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# Minimally Invasive Surgery

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## Abstract

The majority of cardiac surgery in recent times has involved a median sternotomy and cardiopulmonary bypass. However, as the use of minimally invasive procedures in cardiovascular surgery increases, this paradigm is shifting. Surgeons now have the ability to carry out a wide range of intricate procedures with fewer incisions and, in some instances, without the use of cardiopulmonary bypass thanks to advancements in patient evaluation, instrumentation and surgical technique. Minimally invasive cardiac surgery ought to be widely practiced because patients want less invasive procedures and the literature supports reduced blood loss, shorter hospital stays, reduced postoperative pain and improved cosmesis. In this section, we discuss the various approaches and incisions currently utilized in minimally invasive cardiovascular surgery.

**Keywords:** Cardiac surgery • Minimally invasive surgery • Valve surgery

## Introduction

When applied to cancer resection, MIS techniques may improve survival by accelerating recovery, expediting the administration of adjuvant therapy and improving the patient's tolerance for it. Sadly, the planning of commencement and generally speaking resistance to adjuvant chemotherapy were not kept in the laparoscopic colon malignant growth resection randomized preliminaries. Their recent publication showed that laparoscopic resection of colorectal cancer resulted in earlier administration of adjuvant chemotherapy and improved overall survival. Until recently, there was little evidence to support these presumed benefits for MIS in treating GI malignancies. Strouch found that patients who went through laparoscopic rectal disease medical procedure got adjuvant chemotherapy 25 days sooner and expressed, "Time to commencement of postoperative chemotherapy ought to act as a result measure for further developed recuperation in laparoscopic rectal malignant growth medical procedure." Petersen found that non-small cell lung cancer patients who underwent thoracoscopic lobectomy had significantly fewer delayed or reduced doses of adjuvant chemotherapy than those who underwent thoracotomy. Petersen et al. found that the thoracoscopy group had better overall tolerance to the adjuvant chemotherapy regimen, despite the fact that there was no difference in the time of chemotherapy initiation.

## Discussion

According to numerous retrospective and a few prospective studies, the studies that have been published thus far demonstrate that traditional laparoscopy is safe, feasible and appears to be oncologically equivalent to laparotomy. The use of minimally invasive surgery in this setting is not supported by any published data from randomized controlled trials. However, the Laparoscopy in Cervical Cancer (LACC) Study, a randomized international study in progress, is expected to provide high-quality evidence in support of minimally invasive surgery for the treatment of cervical cancer. Prior to the introduction of the robotic platform, adoption rates of this complicated procedure remained somewhat limited despite the current evidence in favor of laparoscopic radical hysterectomy.

Idiopathic achalasia is a primary motor disorder characterized by the loss of inhibitory ganglion cells in the myenteric plexus, which results in incomplete relaxation of the lower esophageal sphincter and aperistalsis of the esophageal body. It is muddled whether the essential occasion happens in the mind or whether the neurologic changes are the consequence of an immediate physical issue of the myenteric plexus. The disease's etiology is unknown, though environmental, genetic, autoimmune and infectious factors have been suggested. The most prevalent primary esophageal motor disorder is achalasia, which is typically diagnosed between the ages of 20 and 40 or after the age of 60. It is the most common functional esophageal disorder that necessitates surgical treatment, surpassing only gastroesophageal reflux disease. In 1674, Thomas Willis gave the first account of a case of achalasia that was successfully treated. In this case, a whale bone was used to forcefully dilate the cardia. Ernst Heller performed the first surgical myotomy in 1913.

The most delicate tests for recognizing achalasia are esophageal manometry and barium swallow videofluoroscopy. Aperistalsis and fragmented lower esophageal sphincter unwinding are the common manometric highlights. Aperistalsis, esophageal dilatation and a minimal opening resembling a bird's beak are among the radiological abnormalities. Before implementing invasive treatments, an endoscopic evaluation is essential to rule out the diagnosis of malignancy-induced secondary achalasia, also known as pseudoachalasia. A short duration of dysphagia, significant weight loss and an elderly patient are clinical characteristics that point to a tumor of the gastroesophageal junction. CT scan, endoscopic ultrasonography and even exploratory laparoscopy should be used extensively in this subgroup of patients because adenocarcinoma of the cardia may present endoscopically as an infiltrating lesion with a mucosa that appears to be normal [1-3].

However, in patients with full-thickness fibrostenotic/inflammatory disease, the small bowel can typically be run during laparoscopic surgery without difficulty, typically in high-definition on large monitors and discontinuous areas can still be serially palpated through the specimen extraction incision. The entire small bowel must frequently be palpated by hand with the assistance of an intraluminal device, such as the balloon of a long-intestinal Baker tube or Bakelite ball, in cases of subtle ring-like

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strictures. The entire small bowel can be extracted using a wound-protecting device in patients who do not have severe mesenteric thickening and have a low body mass index (in kilograms per square meter), which is common in CD due to anorexia. Patients randomized to laparoscopic surgery for CD had comparable rates of reoperations for both disease- and non-disease-related reasons at long-term follow-up. This argues that laparoscopy does not actually miss occult disease that is clinically significant.

The lack of depth perception, camera instability, reduced range of motion and steep learning curves of traditional laparoscopic surgery may all be alleviated by robotic surgery. Robotic surgery, on the other hand, provides superior visualization with three-dimensional stereoscopic vision, camera and instrument stabilization, wristed instruments that enhance dexterity and enable more natural hand and wrist movements and software that cancels tremors to enhance surgical precision. However, these benefits come with some drawbacks, such as a higher price, possibly longer operating times, the absence of haptic feedback, the need for additional ports, a lack of compatible instrumentation and energy sources, the possibility of mechanical failure and the need for additional surgical training. In comparison studies, it is still unclear whether robotic surgery is truly superior to traditional laparoscopy. On the other hand, more complex procedures that would normally necessitate open surgery are now being performed with the assistance of the robotic platform with a greater frequency. Within the field of gynecologic oncology, widespread adoption of robotic surgery has occurred despite the possibility of its limitations [4,5].

## Conclusion

A wide range of cardiac procedures have been performed using minimally invasive techniques since the pioneering cases of the 1990s. In the intervening two decades, numerous reports in the literature have supported the integration of minimally invasive cardiac surgery into clinical practice and demonstrated its viability, safety and efficacy. Cardiovascular surgeons need to stay up to date on the most common procedures because of the growing demand from patients for less invasive surgical options and the ongoing development of percutaneous technologies. Later on, the proceeded with advancement of endoscopic, mechanical and percutaneous innovations will just expand the capacity of specialists to address cardiovascular sickness with diminishing usable injury.

## Acknowledgement

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## Conflict of Interest

There are no conflicts of interest by author.

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