

Study finds that minimally invasive robotic bypass surgery provides health and economic benefits

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Minimally invasive heart bypass surgery using a DaVinci robot means a shorter hospital stay and faster recovery for patients, as well as fewer complications and a better chance that the new bypass vessels will stay open. And, according to a University of Maryland study, robotic heart bypass surgery also makes good economic sense for hospitals. The study will be presented at the American Surgical Association on April 26, 2008.

Using a surgical robot increases the cost of each bypass case by about \$8,000, according to Robert S. Poston, M.D., a cardiac surgeon formerly at the University of Maryland Medical Center who is the lead author of the study. He says those additional expenses, which are due to equipment and supplies, are offset by a shorter hospital stay, reduced need for transfusions and fewer post-surgical complications that would require a patient to be re-admitted to the hospital. Especially with high risk patients who have lung or kidney disease or other health problems, the researchers found that the minimally invasive, robotic approach saves costs.

“These findings are significant because payers are considering linking reimbursement for coronary artery bypass surgery to patient outcomes,” says Stephen T. Bartlett, M.D., professor and chairman of the Department of Surgery at the University of Maryland School of Medicine and chief of surgery at

the University of Maryland Medical Center.

“Our study shows that there are health benefits to patients from the minimally invasive approach, both in terms of a shorter recovery and also looking at the function of the bypass graft months after the surgery,” adds Dr. Bartlett, who is one of the study’s co-authors.

While the DaVinci surgical robot is in widespread use for prostate surgery, the University of Maryland Medical Center is among only a few hospitals nationwide, and was one of the first in the U.S., to use the robot to perform multiple vessel heart bypass surgery.

The researchers studied 100 consecutive patients who had minimally invasive coronary bypass surgery using a robot at the University of Maryland Medical Center. The technique requires no incisions except for a few small holes to insert instruments. These cases were compared to a matched group of 100 patients who had the traditional “open” bypass surgery with a sternotomy, a surgical incision through the sternum.

The average length of the hospital stay for the patients with the minimally invasive surgery was about four days compared to seven days for the traditional bypass operation; however the difference was even greater among patients considered to be at high risk. In that group, the average stay was five days with robotic surgery compared to 12 days with the traditional technique.

The complication rate for those who had the robotic bypass was also much lower, with 88 percent of patients free of complications after having the minimally invasive surgery compared to 66 percent of those with the “open” operation.

The patients in the study were followed up one year after their surgery. Using a CT angiography scan, the researchers found that those who had the robotic bypass were much less likely to have narrowing or clots in the bypass graft than those with the traditional bypass surgery from six months to a year after the operation.

“We saw a long term benefit to patients after their bypass in terms of the patency, or openness, of the bypass graft, according to Bartley Griffith, M.D., head of Cardiac Surgery at the University of Maryland Medical Center and professor of surgery at the University of Maryland School of Medicine. Dr. Griffith, also a co-author of the study, says the grafted vessels of more than 99 percent of the patients who had robotically-assisted bypass surgery were still open and functioning well compared to about 80 percent of those who had the “open” operation.

The reason for the difference is that for patients who need multiple bypasses, surgeons can easily access two internal mammary arteries to use as the new bypass vessels rather than taking a section of vein from another part of the body. In traditional bypass operations, only one internal mammary artery is used while other bypasses are performed using a vein. The long-term success of the bypass, or patency of the target vessel, is superior with an internal mammary artery versus a vein.

Dr. Poston says hospitals have been waiting for data on the costs and benefits of robotic-assisted heart bypass programs before investing in them. “Our conclusion from this study is that robotically-assisted coronary artery revascularization presents quality of life benefits for patients along with financial savings for those hospitals which care for large numbers of high risk patients,” says Dr. Poston, who recently moved from the University of Maryland to be the chief of cardiac surgery at Boston Medical Center.

Source: University of Maryland

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