

Liver-sparing operation associated with higher survival rates in cancer patients

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A surgical approach in which a surgeon removes less than a lobe of the liver in a patient undergoing an operation for liver cancer is associated with lower mortality and complication rates, according to new study results published online as an "article in press" in the *Journal of the American College of Surgeons (JACS)*. The article will appear in print in the April issue of the Journal.

Historically, the most common surgical method of treatment for [liver](#) cancer was a major hepatectomy in which a lobe (hemi-liver) is removed in order to remove the tumor. The five-year survival rate of selected patients who undergo a complete resection is as high as 50 percent, yet many people aren't operated on because of the high complication rate, blood loss, and [liver dysfunction](#) associated with a major hepatectomy.

However, over the last 20 years liver operations have become safer and more effective due to advances in surgical and anesthetic techniques and operating room devices; improvements in perioperative patient care; and a much wider availability of surgeons who are trained in liver surgery techniques.

When a patient has a single tumor, or tumors confined to one side of the liver, a surgical approach called hepatic parenchymal preservation is far better for the patient than the traditional approach of removing large sections of the liver. This preservation procedure involves removing less than a lobe of the liver without compromising principles of cancer surgery. It places less physical stress on the body, and gives patients a

quicker recovery time and the option to have another operation if the cancer recurs.

"The majority of patients with metastatic colorectal cancer are never sent to a liver surgeon because of the impression that a liver operation is too dangerous and patient outcomes are poor," according to T. Peter Kingham, MD, FACS, lead study author and a surgeon at Memorial Sloan Kettering Cancer Center (MSKCC) in New York City. "But we've shown that it's possible to do safe [liver resection](#), so patients should be considered for hepatic parenchymal preservation."

The aim of this retrospective study was to investigate the correlation between surgical methods, mortality, and complication rates over the last 19 years. Dr. Kingham and colleagues at MSK analyzed hospital records of all patients who underwent liver resection for a malignant diagnosis from 1993 to 2012 at their cancer center.

There were 3,875 patients who underwent 4,152 resections for cancer entered into the MSK database. The most common diagnosis was [metastatic colorectal cancer](#). The researchers divided the patients into three equal groups according to time period: early (1993 to 1999), middle (2000 to 2006), and late (2007 to 2012).

They then looked at what percentage of cases in each era were major versus minor hepatectomies (major resection was defined as removal of three or more segments of the liver), and compared outcomes in terms of surgical morbidity and mortality rates between the three time periods.

Over the study period, the 90-day mortality rate decreased from 5 percent to 1.6 percent. Overall complications dropped from 53 percent to 20 percent. The percentage of major hepatectomies decreased from 66 percent to 36 percent. The transfusion rate decreased from 51 percent to 21 percent, and liver dysfunction for all cases decreased from 3

percent to 1 percent.

One interesting finding was that the mortality risk for major hepatectomies remained the same in all three time periods, suggesting that the improved outcomes were related specifically to the increased use of parenchymal sparing resections. "This change in approach to resection appears to be largely responsible for the decrease in overall mortality, given that the mortality rate associated with major liver resections remained constant over the entire study period," Dr. Kingham said.

In addition, the researchers found that abdominal infections were the most common complication of liver surgical procedures. The study authors conclude that encouraging parenchymal preservation and preventing abdominal infections are critical for continued improvement of liver procedure outcomes.

"The biggest takeaway from our study is that parenchymal preservation should be applied to all patients undergoing liver operations for malignancies because the data show that the mortality rate and complication rate, the blood loss, the requirement for blood transfusions, time in the hospital, all of these things which we are all trying to improve on, are all less," Dr. Kingham said. "That is an important message because parenchymal preservation is not always done. While it may be technically easier to remove more liver in some cases, it is worth considering a technically more challenging approach to remove less liver. In the end, there is a real difference in a patient's mortality risk: the more segments of liver that you take out, the higher the risk to the patient." he said.

"We hope our study findings interest more physicians who advise patients with liver cancers to send their patient to be evaluated by a liver surgeon, particularly high-risk [patients](#) who previously may not have been considered for a liver operation at all," Dr. Kingham concluded.

More information: Hepatic Parenchymal Preservation Surgery: Decreasing Morbidity and Mortality Rates in 4,152 Resections for Malignancy, *Journal of the American College of Surgeons*. DOI: [dx.doi.org/10.1016/j.jamcollsurg.2014.12.026](https://doi.org/10.1016/j.jamcollsurg.2014.12.026).

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