

Minimally invasive surgery for liver cases compares favorably with open operations

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For patients who may benefit from a major liver operation to treat cancer, an open abdominal procedure is often the only option. However, a minimally invasive approach that avoids the large open incision may soon be a viable alternative, according to results from a multicenter study presented at the 2016 Clinical Congress of the American College of Surgeons (ACS).

The researchers evaluated 1,015 major liver resections (hepatectomies) performed in 2014 at 65 hospitals that participate in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Hepatopancreaticobiliary Collaborative. Of those procedures, 13 percent, or 132, were performed using [minimally invasive surgery](#) (MIS), the rest were performed using open operations. This research is the largest multicenter study to date evaluating outcomes after MIS major liver resection.

"Major hepatectomy is a high-risk procedure used to remove approximately half of a patient's liver and is the treatment of choice for many cancers involving the liver," according to lead investigator Lucas W. Thornblade, MD, a general surgery resident at the University of Washington, Seattle. "Our study results showed that the odds of serious morbidity, including major bleeding, serious infections, organ failure, and death, were significantly lower after major liver resection performed by MIS."

In this study, the odds of death or serious complications in the short term

for liver cancer patients who had MIS was about half that of those who had the conventional open procedure. Risk of bile leak, [liver failure](#), a second operation, or readmission were similar between the two types of operations.

Dr. Thornblade and his coauthors undertook the study to evaluate the use of MIS in more challenging cases. "There has not been convincing evidence to support the routine use of MIS in these more challenging liver resections," Dr. Thornblade said. "But the ACS NSQIP registry recently began collecting data on hepatectomies. This new data presented a unique opportunity to look at a larger group of patients who are having these more challenging operations," he explained.

During MIS, the surgeon inserts instruments through small incisions, or ports, and with the guidance of a camera, controls the surgical instruments inside the abdominal cavity to perform the steps of surgery.

The advantages of MIS are well known. While the carbon dioxide gas used to inflate the abdominal cavity during MIS helps to lessen blood loss, MIS liver resection has some inherent challenges, according to Dr. Thornblade. "When performing MIS, the surgeon has limited access to control the blood vessels and that limitation certainly presents a risk of major bleeding," he said. "Also, the ability to expose the targeted part of the organ during MIS is different than it is with an open liver procedure."

The location of the tumor and its relationship to major blood vessels are factors the surgeon takes into consideration when deciding if MIS is feasible. Hence, depending on the surgeon's experience and comfort level, MIS may only be an option when the tumor is accessible with the surgical instruments.

Another challenge is that MIS liver procedures are not widely available.

"One factor that may limit the ability of a patient to undergo MIS liver resection is access to a surgeon who is trained in this procedure," Dr. Thornblade said. "There is a significant learning curve to mastering MIS approaches to liver resection, and in order to see enough cases to become skillful in MIS resection, liver surgeons need to practice in a high-volume setting."

Last year, an expert panel on minimally invasive surgery, the Second International Consensus Conference on Laparoscopic Liver Resection, issued a statement that MIS for major liver resection is still considered an innovative procedure. "Our study helps to contribute to that fund of knowledge," Dr. Thornblade said. "Our findings indicate that the odds of a favorable outcome for MIS major liver resection are significantly better, in selected cases, among surgeons who participate in NSQIP."

"However, more information is needed on long-term disease recurrence and survival after MIS liver procedures," Dr. Thornblade said. "There may come a time in the United States when we are interested in developing a trial to look at long-term outcomes with MIS liver resection."

Provided by American College of Surgeons

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