

Laparoscopy for chronic abdominal pain

M. E. Klingensmith, D. I. Soybel, D. C. Brooks

Department of Surgery, Brigham and Women's Hospital, Harvard Medical School, 75 Francis Street, Boston, MA 02115, USA

Received: 16 April 1996/Accepted: 30 May 1996

Abstract

Background: This purpose of this investigation was to evaluate the utility of laparoscopy in patients with chronic abdominal pain.

Methods: A retrospective review was performed of 34 patients who underwent laparoscopy for chronic abdominal pain. Average patient age was 39 years. The majority were women. Most had undergone abdominal surgery in the past.

Results: All procedures were performed laparoscopically. A positive finding was made in 65% of patients. Fifty-six percent of patients underwent adhesiolysis, but 26% required no operative intervention other than laparoscopic exploration. Notably, 73% of patients reported improvement in pain postoperatively, whether or not a positive finding had been made on laparoscopy.

Conclusions: This retrospective study suggests laparoscopy can identify abnormal findings and improve outcome in a majority of selected cases. Recommendations are provided for patient selection. Prior abdominal surgery is not an absolute contraindication to laparoscopic exploration for chronic abdominal pain.

Key words: Laparoscopy — Chronic abdominal pain — Adhesiolysis

Few investigations have considered the utility of laparoscopy solely for the evaluation of chronic abdominal pain [3, 4, 10]. The management of patients with persistent chronic abdominal pain, when other pathologic causes have been ruled out, remains a challenge to physicians and surgeons alike [2, 5]. Many patients experience pain which is refractory to the multimodality therapy often employed in the management of their care. In our institution, it is not uncommon for patients with chronic abdominal pain to be evaluated by a myriad of physicians, from gynecologists and gastroenterologists to neurologists and anesthesiologists specializing in chronic pain management. Surgeons become

involved in the care of these patients by consultation, and increasingly, as a "last resort" referral to seek a resolution of the chronic abdominal pain.

This study provides evidence that laparoscopic evaluation of selected patients, in a majority of instances, is beneficial in providing relief from chronic abdominal pain. Our findings provide a basis for recommendations for selection of patients who are likely to benefit from diagnostic laparoscopy.

Patients and methods

Patient characteristics

The records of patients who underwent exploratory laparoscopy between April 1991 and March 1995 were retrospectively reviewed. Those undergoing elective therapeutic laparoscopy (i.e., cholecystectomy) were excluded. Thirty-four patients with chronic abdominal pain were selected for inclusion in this study. Abdominal pain was considered chronic if it had persisted more than 2 months. In all patients selected for the study, the chronic pain was of unclear etiology, despite physical, laboratory, and radiographic evaluation.

Patient characteristics are summarized in Table 1. Mean patient age was 39 years, with a range of 21 to 75 years. The vast majority (85%) were women. On preoperative assessment, patients most commonly localized their pain to the right lower quadrant (32%), right groin (15%), or pelvic area (15%). Upon preoperative physical exam by the surgeon, reproducible tenderness was elicited in 70% of the patients. Twenty-four patients (70%) had a history of surgical exploration of either the abdomen or groin in the past. Six of these had undergone surgical intervention for an identical complaint of chronic pain in the past.

The mean number of consults per patient prior to surgical consultation was 1.3 (range 1–3): 40% internists, 33% gynecologists. Diagnostic studies prior to laparoscopy were performed an average of 1.4 times per patient (range 0–5 studies). Ultrasound was the most commonly performed test (in 14 patients), followed by UGI series (ten patients), CT scan (seven patients), and barium enema (seven patients). Smaller numbers of patients underwent MRI, colonoscopy, esophagogastrosopy, ERCP, HIDA scan, or Meckel's scan. In all studies in this series, only one was read as "abnormal." A HIDA scan revealed an atonic gallbladder in one 34-year-old woman who presented complaining of right lower quadrant pain.

Operative technique and postoperative care

All procedures were performed entirely by standard laparoscopic techniques. No patients required open laparotomy. Standard general anesthetic and postoperative management was utilized in all cases. The average length of postoperative inpatient stay was 1 day—range, 0–2 days.

Table 1. Patient characteristics ($n = 34$)

Age	39 years (21–75)
Sex	26 female, 5 male
Previous abdominal or groin surgery	24 patients
Previous surgery for similar complaint	6 patients
Preoperative reported location of pain	Right lower quadrant: 11 patients Right groin: 5 patients Pelvic area: 5 patients Left groin: 4 patients Right upper quadrant: 3 patients Left lower quadrant: 3 patients Periumbilical area: 3 patients

Table 2. Findings on laparoscopy

Finding	Number of times encountered	% of patients studied ^a
Adhesions	20	58
Normal abdominal contents	9	26
Endometrial implants	2	6
Indirect inguinal hernia	2	6
Umbilical hernia	1	3
Varicocele	1	3
Chronically inflamed gallbladder	1	3
Chronically inflamed appendix	1	3
Chronic inflammation over lower abdominal organs	1	3

^a Several patients were noted to have more than one finding on laparoscopy

Evaluation of outcome

Laparoscopic intervention was determined to result in a “positive outcome” when patients reported at least some improvement in their pain upon interview during the routine 3-month postoperative outpatient evaluation.

Results

Findings at laparoscopy

An abnormal finding on laparoscopy was identified in 70% of patients. These findings are summarized in Table 2. In the vast majority of cases, adhesions were found. Smaller numbers of patients were noted to have endometrial implants, hernias, or signs of chronic inflammation of abdominal organs.

Laparoscopic management

The majority of patients (56%) underwent adhesiolysis. In 12 patients (35%) the preoperative physical exam had localized the operative finding, and in all 12 of these patients, adhesions were found. Laparoscopic appendectomy was performed in two patients. Other procedures included biopsies in two patients (one of an ovarian mass, one of fibrotic peel on cecum), hernia repair in two patients (one umbilical, one indirect inguinal), and cholecystectomy, appendectomy, and fulguration of endometrial implants in one patient each.

Table 3. Postoperative diagnoses

Diagnosis	Number of patients
Adhesions	18
Chronic pain of unknown etiology	11
Endometriosis	2
Chronic appendicitis	1
Chronic cholecystitis	1
Umbilical hernia	1

Twenty-six percent of patients required no operative intervention and received laparoscopic exploration alone.

Postoperative diagnosis

Table 3 summarizes the postoperative diagnoses assigned to the patients after laparoscopy. The majority of patients were diagnosed with adhesions. A significant portion carried the diagnosis of chronic pain of unknown etiology. Postoperatively, one patient each was noted to have pathologically confirmed chronic appendicitis or cholecystitis.

Complications

One minor complication was noted in this series. A patient presented 3 months following laparoscopy requesting scar revision, citing cosmetic concerns. A retracted scar was noted at one trocar site, and was felt to have been caused by the placement of several sutures necessitated after superficial bleeding had been noted after trocar removal. The scar was successfully revised under local anesthesia.

Outcome

Follow-up in this series was 100%. At routine evaluation 3 months postoperatively, 73% of patients reported at least some improvement in their pain. Only 15% reported the pain had completely resolved, yet more than 50% reported pain to be mostly resolved.

Of those who reported at least some improvement in their pain, 68% had an abnormal finding made on laparoscopy, but interestingly, despite no abnormality being found, 32% still noted improvement in pain postoperatively.

Discussion

This study confirms that in the difficult patient group with chronic abdominal pain, diagnostic laparoscopy can safely identify abnormal findings and can improve outcome in a majority of cases. All patients included in this study underwent laparoscopy after other pathologic causes for their pain had been excluded by radiographic and laboratory tests. The majority had undergone some sort of abdominal surgery in the past, and not surprisingly, in the majority, adhesions were found. However, a significant number were found to have a variety of other conditions to which their pain could be attributed, while a similar number were noted to have no

clear pathologic abnormality at all. The overall outcome in this series was positive: most of the patients found significant relief from their chronic pain postoperatively.

The use of laparoscopy in patients with ill-defined chronic abdominal pain remains controversial [4, 7, 10]. While we and others [1, 4, 10, 12] have found that the patients in whom adhesions were found seemed to experience the most relief after laparoscopy, Ikard [7] has questioned whether laparoscopic adhesiolysis is of benefit and has suggested that it may not be safe. He refers to the "traditional surgical teaching" that "adhesions do not cause pain unless they are obstructing" and believes that the only currently recognized surgical indication for enterolysis is bowel obstruction. As he indicates, clearly, a laparoscopic approach to a patient with known bowel obstruction can provide inadequate exposure and be dangerous. However, it is unclear whether nonobstructing adhesions involving the bowel can cause pain. The study by Mueller et al. [10], which supports and cites the findings of Kresch et al. [8], indicated that not all abdominal adhesions cause pain. Instead, they believe that only those adhesions which involve limitations of the movement or distensibility of organs involving the parietal peritoneum or bowel are likely to cause pain [8, 10]. Thus, one may infer that lysis of these adhesive bands, which allows free movement and distensibility of organs, or which may release traction on bowel loops, could potentially result in relief from chronic abdominal pain.

In a patient in whom adhesions might be expected to be a cause of chronic pain, previous observations have suggested that a laparoscopic approach to adhesiolysis is preferable to laparotomy for exposure. While adhesions can be elusive to even the most sophisticated of imaging studies [6], preoperative findings on physical exam which are said to be positive predictors of pelvic adhesions include: uterine immobility, adnexal mass, and adnexal tenderness [13]. Adhesions involving the bowel could produce subacute obstructive symptoms or could be manifest only through chronic pain. If adhesions are suspected, and are nonobstructing, a laparoscopic approach for adhesiolysis can theoretically provide longer-term relief than adhesiolysis via laparotomy. This is supported by the experimental evidence from Luciano et al. [9] wherein laparoscopic adhesiolysis was effective and associated with a lesser extent of adhesion recurrence than in those cases initially approached by laparotomy.

Unlike in the recent study by Fayez et al. [3], we found a low incidence of chronic appendicitis in this study. While the selection criteria for patients in that study are unclear and may have biased results, other studies [10, 11] have found chronic appendicitis frequently in patients with chronic abdominal pain. However, in the patient population with chronic pain and a history of prior surgery, adhesions

are felt to account for the pain in the majority of patients [1, 4, 12].

This study has found that in a select patient group, laparoscopic evaluation of chronic abdominal pain is usually associated with a positive outcome. The characteristics which seem pertinent to a positive outcome after laparoscopy include previous abdominal surgery and reproducible point tenderness on abdominal exam which localizes the pain. These characteristics might suggest the presence of adhesions, and in the patient without signs or symptoms of intestinal obstruction, a laparoscopic approach, in experienced hands, is reasonable. We have found, in our series, that all patients who had a history of previous surgery and localized pain underwent successful laparoscopic adhesiolysis and subsequently reported at least some relief in their chronic pain.

In summary, we have found that patients who are referred to a surgeon experienced in laparoscopy with complaints of chronic abdominal pain are likely to benefit from exploratory laparoscopy if the following criteria are met: (1) Other pathologic causes have been ruled out, (2) the patient has a prior history of abdominal surgery, and (3) the patient has pain which can be localized on physical exam.

References

1. Easter DW, Cuschieri A, Nathanson LK, Lavelle-Jones M (1992) The utility of diagnostic laparoscopy for abdominal disorders. *Arch Surg* 127: 379–383
2. Eisendrath SJ, Kodama KT (1992) Fluoxetine management of chronic abdominal pain. *Psychosomatics* 33: 227–228
3. Fayez JA, Toy NJ, Flanagan TM (1995) The appendix as the cause of chronic lower abdominal pain. *Am J Obstet Gynecol* 172: 122–123
4. Freys SM, Fuchs KH, Heimbucher J, Thiede A (1994) Laparoscopic adhesiolysis. *Surg Endosc* 8: 1202–1207
5. Hermann RE (1990) Chronic lower abdominal pain. *JAMA* 264: 2450
6. Hershlag A, Diamond MP, DeCherney AH (1991) Adhesiolysis. *Clin Obstet Gynecol* 34: 395–402
7. Ikard RW (1992) There is no current indication for laparoscopic adhesiolysis to treat abdominal pain. *So Med J* 85: 939–940
8. Kresch AJ, Seifer DB, Sachs LB, Banner I (1984) Laparoscopy in 100 women with chronic pelvic pain. *Obstet Gynecol* 64: 672–674
9. Luciano AA, Maier DB, Koch EI, Nulsen JC, Whitman GF (1989) A comparative study of postoperative adhesions following laser surgery by laparoscopy versus laparotomy in the rabbit model. *Obstet Gynecol* 74: 220–224
10. Mueller MD, Tschudi J, Herrmann U, Klaiber C (1995) An evaluation of laparoscopic adhesiolysis in patients with chronic abdominal pain. *Surg Endosc* 9: 802–804
11. Salky B (1993) Diagnostic laparoscopy. *Surg Laparosc Endosc* 3: 132–134
12. Schrenk P, Woisetschlager R, Wayand WU, Rieger R, Sulzbacher H (1994) Diagnostic laparoscopy: a survey of 92 patients. *Am J Surg* 168: 348–351
13. Stovall TG, Elder RF, Ling FW (1989) Predictors of pelvic adhesions. *J Reprod Med* 34: 345–347