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## Minimally Invasive Left Colectomy

Since the earliest descriptions of this technique, minimally invasive colon resection has enjoyed near-universal acceptance as a treatment for benign colon disease. With the publication of data from controlled clinical trials in 2002 and afterward, minimally invasive colon resection also has been increasingly accepted as a treatment modality for colon cancer. In fact, minimally invasive colon resection is now the preferred surgical approach for colorectal malignancy in many tertiary centers. The early concerns about laparoscopic operation on colon cancer, such as incomplete tumor clearance, abdominal wall implants, and so on, have not been borne out in large clinical series nor in randomized trials. Perhaps a pertinent question to ask at this point is how quickly and to what extent will minimally invasive resection become the preferred approach for surgical disease of the colon, regardless of the practice environment.

It is readily apparent that the transition from an open to a minimally invasive operative approach has not happened precipitously with colorectal resection as it did with, say, cholecystectomy. The reasons for this are interesting to discuss and might include the technical demands of a laparoscopic colon operation, controversy regarding the purported patient-related advantages of minimal access over a standard incision, the costs of the laparoscopic equipment, and so on. We will bypass discussion of such controversies and simply state that we place ourselves firmly on the side of the colorectal laparoscopists. It is our opinion that in the patient who requires a colorectal resection, the patient-related advantages of having a minimally invasive operation far outweigh any and all of the supposed disadvantages. We approach all patients with surgical disease of the colon and rectum with the intent to perform a minimally invasive resection.

Does this stance imply that the performance of an open colorectal resection will sink below the so-called “standard of care?” Of course not. For the foreseeable future, the need to perform open colorectal resection will continue to exist, just as the need for open cholecystectomy still exists today for various (though uncommon) indications. Presumably, the future will bring an increase in the number of surgeons who perform minimally invasive colorectal resection; correspondingly, the number of open procedures gradually will decrease. Probably the most important elements to preserve in this gradual transition are patient safety and the preservation of therapeutic efficacy.

In this chapter, we will describe our technique of minimally invasive resection of the left colon. To be specific, this chapter applies to

lesions that are located in the colon from the splenic flexure down to the rectosigmoid junction (or peritoneal reflection). Resection of more distal lesions in the rectum (e.g., low anterior resection) will be described in another chapter. We acknowledge that there are a number of approaches to minimally invasive left colon resection; our preference is to complete this type of resection laparoscopically, that is, without hand-assisted technology.

### OPERATIVE INDICATIONS

As discussed for transverse colectomy (see Chapter 14), minimally invasive colon resection now is acceptable for both benign and malignant disease of the colon, and our approach is to consider each colon case as a possible laparoscopic procedure. In Western society, the most common indications for left colon resection are cancer, premalignant polyps, and diverticular disease; the rank order mostly depends on the practice environment. Less common indications for left colon resection in the West include sigmoid volvulus, ischemic colitis, inflammatory bowel disease, and pseudo-obstruction. With the heavy utilization of screening for colorectal cancer, we have experienced a noticeable surge in the percentage of patients with endoscopically unresectable premalignant polyps who are referred for colon resection.

The extent of colon resection is dependent on the diagnosis. Although much has been made of the theoretical limitations of segmental colon resection secondary to limited collateral blood supply, in practice the entire colon is amenable to segmental resection in elective procedures in good-risk patients with little regard to the main feeding vessels. So with a benign or premalignant diagnosis, the extent of resection should be guided by the extent of the disease; that is, just enough colon is resected to remove the offending lesion. With established malignancy, the extent of the longitudinal resection is guided somewhat by the position of the tumor with respect to the draining lymphatics, which parallel the major arteries (see also “Operative Indications” in Chapter 14). The guidelines for the extent of resection in colon cancer have been evolving, however, and radical resections of the mesocolon are not always required.

The sigmoid colon is supplied by an arterial arcade from the inferior mesenteric artery above, which forms an anastomotic network with hemorrhoidal (rectal) arteries from below (see Fig. 14-1). The question arises whether a cancer in the sigmoid colon should be treated with removal of its entire lymphatic