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COLON AND RECTAL SURGICAL ASSOCIATES
Norman N. Hoffman, MD | Gary H. Hoffman, MD | Eiman Firoozmand, MD | Liza M. Capiendo, MD

Laparoscopic Colon Surgery – Is it ready for Colorectal Cancer?

Minimally invasive surgical techniques have gained popularity in approaching benign diseases such as cholecystitis, appendicitis, gastric fundoplications, benign colorectal polyps, and recurrent diverticulitis. Initial concerns for the laparoscopic approach to colorectal cancer have centered around the oncologic principles of adequate tumor excision, lymph node and mesentery excision, early reports of port-site (incisional) recurrence, and lack of long-term follow-up in well conducted studies. A significant number of recent well conducted prospective studies have shed new light on these topics, effectively reshaping the approach to colorectal cancer.

A colorectal cancer oncologic resection is defined as complete tumor removal with adequate surgical margin, and removal of the mesentery and draining lymph nodes. Many studies have compared the size of the specimen, resection margin, and number of lymph nodes randomly comparing open to laparoscopic specimens, and no difference has been seen.(1) This indicates that laparoscopic colectomy for colon cancer is feasible from a technical standpoint.

In the early experience of laparoscopic colectomy for cancer a few initial case reports described tumor recurrence at the laparoscopic incision sites, referred to as port-site recurrence. It was theorized that this cancer recurrence happened due to tumor shedding or some accelerated tumor growth. However, multiple long-term studies looking at over 2,600 cases have evaluated this prospectively and found the rate to be approximately 1%, which is similar to that noted in open colorectal cancer surgery. It is not currently believed that laparoscopic colectomy for cancer is associated with early wound recurrences. (2)

The most recent well conducted multi-center prospective study comparing laparoscopic versus open colon cancer resection was published in the May 2004 in the New England Journal of Medicine. This study followed patients for a median of four years, and found recurrence rates to be similar between the two groups. This study further concluded that laparoscopically resected patients required briefer use of parenteral narcotics and oral analgesics, and had shorter hospital stays. The overall adequacy of oncologic resection were determined to be <u>not</u> significantly different. (3)

What then are the additional advantages of this approach? The benefits of minimally invasive colectomy for cancer are similar to those seen for benign disease, and are related to less surgical trauma. Patients who undergo a laparoscopic colectomy can resume an oral diet earlier than those undergoing

open colectomy.(4) This is related to the shorter post-operative ileus attributed to many factors including less bowel manipulation intra-operatively, decreased pain and therefore less narcotic usage.

Although laparoscopic surgery does not allow for direct manual manipulation of tissues there has not been an increased rate of complications following laparoscopic colectomies. In fact, some studies have noted a lower complication rate with the minimally invasive approach.(5) The reasons for this may be related to a quicker return of pulmonary function(6), less operative blood loss(7), and decreased overall systemic inflammatory response(8). This difference is perhaps most noticeable in the elderly patient, with one study noting a difference in cardiopulmonary complications decreased from 22.4% in the open colectomy group, to 7.7% in the laparoscopic group.(9)

The disadvantages of laparoscopic colectomy center primarily around the increased operative time of the cases. Most studies report a 30 to 75 minute increase in surgical time using the minimally invasive approach. (2, 4, 6) The surgeon's experience is important, and there is a significant learning curve for laparoscopic colectomy. However, as experience grows, operative times decrease as this procedure is performed more commonly for benign and malignant colorectal disease. (10)

It is clear that both laparoscopic and open resection techniques hold advantages for particular patients. For this reason it is important for patients to choose a surgical team that is well trained and experienced in both approaches, so that the advantages and disadvantages of each alternative can be fully considered.

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