



Division of General Surgery:

Massachusetts General Hospital Perspective on Minimally Invasive Surgery

Laparoscopic cholecystectomy

This is the most common laparoscopic procedure. Removal of the gallbladder is accomplished through four small incisions, one around the umbilicus and three underneath the ribs on the right side. Both the artery and bile duct to the gallbladder are divided between metal clips and then the gallbladder is detached from the liver and removed through the umbilical incision site. Often an x-ray of the main bile duct is obtained during this operation. The x-ray is performed to determine whether or not gallstones have migrated out of the gallbladder and into the main bile duct (common bile duct). When common bile duct stones are identified, they can often be removed laparoscopically. Alternatively, these stones may be retrieved following laparoscopic cholecystectomy by endoscopic sphincterotomy, a common outpatient procedure. When laparoscopic cholecystectomy is performed as an elective procedure, conversion to open surgery is rarely required (one to three percent of cases). When the gallbladder is inflamed and surgery is performed on an urgent or emergency basis, the inflammation may prevent the surgeon from safely accomplishing gallbladder removal thereby necessitating conversion from laparoscopic to open surgery in order to safely complete the procedure.

Laparoscopic surgery for a hiatal hernia and gastroesophageal reflux disease

Laparoscopic surgery is the ideal approach for correction of gastroesophageal reflux and repair of most hiatal hernias. The surgery is performed through five small incisions in the upper abdomen. The hiatal hernia is repaired by reducing the stomach into the abdomen and suturing the hernia defect in the diaphragm. A new valve is constructed at the top of the stomach by suturing the upper portion of the stomach around the esophagus. There are several different types of anti-reflux operations. The most common procedure is a Nissen fundoplication which creates a 360 degree wrap of the stomach around the esophagus. In some circumstances, however, a surgeon may choose to make a partial wrap around the esophagus. The average length of stay following this in the hospital is one day, and most patients can return to work two weeks following the procedure. The long-term results of this procedure are excellent.

Surgery for achalasia

Laparoscopic Heller myotomy is the most effective treatment for achalasia. The long-term success rate is greater than 90%. Like laparoscopic anti-reflux surgery, it requires five small incisions. Taking advantage of the magnification provided by the laparoscope, the surgeon can identify the muscle fibers of the lower esophageal sphincter which need to be divided in order to create a successful myotomy. Following surgery, the average length of stay is one day and return to work is two weeks.

Laparoscopic splenectomy

Removal of the spleen can be accomplished laparoscopically. For diseases in which the spleen is not enlarged, the laparoscopic approach is the preferred approach for removal of the spleen. Even in situations in which the spleen is quite enlarged, a laparoscopic approach, often with a hand-assisted technique, may offer benefits in terms of a quicker recovery and less postoperative pain. This procedure requires four small incisions. After dividing the blood vessels to the spleen and freeing the spleen of from its attachments to the surrounding tissue, the spleen is placed into

a canvas or plastic bag and minced into small pieces so that it can be removed through the small incision around the bellybutton. Length of stay is one to two days postoperatively. Return to work can be achieved in two weeks' time.

Laparoscopic adrenalectomy

Laparoscopic approach is the preferred method for removing adrenal glands. Some large adrenal tumors may not be suitable for the laparoscopic approach, but most routine situations are appropriate. This technique involves four small incisions and division of the blood vessels and tissue surrounding the adrenal gland. The adrenal gland is then placed in a pouch and delivered through one of the incisions intact (it is not minced into pieces like the spleen). The average length of stay is between one and two days and return to work is in two weeks or so.

Laparoscopic colectomy

Laparoscopic techniques are used to treat a variety of different conditions of the small and large intestine. These include Crohn's disease, ulcerative colitis, diverticulitis, colonic polyps and cancer. Not all diseases or patients are appropriate for laparoscopic colon surgery. These operations generally involve four to five small incisions with one incision being enlarged to between five and eight centimeters in order to remove the piece of intestine which is being resected. Following these procedures the length of stay is slightly shorter than what would be seen in a comparable open procedure. Perhaps the greatest benefit of laparoscopic colon procedures is the more rapid return to work following surgery as well as an improved cosmetic result.