

Two Cases of Laparoscopic Adhesiolysis for Chronic Abdominal Pain without Intestinal Obstruction after Total Gastrectomy

Hyun Jung Choi, Sang Chul Yoon, and Yong Jin Kim

Department of Surgery, Soonchunhyang University College of Medicine, Seoul, Korea

Chronic abdominal pain remains a challenge to all known diagnostic and treatment methods with patients undergoing numerous diagnostic work-ups including surgery. However, the surgical treatment of patients with chronic intractable abdominal pain is controversial. There has been no discussion of the indications for adhesiolysis in cases of obstruction or strangulation of the bowel, and adhesiolysis by laparotomy has never gained acceptance as a treatment modality for chronic abdominal pain. One of the reasons for this lack of acceptance is the high complication rate during and after adhesiolysis. Laparoscopic surgery has been accepted as a technique for diagnostic and therapeutic procedures in general surgery. Laparoscopy allows surgeons to see and treat many abdominal changes that could not otherwise be diagnosed. Here we report two cases of successful symptomatic improvement through laparoscopic adhesiolysis for chronic abdominal pain without intestinal obstruction after total gastrectomy.

Key Words: Laparoscopy; Abdominal pain; Adhesion; Gastrectomy

Introduction

Patients with chronic abdominal pain often consult many doctors and can undergo extensive testing that is ultimately unsuccessful in identifying the etiology of their pain.(1) Chronic abdominal pain remains a continuing challenge and may be caused by the presence of intra-abdominal adhesions that lead to disturbances in organ motility. Recently, Sulaiman et al.(2) showed that sensory nerve fibers in all peritoneal adhesions are capable of conducting pain.

Nearly all patients of both sexes develop intra-abdominal adhesions after surgery in the abdominal cavity.(3) About 5% of all

abdominal surgery patients will suffer from the consequences of these adhesions, which include bowel obstruction, strangulation, and intermittent acute or chronic abdominal pain.(3,4) Although an explorative laparotomy is an option in patients with this condition, the open procedure for chronic abdominal pain without complete bowel obstruction has never gained wide acceptance. Laparotomy bears the risk of inducing new adhesions and the morbidity and mortality of such an open procedure is thought to be too high to justify it.

However, the introduction of laparoscopic techniques has renewed interest in surgical treatment of adhesions causing chronic pain. Laparoscopic surgery has been accepted as a technique for diagnostic and therapeutic procedures in general surgery, and the value of diagnostic laparoscopy in patients with chronic abdominal pain has been documented. A diagnosis was established in 76% of 265 patients with chronic abdominal pain as described by Salky and Edey.(5-8) A previous history of gynecologic procedures and appendectomy are reported to be the most frequent causes of chronic pain after diagnostic laparoscopy, but upper gastroentero-

Correspondence to: Yong Jin Kim
Department of Surgery, Soonchunhyang University Hospital, 59, Daesagwan-ro, Yongsan-gu, Seoul 140-743, Korea
Tel: +82-2-709-9479, Fax: +82-2-795-1687
E-mail: yjgs1997@gmail.com
Received August 1, 2012
Revised November 3, 2012
Accepted November 3, 2012

© This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

logic procedures are rarely performed.(1,4-6)

This case study provides evidence that laparoscopic evaluation of selected patients is beneficial in providing relief from chronic abdominal pain. Our findings provide a basis for recommendations for the selection of patients who are likely to benefit from diagnostic laparoscopy. Here we describe two cases of laparoscopic adhesiolysis for chronic abdominal pain without intestinal obstruction after total gastrectomy.

Case Report

1. Case 1

A 71-year-old male was diagnosed with early gastric cancer in December, 2007. The cancer was located in the lower third and greater curvature of the stomach, so we performed distal gastrectomy. However, five days later, the patient underwent total gastrectomy because the proximal resection margin was found to be positive on pathologic analysis. His postoperative clinical course was uneventful.

During follow-up, he complained of intermittent chronic abdominal pain lasting for two years. The pain remained refractory to several courses of medical treatment and worsened. He weighed 53 kg before the first operation and 45 kg two years later. The results of many diagnostic tests were nonspecific. There was no recurrence or intestinal obstruction on abdominopelvic computed tomography (CT) (Fig. 1A) and simple abdominal X-rays revealed mild paralytic ileus without definite intestinal obstruction (Fig. 1B, C).

We decided to perform diagnostic laparoscopy to determine the cause of his chronic abdominal pain in November, 2009. The pa-

tient was placed in the supine reverse Trendelenburg position under general anesthesia. Three working ports, including a right lower anti-McBourney points port inserted by the open method, were placed. The operation took two hours with 100 ml of blood loss. The operative findings were multiple dense adhesions in the small bowel mesentery (Fig. 2). He recovered without any complications and the abdominal pain disappeared immediately after surgery. He is currently doing well with no abdominal pain and his weight has increased from 45 kg to 51 kg.

2. Case 2

A 57-year-old male underwent distal gastrectomy with gastrojejunostomy under the diagnosis of gastric cancer in May, 2007. Recurrence in the remnant stomach was detected during a regular check-up, and completion gastrectomy was performed in March, 2010. However, the patient complained of intermittent chronic abdominal pain radiating from his back to his waist for one year following the completion gastrectomy. We performed abdominopelvic CT, an upper gastrointestinal series, small bowel series, and simple x-rays, none of which indicated stricture, intestinal obstruction, or strangulation (Fig. 3). The pain was refractory to medical treatment.

We performed diagnostic laparoscopy in June, 2012, and the surgical technique was the same as in case 1. The operative findings included an adhesion in the jejunojunctionostomy anastomosis and dense adhesion in the small bowel itself. But there was no delay or disturbance of passage through jejunojunctionostomy. The operation time was 100 minutes and he was discharged from the hospital on postoperative day 1 without any complications. He is doing well, although he has reported intermittent abdominal pain

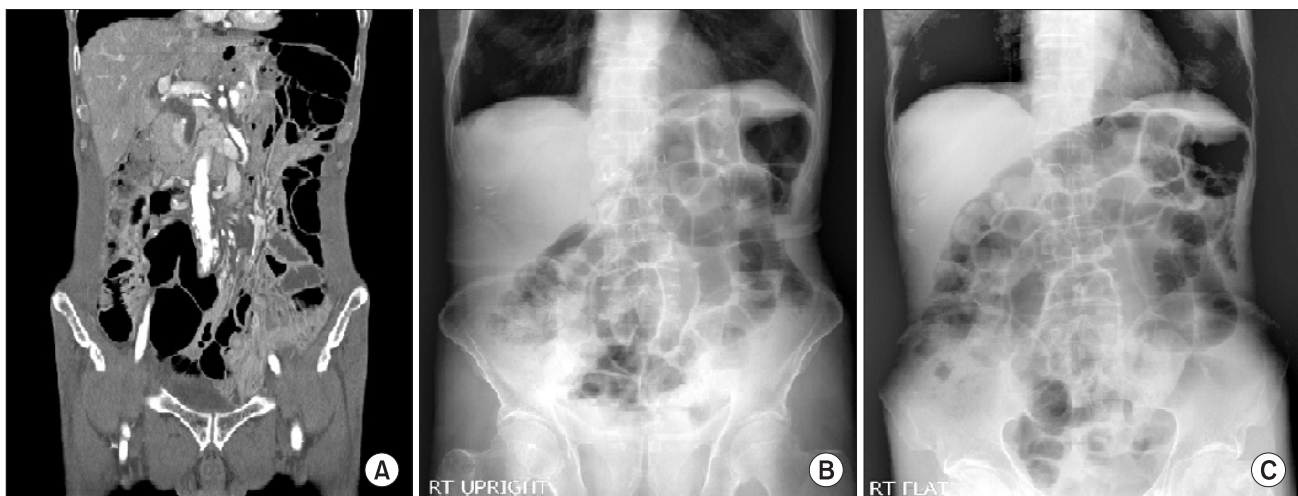


Fig. 1. (A) A preoperative abdominopelvic computed tomography scan and (B, C) simple abdominal x-rays showed no definite evidence of intestinal obstruction, except for mild paralytic ileus.

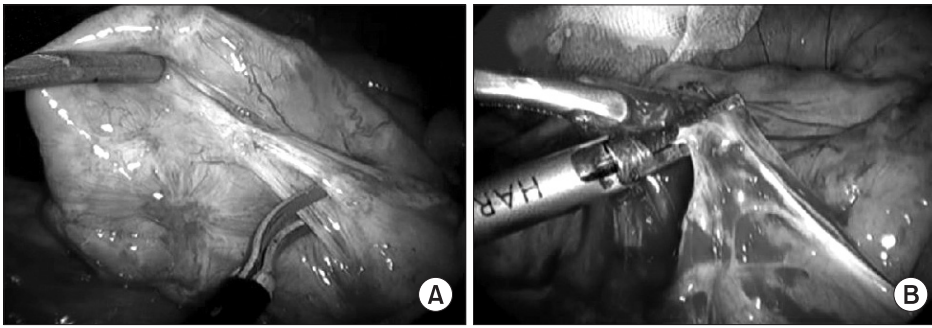


Fig. 2. (A) Multiple dense adhesions in the small bowel mesentery were found intraoperatively and (B) were released with endoscopic scissors or ultrasonic shears.

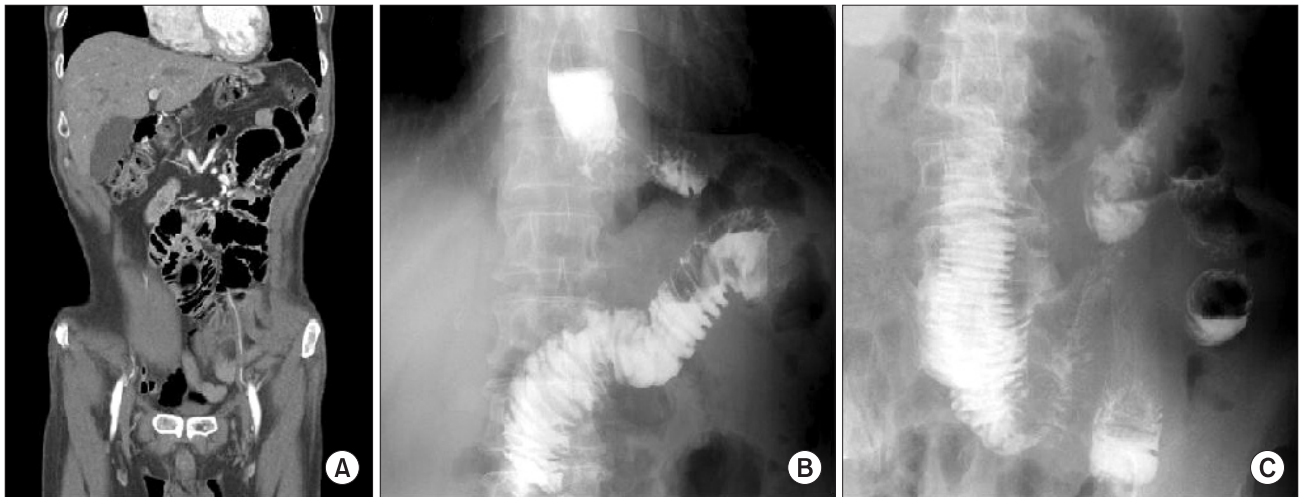


Fig. 3. (A) Abdominopelvic computed tomography and (B, C) upper gastrointestinal studies showed no stricture, intestinal obstruction, or passage disturbance.

and has stopped taking analgesics. Two months thereafter, he has no abdominal pain and is doing well.

Discussion

Major abdominal operations often result in random and unpredictable intra-abdominal scar tissue formation. Sometimes intra-abdominal scar tissue may result in symptomatic intermittent chronic pain without intestinal obstruction, especially in patients with a prior history of gynecological procedures and appendectomy.(4-6) Diagnostic laparoscopy is often used to identify specific intra-abdominal pathology as the cause for chronic abdominal and pelvic pain. However, few studies have determined that laparoscopic adhesiolysis, as the only operative intervention, ameliorates a significant amount of chronic abdominal pain.(7-9) Furthermore, only a few reports of the role of laparoscopic adhesiolysis in the setting of chronic pain have been published. Additionally, in terms of upper gastroenterologic procedures, there have been no studies of laparoscopic adhesiolysis for chronic abdominal pain without intestinal obstruction after total gastrectomy. We performed two cases

of laparoscopic adhesiolysis for chronic abdominal pain without intestinal obstruction after total gastrectomy. Although many diagnostic tests were performed in our cases, the cause of the chronic intermittent pain was not found.

According to available data, peritoneal adhesions form in 93~100% of adults after laparotomy for upper abdominal surgery, with the laparoscopic approach decreasing that percentage to 45%. The frequency of surgical re-intervention for adhesion-related symptoms varies with the type of initial procedure but, in all cases, remains between 6.4 and 10% of adult patients. The greater omentum is the organ most typically involved in adhesion formation.(10)

However, the incidence of postoperative chronic pain in upper abdominal surgery without intestinal obstruction is unknown. Therefore, chronic pain after total gastrectomy is a controversial entity. Its definition remains imprecise and is often not specified in the literature.

Laparoscopy has both a diagnostic and therapeutic role since it permits recognition and simultaneous treatment of the cause of pain, although adhesiolysis may result in renewed adhesion formation. In any case, the benefit of extensive adhesiolysis in

the treatment of patients with chronic abdominal pain and diffuse adhesions has not been proven, and this procedure has its own significant morbidity (enterotomy). The use of laparoscopy in patients with ill-defined chronic abdominal pain remains controversial. While others have found that the patients in whom adhesions were found seemed to experience the most relief after laparoscopy, Ikard questioned whether laparoscopic adhesiolysis is of benefit and 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, the laparoscopic approach in a patient with known bowel obstruction can provide inadequate exposure and may be dangerous.(7,11,12) However, it is unclear whether non-obstructing adhesions involving the bowel can cause pain. A study by Mueller et al., who support and cite the findings of Kresch et al., indicated that not all abdominal adhesions cause pain. Instead, they believe that only those adhesions limiting the movement or distensibility of organs involving the parietal peritoneum or bowel are likely to cause pain.(13,14) Thus, one may infer that lysis of these adhesive bands, which allows the free movement and distensibility of organs or may release traction on bowel loops, could potentially result in relief from chronic abdominal pain.(8)

Diagnostic laparoscopy makes it possible for the surgeon to visualize the surface anatomy of the intra-abdominal organs in detail better than any other imaging modality. Laparoscopy is the only diagnostic tool facilitating reliable detection of intra-abdominal adhesions. However, deep parenchymal organs, processes of the retroperitoneal space, and the inner surface of hollow organs cannot always be visualized using laparoscopy. Thus, preoperative imaging studies have to be undertaken to rule out tumors of the retroperitoneum before laparoscopy is performed in patients with chronic abdominal pain.(7-9,15) As in our cases, these patients should be examined via several endoscopies, computed tomography, and ultrasound prior to laparoscopy. Furthermore, the patients included in this study underwent laparoscopy after other pathologic causes for their pain had been excluded by radiographic and laboratory tests. The subjective benefit of laparoscopy for both the operating surgeon and for the patient is that it can be used to definitively determine whether there is serious pathology intra-abdominally.

In summary, we have found that patients with a prior history of abdominal surgery who are referred to a surgeon experienced in laparoscopy due to complaints of chronic abdominal pain are likely to benefit from exploratory laparoscopy if other pathologic causes

have been ruled out. In carefully selected patients laparoscopic adhesiolysis for chronic abdominal pain is safe and effective and results in minimal peri-operative morbidity. Moreover, laparoscopic adhesiolysis can be considered suitable for patients with chronic abdominal pain if other diagnostics tests are negative.

References

1. Swank DJ, Jeekel H. Laparoscopic adhesiolysis in patients with chronic abdominal pain. *Curr Opin Obstet Gynecol* 2004;16:313-318.
2. Sulaiman H, Gabella G, Davis C, Mutsaers SE, Boulos P, Laurent GJ, et al. Presence and distribution of sensory nerve fibers in human peritoneal adhesions. *Ann Surg* 2001;234:256-261.
3. Swank DJ, van Erp WF, Repelaer van Driel OJ, Hop WC, Bonjer HJ, Jeekel J. Complications and feasibility of laparoscopic adhesiolysis in patients with chronic abdominal pain. A retrospective study. *Surg Endosc* 2002;16:1468-1473.
4. Paajanen H, Julkunen K, Waris H. Laparoscopy in chronic abdominal pain: a prospective nonrandomized long-term follow-up study. *J Clin Gastroenterol* 2005;39:110-114.
5. Swank DJ, Van Erp WF, Repelaer Van Driel OJ, Hop WC, Bonjer HJ, Jeekel H. A prospective analysis of predictive factors on the results of laparoscopic adhesiolysis in patients with chronic abdominal pain. *Surg Laparosc Endosc Percutan Tech* 2003;13:88-94.
6. Shayani V, Siegert C, Favia P. The role of laparoscopic adhesiolysis in the treatment of patients with chronic abdominal pain or recurrent bowel obstruction. *JLS* 2002;6:111-114.
7. Klingensmith ME, Soybel DI, Brooks DC. Laparoscopy for chronic abdominal pain. *Surg Endosc* 1996;10:1085-1087.
8. Salky BA, Edey MB. The role of laparoscopy in the diagnosis and treatment of abdominal pain syndromes. *Surg Endosc* 1998;12:911-914.
9. Onders RP, Mittendorf EA. Utility of laparoscopy in chronic abdominal pain. *Surgery* 2003;134:549-552.
10. Ouaïssi M, Gaujoux S, Veyrie N, Denève E, Brigand C, Castel B, et al. Post-operative adhesions after digestive surgery: their incidence and prevention: review of the literature. *J Visc Surg* 2012;149:e104-e114.
11. Ikard RW. There is no current indication for laparoscopic adhesiolysis to treat abdominal pain. *South Med J* 1992;85:939-940.
12. Tulandi T, Chen MF, Al-Took S, Watkin K. A study of nerve

- fibers and histopathology of postsurgical, postinfectious, and endometriosis-related adhesions. *Obstet Gynecol* 1998;92:766-768.
13. Mueller MD, Tschudi J, Herrmann U, Klaiber C. An evaluation of laparoscopic adhesiolysis in patients with chronic abdominal pain. *Surg Endosc* 1995;9:802-804.
 14. Howard FM. The role of laparoscopy in chronic pelvic pain: promise and pitfalls. *Obstet Gynecol Surv* 1993;48:357-387.
 15. Dijkstra FR, Nieuwenhuijzen M, Reijnen MM, van Goor H. Recent clinical developments in pathophysiology, epidemiology, diagnosis and treatment of intra-abdominal adhesions. *Scand J Gastroenterol Suppl* 2000;(232):52-59.