undergone between 1 and 8 prior abdominal surgeries. Forty-two patients had prior abdominal hysterectomy, 5 patients had undergone vaginal hysterectomy, and 1 patient had undergone total laparoscopic hysterectomy. In addition to hysterectomy, other prior surgeries included bilateral or unilateral salpingo-oophorectomy, appendectomy, cesarean section, treatment of endometriosis, lysis of adhesions, removal of ectopic pregnancy, cholecystectomy, myomectomy, tubal ligation, bowel resection, abdominoplasty, vaginal vault prolapse repair, and partial gastrectomy. Four patients complained of gastrointestinal symptoms associated with intermittent bowel obstruction (intermittent

nausea and vomiting, and irregular bowel movements associated with abdominal pain).

The preoperative evaluation included tests to exclude other possible sources of chronic abdominal pain such as diverticulitis or diverticulosis, if indicated. The patients were counseled regarding operative laparoscopic procedures. Informed consent was obtained after potential risks, benefits, and alternatives were discussed at length. Outpatient mechanical and antibiotic preoperative bowel preparation was required of all patients.³ Patients diagnosed by laparoscopy as having bowel adhesions in the absence of endometriosis were the only cases included in the study. All patients were noted to have severe adhesions of the bowel, the omentum, or both to the anterior abdominal wall and often to prior surgical sites.

All surgeries were performed by 1 of the senior authors (CRN, FRN, CHN). Multiple puncture operative laparoscopy was performed using a carbon dioxide (CO₂) laser (Coherent, Palo Alto, CA) for cutting and bipolar electrocoagulation for hemostasis as previously described.³ Lysis of adhesions was accomplished by cutting as close to the side wall peritoneum and as far away from the bowel as possible. Hydrodissection was used whenever necessary to better distinguish surgical areas. The pelvis was copiously irrigated with lactated Ringer's solution at the end of the procedure, and minimal fluid was left in the abdomen. Interceed TC7 (Johnson & Johnson, Newark, NJ) was used in 14 cases.

No conversion to laparotomy was needed. Operative time averaged 150 ± 71 minutes. Postoperatively, patients were admitted for observation and bowel rest. They were allowed to drink only a small amount of water, and their diet was not advanced until passage of flatus. The Foley catheter was removed in the recovery room, unless otherwise indicated (ie, bladder neck suspension, cystotomy repair), and patients were vigorously ambulated on the day of surgery. Postoperative stay ranged from several hours to 3 days, with the exception of 1 patient who remained in the hospital for 6 days.

Eight intraoperative or postoperative complications were noted in patients undergoing their first laparoscopy. Two cystotomies and one enterotomy occurred, which were repaired laparoscopically. One patient was readmitted for 1 day for urinary retention, 2 had persistent ileus that required readmission and resolved with medical management, and 1 had gastroenteritis, possibly because of a drug allergy. One patient developed a post-

operative pelvic infection that was treated with laparoscopic drainage and irrigation, and intravenous antibiotics. Ultimately, this patient had recurrent pain and underwent laparotomy several weeks after her discharge to drain a sterile loculated fluid collection located in massive bowel adhesions that had reformed.

In patients who underwent repeat laparoscopy for recurrent pain, 2 complications were noted. One patient had an enterotomy while undergoing her second laparoscopy, and 1 patient had an enterotomy while undergoing her third laparoscopy. Both of these injuries were repaired laparoscopically.

Questionnaires regarding the recurrence of pelvic pain were completed during office visits or by mail at intervals of 2 to 8 weeks, 6 months to 1 year, and 2 to 5 years after laparoscopic enterolysis. Patients were asked to rate their pain relief on the following scale: complete/near complete relief (80-100% pain relief), significant relief (50-80% pain relief), and less than 50% or no pain relief.

RESULTS

The results from the questionnaires are summarized in **Table 1**. Forty-six of the original 48 patients answered questionnaires by mail or directly during follow-up office visit 2 to 8 weeks following surgery. Two patients were lost to follow-up. Of these 46 patients, 18 (39%) reported complete/near complete relief, 15 (33%) reported significant relief, and 13 (28%) reported less than 50% or no pain relief.

Thirty-three patients answered questionnaires 6 months to 1 year after surgery. Of these patients, 16 (49%) reported complete/near complete relief, 5 (15%) reported significant relief, and 12 (36%) reported less than 50% or no pain relief. In the latter group, 3 of the 12 patients reporting less than 50% or no pain relief went on to have subsequent surgery. One patient underwent 1 additional laparoscopic surgery and 2 required 2 further laparoscopic procedures.

Twenty-seven of the patients were followed from 2 to 5 years after laparoscopic enterolysis. Ten (37%) reported complete/near complete relief, 8 (30%) reported significant relief, and 9 (33%) reported less than 50% or no pain relief. In this group, 9 women required further surgeries. Seven patients underwent 1 further surgery and 2 required 3 subsequent procedures.

Table 1.
Short- and long-term pain relief after laparoscopic enterolysis
in patients with chronic pelvic pain.

Percentage of Pain Relief	Duration and Patient Follow-up		
	2-8 week postoperative 46 patients	6 months-1 year postoperative 33 patients	2-5 year postoperative 27 patients
Complete/near complete (80-100%) relief	18 patients (39%)	16 patients (49%)	10 patients (37%)
Significant (50-80%) relief	15 patients (33%)	5 patients (15%)	8 patients (30%)
Less than 50% or no pain relief	13 patients (28%)	12 patients (36%)	9 patients (33%)

Table 2.
Comparing the chronic pain relief after laparoscopic adhesiolysis and enterolysis
by different authors.

Author	Patient population	Percent of patients with pain relief	Time after laparoscopy
Chan & Wood ⁴	infertility	65.1	> 6 months
Frey et al ⁵	prior cholecystectomy	80% (45% complete + 35% substantial relief)	up to 30 months
Daniell ⁶	bowel adhesions	67%	3 months
Steege & Stout ⁷	chronic pelvic pain	88%	6 to 12 months
Fayez ⁸	postoperative adhesions	88%	1 year
Lavonius ⁹	postsurgical adhesion	77%	4 to 43 months
Present Study	prior hysterectomy, dense bowel adhesions	72%	2 to 8 weeks
		64%	6 months to 1 year
		67%	2 to 5 years

To compare our data to prior studies, we separated responses of those patients with less than 50% or no relief from the total number of patients with greater than 50% relief. (Table 2). Seventy-two percent of patients in our study reported greater than 50% pain relief after 2 to 8 weeks, 64% reported continued relief after 6 months to 1 year, and 67% of patients reported relief of their chronic pain 2 to 5 years after laparoscopy (Tables 1 and 2).

DISCUSSION

Women who have undergone prior hysterectomy and

other surgeries may report pelvic pain secondary to adhesions. With the advent and evolution of advanced operative laparoscopy, laparoscopic surgeons are able to evaluate and treat women with chronic pelvic pain in a less invasive fashion than conventional laparotomy.³ Postoperative adhesions after laparoscopy are often less frequent than those from laparotomy,¹⁰⁻¹² thus possibly averting future chronic pelvic pain.

Chronic pelvic pain is a complex entity that often has concrete pathologic causes. In our study, we focused on bowel adhesions as the primary physical source of

chronic pelvic pain after hysterectomy and examined the efficacy of treatment by operative laparoscopy. Patients with confirmed endometriosis and other pathological etiologies for pain were excluded. Some patients exhibited symptoms of intermittent, chronic bowel obstruction prior to surgery.

Although physical examination is not often helpful in the diagnosis of chronic bowel adhesions,¹³ patient history can be the key to diagnosis. Others have demonstrated that 97% of patients are able to precisely map the site of pathology, such as endometriosis or adhesions, preoperatively on a female body map.¹⁴ Patient history of prior abdominal surgery and bowel symptoms, such as intermittent nausea or vomiting associated with colicky-type pains over a discrete area, may indicate the presence of bowel adhesions. Diagnostic laparoscopy, however, is the gold standard for the diagnosis of pelvic adhesive disease.

Several authors have suggested theories on the mechanism of pain relief with enterolysis. In 1984, Kresch et al² compared laparoscopic findings from 100 women with chronic pelvic pain to 50 asymptomatic women who underwent laparoscopic tubal ligation. In his study, 29% of asymptomatic women were found to have pathology, such as endometriosis or adhesions, that in other patients has been found to cause pain. However, these incidental adhesions were filmy and did not seem to limit bowel mobility. Kresch and others have proposed that the bowel adhesions that restrict movement of the viscera are the types of adhesions that cause localized pain.² Therefore, the type and location of the adhesion may play the greatest role in the pain experienced.

Kresch's premise agrees with an earlier postulation by Lundberg et al in 1973 that a hollow organ, such as the bowel, is normally sensitive to increased tension on it.^{2,14,15} Adhesions that tether down the bowel could cause pain and symptoms consistent with subacute bowel obstruction. With normal peristalsis, the parietal peritoneum may be pulled on by adhesions to the bowel, thus causing pain. We studied adhesiolysis in patients who suffered from bowel or omental postoperative adhesions, or both of these. Our results indicate that such bowel adhesions may cause some types of chronic pelvic pain and that lysing these adhesions can offer relief to some patients. The majority of patients in our study (72%

after 2 to 8 weeks, 64% after 6 to 12 months, and 67% of patients after 2 to 5 years) reported significant relief from laparoscopic adhesiolysis that is similar to reported series in the literature (**Table 2**). Recently, Lavonius of Finland reported 77% pain relief in 22 patients who underwent laparoscopic adhesiolysis for chronic pain⁹. One woman had a recurrence of symptoms after being pain-free for 1 year. She underwent a repeat procedure and 1 year postoperative was pain-free.

In 1988, estimates of annual costs of hospitalizations related to adhesions exceeded 1 billion dollars. At that time, most surgical treatments for adhesions required laparotomy.¹⁶ Laparoscopic enterolysis may also help decrease costs by decreasing the number of days a patient is hospitalized and indirectly by a quicker postoperative recovery, which in turn decreases the number of work days missed by patients.

A small group of refractory patients in our study underwent repeat laparoscopic surgical evaluation and treatment. Six patients from the original group of 46 were truly refractory and experienced less than 50% or no pain relief despite subsequent surgery. Pelvic pain is a complex entity and, although these patients had organic pathology that was treated and normal pelvic anatomy restored, they still continued to have pain. One possible explanation is that post-adhesiolysis patients can continue to have phantom pain, and by the time the effect of phantom pain is gone, the adhesions have reformed. These patients may also have psychological issues relating to their chronic pelvic pain that need to be addressed. However, in general, physical disease should first be ruled out by diagnostic laparoscopy before pelvic pain is attributed to purely psychological causes. Perhaps new developments in pain mapping under conscious sedation laparoscopy will shed more light on this complex issue.

In summary, we have found that the majority of patients treated by laparoscopic enterolysis reported significant pain relief and did not require further surgery to treat their pain up to 5 years after surgery. Even in the hands of very experienced surgeons, risks are present that are associated with advanced laparoscopic procedures, and the risks, benefits, and alternatives should be reviewed fully with patients before any procedure is performed.

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