Minimally invasive surgery underused at many US hospitals

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Hospitals across the country vary substantially in their use of minimally invasive surgery, even when evidence shows that for most patients, minimally invasive surgery is superior to open surgery, a new study shows. The finding represents a major disparity in the surgical care delivered at various hospitals, the study's authors say, and identifies an area of medicine ripe for improvement.

"Some surgeons specialize in complex open operations, and we should endorse that expertise," says Marty Makary, M.D., M.P.H., a professor of surgery at the Johns Hopkins University School of Medicine. "But we think there could be a better division of labor at hospitals. Patients who need an open procedure could be sent to surgeons skilled in open surgery . Those who are candidates for minimally invasive surgery could be directed to a surgeon with minimally invasive skills, sparing more patients the risks associated with open surgery."

Minimally invasive surgery, which uses a few small incisions rather than one large incision, has been associated with better outcomes than open surgery, including fewer surgical site infections, less pain and shorter hospital stays. However, says Makary, his analysis shows that some hospitals capable of performing minimally invasive surgery aren't providing it as often as they could.

To measure use, Makary and his colleagues collected data from the Nationwide Inpatient Sample, one of the largest inpatient care databases in the United States. This resource contains information about more than

7 million hospital stays, including the characteristics of each patient, their conditions and their treatments.

The Johns Hopkins team analyzed the data to identify how many minimally invasive surgery procedures hospitals could be performing based on standard qualifications for four different operations: appendectomy, colectomy and hysterectomy, all procedures for which minimally invasive surgery has shown significant advantages over open procedures, and lung lobectomy, an operation for which the jury is still out on the risks versus benefits. The team then compared those numbers with the number of operations actually performed with minimally invasive surgery.

Though all of the 1,051 hospitals included in the data had similar patient characteristics for these procedures, indicating minimal differences in patient candidacy rates for minimally invasive surgery, the researchers' findings show considerable variability in what proportion of these operations were actually minimally invasive surgery. For example, 71 percent of appendectomies could be performed by the minimally invasive operation, but one-quarter of U.S. hospitals favored the open operation for the majority of cases. Hospitals more likely to perform minimally invasive surgery tended to be large urban teaching hospitals located in the Midwest, South or West.

Makary and his colleagues attribute much of the variability to differences in physician training at various hospitals across the country. Since physicians tend to stay and practice in the same region where they trained, Makary explains, whatever techniques surgeons trained in most heavily during their residencies tend to become the go-to procedures that surgeons in particular regions prefer to perform. Surgeons may be uncomfortable offering their nonpreferred method to patients.

Another researcher who participated in the study, assistant surgical

resident Michol Cooper, M.D., says underuse of minimally invasive surgery is a problem, because the complication rates for minimally invasive surgery are significantly lower for so many operations. For example, when she and her colleagues used the database to compare complication rates between minimally invasive surgery and open surgery in the four procedures, they found that minimally invasive appendectomies had about one-half the complications of open appendectomies. Similarly, minimally invasive colectomies—removal of all or part of the colon—had about one-third the complication rates of open procedures. Consequently, Cooper says, performing as many of these procedures using minimally invasive surgery techniques as possible could help patients stay healthy and save thousands of dollars per patient in medical costs.

Makary says many patients aren't aware that a minimally invasive surgery option exists for their condition. He also believes that this study offers an opportunity to reduce practice variation and improve health care quality through increased transparency and patient empowerment.

"Without any publicly reported metrics, patients can't really know what to look for and what to ask," he says. "Physicians have an obligation to inform patients about all their options, even if we don't offer all the options ourselves."

More information: Hospital level under-utilization of minimally invasive surgery in the United States: retrospective review, *BMJ*, 2014.

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