Elective Laparoscopic-Assisted Colectomy for Sigmoid Diverticulitis

Vincenzo Neri, MD, Antonio Ambrosi, MD, Giuseppe Di Lauro, MD, Tiziano Pio Valentino

ABSTRACT

Objectives: The aim of this study was to evaluate the safety and effectiveness of laparoscopic-assisted sigmoid colectomy for diverticulitis and to assess its postoperative advantages.

Methods: From 1999 to 2001, 5 patients were selectively operated on with a laparoscopic-assisted procedure for uncomplicated sigmoid diverticulitis. In the preceding period (September 1997 through December 1998), 4 patients underwent open procedures for the same pathology. The surgical indication with the same criteria was restrictive: at least 2 acute episodes had occurred that were treated with hospital admission and that were separated by an adequate period (2 months) of medical therapy.

Results: No conversions of laparoscopy to an open procedure were necessary. Age, sex, weight, morbidity, and mortality were similar between the 2 groups. Operative time was 180 minutes for laparoscopy and 120 minutes for laparotomy. Postoperative resumption of peristalsis was 24 hours versus 4 days, resumption of alimentation was on the second postoperative day versus the fifth postoperative day, and hospital stay was 7 days versus 12 days for laparoscopy and laparotomy, respectively.

Conclusion: This study shows the feasibility and the advantages of elective laparoscopic-assisted colonic resection for uncomplicated sigmoid diverticulitis. The advantages of the laparoscopic approach are the lower need for analgesics and the more precocious ambulation, canalization, resumption of alimentation, and the shorter hospital stay.

Key Words: Left colectomy, Laparoscopic approach, Laparotomic approach, Uncomplicated diverticular disease.

INTRODUCTION

Colonic diverticulosis is a very frequent disease in the West. In 40- to 50-year-old persons, its incidence increases with age, reaching over 50% in persons >70. In most cases (80%), the disease is asymptomatic (diverticulosis) and has a mild functional clinical scenario of dyscinesia. A few patients, about 10% to 20%,1 have simplex acute or complicated diverticulitis (perforation, abscess, fistula, hemorrhage, circumscribed or generalized peritonitis). Moreover, the possibility that an episode of acute diverticulitis can recur is 45%.2 Acute simplex or complicated diverticulitis requires surgery. Laparoscopy has been used to treat diverticular disease, and currently it is a widely accepted and used procedure.

The laparoscopic approach is not commonly used to treat neoplastic pathology of the colon-rectus; however, its use is not restricted in treating phlogistic diseases. In fact, data about the feasibility and advantages of the laparoscopic approach for treating diverticular disease are reported in the literature.3 Greater postoperative comfort, with a reduction in pain and lower need for analgesics, a more rapid resumption of intestinal function, a shorter hospital stay, and a more rapid return to social activity are well documented.

METHODS

Between January 1999 and January 2001, 5 patients underwent elective treatment with the laparoscopic approach for uncomplicated diverticulitis. The phases of the procedure were the usual: mobilization of the left colon, isolation and section of the inferior mesenteric artery, sovrapubic incision for operative specimen removal, preparation of the proximal stump, closure of the distal stump with Endo-GIA, and end-to-end intracorporeal coloproctostomy with a circular stapler. In the preceding period (September 1997 through December 1998), 4 pa-
tients underwent traditional laparotomy for the same pathology. A comparison was made of the immediate results of the 2 groups of patients. The surgical indication, always elective, was determined on the second admission for acute and obviously uncomplicated diverticulitis. The classifications of diverticular disease according to Hinchey\(^4\) and Wexner\(^5\) are shown in **Table 1**.

The symptomatology is characterized by fever, leukocytosis, nausea, vomiting, pain, and medium-degree contracture of defense in the inferior left abdominal quadrant. A mass in the lower abdominal quadrants or an extensive contracture of defense, except for the left inferior quadrant, should not be present. If either is present, emergency surgery should be performed because of the presence of an abscess or circumscribed or generalized peritonitis from a micro or macro diverticular perforation.

The elements of the clinical scenario of our patients enrolled in the study are outlined in **Table 2**.

**RESULTS**

We compared the results of the surgical treatment in both groups of patients (**Table 3**). The number of patients and the demographic data (sex, age) are similar. The duration of the operation was shorter for the group treated with traditional laparotomy. Postoperative morbidity (anastomotic dehiscences, wound infections, bronchopneumonic infiltrates) and mortality (within 30 days) are the same for both groups.

On the contrary, the following elements are in evidence: a more rapid resumption of bowel movement and alimentation, with a precocious ambulation, and a shorter hospital stay in the patients who underwent the laparoscopic intervention. As to these facts, the differences between the 2 groups are evident.

In summary, we can affirm that, even without statistical validation, on the basis of the results obtained, with the same incidence of morbidity, the elective laparoscopic approach to colectomy for diverticulitis has a more rapid and comfortable postoperative course.

**DISCUSSION**

Surgery has a pre-eminent role on the general therapeutic plan when a benign, uncomplicated pathology is to be treated. We think that surgery should not be performed to treat simple diverticulitis when no inflammatory episodes have occurred. The appearance of acute diverticulitis in the fourth, fifth, and sixth decades represents a further favorable element for surgical indication. Moreover, episodes of acute diverticulitis are considered uncomplicated if medical therapy, begun early, leads to improvement in the clinical scenario within 48 hours. In our opinion, medical therapy must be effective quickly, resulting in improved symptoms within 48 hours. With the persistence or worsening of symptoms urgent surgical intervention should be considered, even if medical therapy has been started. The medical therapy used is based on cessation of solid and liquid food intake, on absolute intestinal rest, on hydro-electrolyte reintegration, and on the use of broad-spectrum parenteral antibiotics and analgesics.

The clinical scenario must be evaluated quantitatively and qualitatively because the same signs with different degrees of expression can change the indication from medical therapy to urgent surgical therapy.

Moreover, comparison of the 2 surgical approaches (laparoscopic-assisted vs. open) must not improperly influence the choice between surgical and medical therapy, in the symptomatic but uncomplicated phase of the disease. Surgery, almost always performed urgently, is necessary in cases of complicated acute diverticulitis, such as peri-

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**Table 1.**

| Stage | Definition                      |
|-------|---------------------------------|
| I     | Diverticulitis-pericolic abscess|
| IIa   | Pelvic abscess                  |
| IIb   | Complex abscess associated with a fistula |
| III   | Generalized purulent peritonitis|
| IV    | Peritonitis stercoracea         |

**Table 2.**

| Signs and Symptoms | Status          |
|--------------------|-----------------|
| Fever              | Mean, 38.5°C    |
| Leukocytosis       | 13000–15000 per ml |
| Abdominal pain in the left lower quadrant | Middle* |
| Abdominal tenderness in the left lower quadrant | Moderate* |
| Lower abdominal mass | Absent* |
| Nausea, vomiting   | Moderate*       |

*Qualitative evaluation of the signs and symptoms.
colic abscess, perforation, circumscribed or generalized peritonitis, and fistulization. However, even in these cases, the possibility of a laparoscopic approach can be considered.

Our cases fall within stage I of the Hinchey-Wexner classification, both in the laparoscopic and open exploration groups, excluding the cases of complicated diverticulitis (abscess, fistula, perforation, generalized peritonitis) in this study. In our opinion, great effort must be made not to change the clinical criteria for the indication because of the sometimes good results of the laparoscopic approach. Then, the question that must be answered is: When must we operate on a patient when diverticulosis becomes symptomatic without significant complications.

The following characteristics should be present: 2 consecutive attacks of acute diverticulitis (clinically controlled); adequate time interval between the 2 attacks (1 to 2 months) with appropriate medical-dietetic therapy, but not followed by stable improvement; age <60 years.

The second element of discussion is the reason for choosing the laparoscopic approach. The immediate postoperative results are to be examined in terms of operative morbidity and mortality and other possible advantages of one approach over another. The results of the stable correction of the pathology are not in discussion, because the intervention is identical in both procedures, so this result is related to the correctness of the indication.

The immediate results can be evaluated based on the following criteria, and compared with those of the traditional open technique: operative time and index of conversion, resumption of bowel movements and alimentation, ambulation, hospital stay, use of analgesics in the postoperative phase (postoperative comfort), postoperative morbidity (anastomotic dehiscences, bronchopneumonic infiltrates, infections of the operative wound or of the trocar incisions, thrombo-embolic accidents), operative mortality.

We think that, even with a longer operative time in comparison with the conventional approach and the necessity for adequate training in the laparoscopic technique, the best quality of the postoperative course and similar morbidity are evidence favorable to the laparoscopic procedure.

At present, the routine indication of laparoscopy for benign colic pathologies is considered correct and effective. In fact, the advantages of the mini-invasive approach are incontestable, because of less postoperative pain, less parietal trauma, and the disappearance, after a while, of complications like postoperative laparocele. The resumption of intestinal function with a more precocious return to alimentation surely represents a great advantage, together with the rapid ambulation, a shorter and more comfortable postoperative stay, and a more rapid resumption of social activities.

In this analysis, operative morbidity needs careful evaluation, and it assumes great importance in the treatment of a benign, uncomplicated pathology. A central element in morbidity is anastomotic dehiscence. Data reported in the literature confirm that the occurrence of anastomotic dehiscences is similar in both the laparoscopic and open procedures.

| Table 3. Results |
|------------------|
|                  | Laparoscopic Approach (5) | Laparotomic Approach (4) |
| Conversions      | None                      | —                        |
| Mean age (years) | 46.4                      | 53.7                     |
| Sex              | 3 males/2 females         | 1 male/3 females         |
| Mean operative time | 180 minutes              | 120 minutes              |
| Resumption of canalization | 24 hours (in mean) | 4 days (in mean)         |
| Resumption of alimentation | 2nd postoperative day | 5th postoperative day   |
| Dehiscence       | None                      | 1                        |
| Bronchopneumonic infiltrates | 1               | 2                        |
| Mortality        | None                      | None                     |
| Mean Hospital stay | 7 days                    | 12 days                  |
| Wound infections | 1                         | 2                        |

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The remaining elements of postoperative morbidity are the same in the 2 procedures; moreover, we must consider that the precocious ambulation after laparoscopic procedures allows a sort of protection from both the bronchopneumonic affects and thromboembolic accidents.

The limits of the indication for laparoscopic surgery in the treatment of diverticular disease are the object of investigation at present. In acute, uncomplicated diverticulitis, the importance of a correct surgical indication and an adequate selection of the patients to undergo laparoscopic intervention is evident, so the surgical procedure is standardized.\(^1\)\(^-\)\(^4\)

In an emergency, it is still difficult to define unequivocally the criteria for the choice of either the laparoscopic or the open approach to treat the complications of diverticular disease.\(^5\) The indication for the laparoscopic intervention for complicated diverticulitis is still an argument in evolution. In complicated diverticulitis (abscess, fistula, generalized peritonitis), the incidence of conversion is still very high: according to the literature, it should reach 61%\(^16\)\(^-\)\(^17\) versus 14% in acute uncomplicated diverticulitis.\(^16\)

Probably in the future, the laparoscopic indications will be very widespread even for complicated diverticulitis.\(^6\)

**CONCLUSION**

The advantages of the laparoscopic approach in benign colonic pathology are represented by a shorter and more comfortable postoperative period with the minor use of analgesics, more rapid ambulation, and early resumption of alimentation and bowel activity.

This study contributes to the literature by demonstrating the feasibility and safety of the laparoscopic-assisted left colectomy in uncomplicated diverticulitis.

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