

## LAPAROSCOPIC COLECTOMY

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### Introduction:

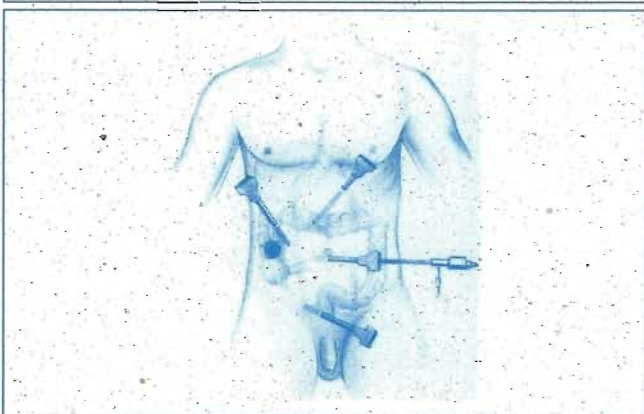
After the advent of laparoscopic cholecystectomy, minimally invasive approaches to other open abdominal procedures have been successfully applied. Although controversial, the inherent benefits of laparoscopic colon surgery, such as decreased pain, smaller incisions, decreased ileus, shorter hospitalization, and shorter recovery, have been noted. The major drawback of laparoscopic colectomies is the need of advanced skills in minimally invasive surgery. Below we describe the three first cases of laparoscopic colectomy performed in Cyprus (first case in 2000).

### Case Reports

**Case 1:** A 25-year-old male was operated on for classic symptoms of acute appendicitis. Intraoperatively, an inflamed appendix was noted and removed through a standard right lower quadrant incision. Also, a mass was palpated in the cecum. After recovering from the appendectomy, endoscopy verified a submucosal lesion.

A laparoscopic right colectomy was offered to the patient. Four trocars (one umbilical, two left sided, and one right upper quadrant) were utilized as displayed in Figure 1. After adhesiolysis, the right colon and distal ileum was mobilized via sharp and blunt dissection. The right colon was exteriorized through a 5 centimeter incision at the right upper quadrant trocar site and sent to pathology (Figure 2). An extracorporeal stapled side-to-side anastomosis was performed (Figure 3). The length of the operation was 2 hours. The patient was discharged on postoperative day 2 with bowel function. Pathology revealed a colonic leiomyoma.

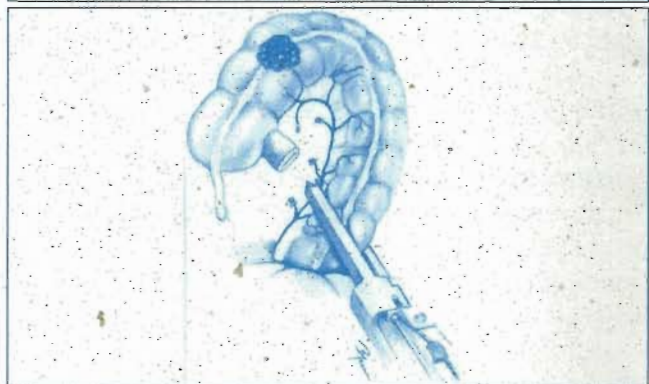
**Figure 1**



This schematic diagram demonstrates the placement of the trocars for a laparoscopic right colectomy. The most cephalad and caudad trocars can be placed even more lateral to the left side depending on the body habitus.

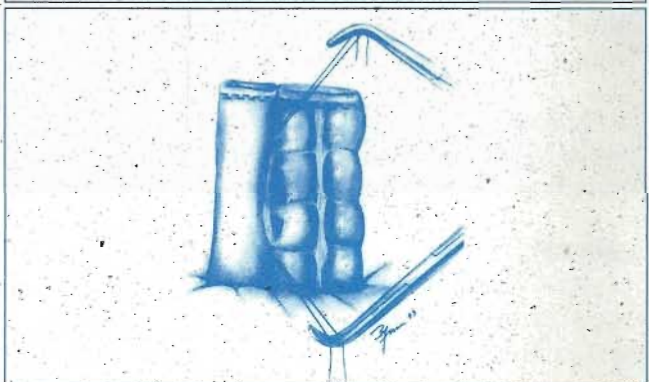
**Case 2:** A 64-year-old male presented with a history of recurrent sigmoid volvulus. All episodes were treated with nonoperative procedures. Both barium studies and endoscopy revealed redundant and mobile sigmoid colon.

**Figure 2**



After the colon is sufficiently mobilized, it can be exteriorized and transected extracorporeally.

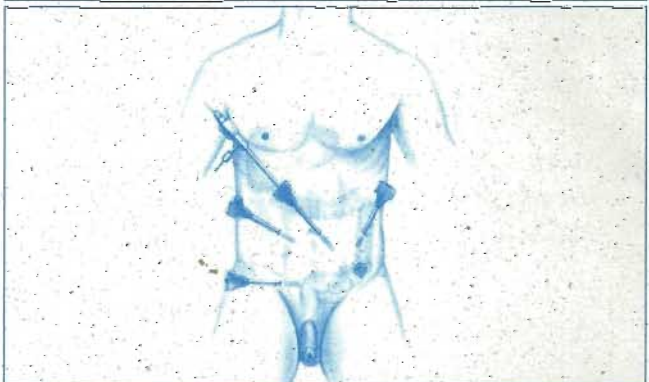
**Figure 3**



The anastomosis (side-to-side) is performed extracorporeally.

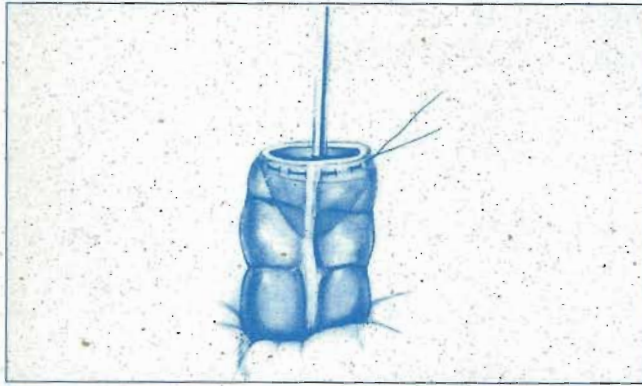
A laparoscopic sigmoid colectomy was offered to the patient. Figure 4 displays the four trocar sites utilized (one umbilical, two right sided, and one left sided). An ultrasonic dissector and endostaplers were used to dissect the sigmoid mesocolon to the rectosigmoid junction. The sigmoid colon was removed via an incision made at the umbilical trocar site. The anvil from circular stapler was placed in the proximal left colon (Figure 5). The stapler was placed into the rectum and the anastomosis was performed intracorporeally (Figure 6). The length of the operation was 2.5 hours. The patient was discharged on postoperative day 4 after return of bowel function.

**Figure 4**



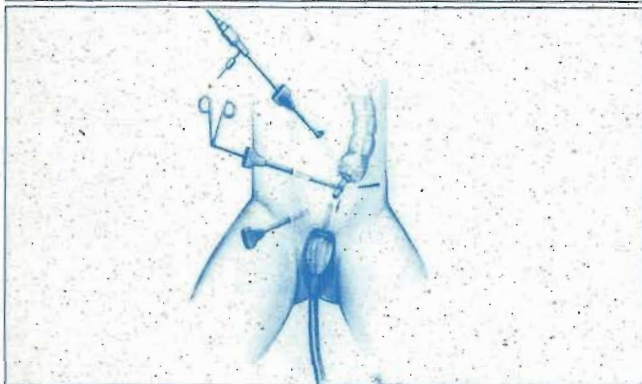
The anastomosis (side-to-side) is performed extracorporeally.

**Figure 5**



The anvil is positioned extracorporeally into the colon and then the colon (with the anvil) is placed back into the abdomen.

**Figure 6**



This diagram demonstrates the intracorporeal anastomosis being performed. The end-to-end circular stapler is placed through the rectum and then connected to the anvil that was placed into the abdomen (Figure 5).

**Case 3:** A 58-year-old female had a 5 centimeter sessile polyp noted on colonoscopy. The location of the polyp was 5cm distal to the ileocecal valve. Biopsy of the polyp revealed severe dysplasia.

A laparoscopic right colectomy was offered to the patient. Again, four trocars (one umbilical, two left sided, and one right upper quadrant) were utilized (Figure 1). The right colon and the ileum were mobilized with sharp and blunt dissection. Via a 5 centimeter incision extended from the right upper quadrant trocar site, the right colon and ileum were exteriorized and sent to pathology (Figure 2). A side-to-side functional end-to-end anastomosis was performed (Figure 3). The operation lasted for 1.5 hours. After return of bowel function, the patient was discharged on postoperative day 2. Pathology revealed a 5 centimeter well-differential adenocarcinoma with clear margins. All thirteen lymph nodes recovered were negative.

### Discussion:

Minimally invasive colectomy for surgical disease of the colon is a natural extension from the success of laparoscopic cholecystectomy and other minimally invasive procedures. The indications for laparoscopic colectomy parallel those for open colectomy and include both benign and malignant disease. Earlier concerns of the port site recurrence were overexaggerated and thus malignant disease is not considered a contraindication to the minimally invasive technique. In fact, in the principal author's (CTF) personal series of over 100 laparoscopic colectomies for malignancy, no port site recurrence has been noted.

Unlike the universal acceptance of laparoscopic cholecystectomy, laparoscopic colectomy has been slower in gaining acceptance. One reason is the complexity of performing laparoscopic colectomies. Unlike other laparoscopic procedures, laparoscopic colectomies can be quite different depending on the part of the colon that is to be removed. The surgeon must be versatile and skillful in various aspects of minimally invasive surgery. Another key to successful laparoscopic colectomy include both appropriate laparoscopic instrumentation and personnel.

The benefits of laparoscopic colon resection include those that are inherent to other minimally invasive procedures. Decreased incision size lends to decreased pain and better cosmesis. Numerous studies have demonstrated shorter hospitalization with laparoscopic colectomy compared with open colectomy. Return to work and regular activities is also enhanced with laparoscopic colectomy. Since earlier ambulation occurs with laparoscopic colon resection, therapeutic benefits include a decrease in the postoperative complications of venous thrombosis, pulmonary embolism, and pneumonia.

The above cases demonstrate the benefits of laparoscopic colectomy with short hospital stays. While the data for the cost benefit of laparoscopic colon resections is controversial, the cost of the procedure depends on the technique and operative time. For the above cases, the average operative time is comparable to open procedures. Our technique of laparoscopic colon resection is similar to that described elsewhere, although some aspects of the technique deserve mentioning. Non-crushing bowel graspers are necessary. Intracorporeal stapling techniques are necessary especially when performing left sided colon resections. When performing anastomosis to the rectum, an end-to-end circular stapler is imperative.

Laparoscopic colectomy is a safe, effective method to perform surgery for both benign and malignant lesions of the colon. Here we reported the first three cases of laparoscopic colectomies performed in Cyprus.

### References:

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### Acknowledgements:

All figures were used with permission by Mosby from *Laparoscopic and Thoracoscopic Surgery* editor CT Frantzides, 1995.