Pancreatic surgery: minimally or maximally invasive?

I recently returned from the 2012 annual meeting of the Pancreas Club. Yes, there is a Pancreas Club- a primarily surgical group dedicated to the study of the pancreas. As a “pancreatologist”, every year this two day meeting is a highlight of my year because it provides an opportunity to get an intensely focused view of new studies designed to improve the lives of patients with pancreatic disease. This year, like last year, the meeting included a huge number of talks and posters presenting “minimally invasive” surgical approaches for pancreatic resection. This interest in minimally invasive surgical techniques has filtered down to patients; every week I have long discussions with new patients with pancreatic tumors who are interested in this approach and want to know if it is right for them.

So what is minimally invasive surgery, and what is its role for patients with pancreatic cancer?

Traditionally, pancreatic surgery has been performed through a large incision: either underneath the ribcage or vertically down the middle of the abdomen. This incision has been necessary to provide visualization of the intra-abdominal anatomy sufficient to safely perform pancreatic resection. Recently, surgeons have adapted laparoscopic techniques to pancreatic surgery. Similar to the case with gallbladder operations, pancreatic resections are now being performed by many surgeons—in many (but not all) cases—through several small incisions instead of one large one. Even more recently, surgeons have begun using surgical robots to help perform these operations. Other than the incision used to access the abdomen, these procedures are very similar—if not exactly the same—as traditional “open” operations.

The advantages to these minimally invasive operations are not entirely clear. Laparoscopy and robotics have been well established for patients with benign diseases such as gallstones and hernia repairs. Several good, randomized controlled studies (the highest level of evidence to support a new technique or medical approach) have compared minimally invasive to open approaches for other cancers, such as that of the colon, and showed that the two approaches are both valid. However, no good studies have compared the two surgical techniques for patients with pancreatic cancer. And, for a number of reasons it is highly unlikely such a study will ever be performed in the future.

Given available evidence, advantages that seem to clearly favor the minimally invasive techniques include less postoperative pain and shorter postoperative length of stay. Furthermore, laparoscopic and robotic procedures certainly can be performed safely by many surgeons, with short-term complication and survival rates “acceptable” to both patient and clinician. But, because these are relatively new techniques, the advantages and disadvantages with regard to long-term cancer survival are totally unknown. And this is clearly the most important concern for patients with pancreatic tumors. Could minimally invasive approaches lead to a smaller amount of inflammation in the body and somehow translate to lower rates of cancer recurrence years after surgery? Conversely, could subtle changes in the surgical procedures used increase rates of cancer recurrence compared to traditional open operations? How do rates of recovery influence rates of administration of postoperative chemotherapy, which certainly have an effect on long-term outcome? How long do patients live who receive...
At this point many (but not all) surgeons agree that minimally invasive approaches are *probably* no worse than open surgical techniques when performed by a highly-skilled surgeon. And many (but not all) agree that such operations *may* be better in some respects.

If you are interested in learning more about or are considering a laparoscopic or robotic operation for pancreatic cancer, you should know that a number of important factors influence whether or not you will be a candidate for that approach. Many high-volume centers now perform minimally invasive surgery for cancers of the body and tail of the pancreas, but only few perform minimally invasive surgery for cancers in the head of the pancreas. Cancers that are near to, or involve, the large vessels that supply and drain the liver and small intestine are generally not appropriate candidates for minimally invasive approaches. Surgeons also consider a number of other factors such as lung function, medical conditions, and body weight.

The goals of pancreatic cancer surgery are simple: 1) operative safety 2) complete removal of the primary tumor and regional lymph nodes, and 3) rapid recovery to facilitate administration of postoperative chemotherapy and/or chemoradiation. Whether a minimally- or “maximally” invasive approach best helps the surgeon accomplish these goals must be considered separately for every patient. But it is incredibly important that discussions be held between patient and physician to thoroughly cover the perceived risks and benefits of each approach, and their incorporation into multimodality treatment strategies that involve chemotherapy and possibly chemoradiation.