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IN THE NEWS

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Report Illustrates Clinical Potential of Tracking Outcomes

Negative Appendectomies Sharply Cut in Statewide Effort; "Accurate" Imaging Seen as Key

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The rate of negative appendectomies among a group of hospitals in Washington state dropped by one-third over two years when the hospitals began collecting and studying their surgical outcomes, a new report shows.

"This study demonstrated a significant reduction in negative appendectomies at participating hospitals contemporaneous to increased use and perhaps the increasing accuracy of preoperative diagnostic imaging," said David Flum, MD, the study's lead author and a professor of surgery at the University of Washington in Seattle.

He presented the study at the 2008 annual meeting of the American Surgical Association, held in New York City.

The finding could have significant implications for public health policy, say experts.

Surgeons, including some not affiliated with the study, say it demonstrates that hospitals that track their surgical performance data can dramatically improve patient outcomes. The study is based on data collected by the Surgical Care and Outcomes Assessment Program (SCOAP), a voluntary collaborative of most of the hospitals in Washington state that provide performance data to a quality assessment program in order to improve patient outcomes (http://www.surgicalcoap.org).

The report could also change clinical practice in hospitals. The study provides strong support for performing preoperative computed tomography (CT) or ultrasound (US) scans on all patients with suspected appendicitis, which is controversial.

Although some centers have a policy of aggressively scanning patients, others do it sparingly and in selected groups of patients.

Supporters of aggressive preoperative scanning say the tests could save many patients from unnecessary operations, thereby cutting health care costs. Others say scans add significantly to health care expenditure without any real clinical benefit.

"This study shows that a very simple intervention was remarkably effective in reducing the rates of negative appendectomy," said John Birkmeyer, MD, George D. Zuidema Professor of Surgery, University of Michigan Health Systems, Ann Arbor.

"They were able to reduce rates of negative appendectomy by one-third, with a negligible impact on rates of perforation. As mundane as that sounds, if you extrapolate those data nationally, somewhere between 5,000 and 10,000 patients each year in the United States could avoid unnecessary operations if the successes from this program could be exported elsewhere," he said.

However, he said the study does not prove that preoperative scanning should be carried out in all patients with suspected appendicitis.

"We would need a large, randomized trial to answer that question," he said.

During two six-month periods in 2005 and 2007, 3,540 patients underwent urgent, nonincidental appendectomy at 15 SCOAP hospitals.

Over the course of the study, negative appendectomy rates declined from a high of 12% to 6%. At the same time, hospitals increased preoperative CT and US scans from 80% to 90%.

The negative appendectomies occurred most often when patients had no imaging—9.8% of patients who were not scanned preoperatively had negative appendectomies. Negative appendectomies were less common among patients who underwent US scans, occurring in 8.1%, and rarest when patients were scanned with CT before surgery, at 4.5%.

The authors say that the drop in unnecessary procedures stemmed not just from the increased use of imaging scans, but an improvement in the accuracy of scans. The use of imaging alone correlated with lower rates of negative appendectomies ($r = -0.19$), but accurate scans had a more significant correlation ($r = -0.57$).

"It appears that it is the use of *accurate* CT/US, not simply the use of imaging, that impacts negative appendectomy," said Dr. Flum.

"An inaccurate CT or US is not helpful and may direct even more patients to unnecessary surgery. The answer is not necessarily more diagnostic testing but rather more, accurate diagnostic testing," he added.

CT/US images were inaccurate in 9.4% of cases—8.6% of CT and 17.8% of US scans, according to the pathology reports.

This is the first report to look at the impact of imaging tests in broad groups of patients and at a variety of hospitals. Most studies that examine CT/US scans are conducted at academic centers or in research environments where tests are often performed with the radiologist present and the scan is repeated to obtain the best images, said Dr. Flum. The radiology reports used in the current study were from physicians in routine practices where radiologists are not always present during imaging tests and the tests are rarely repeated.

Dr. Flum said surgeons should work with radiologists to improve the accuracy of imaging reports. At the SCOAP hospitals with high rates of negative appendectomies, surgeons collaborated with radiologists to find ways to increase diagnostic accuracy. That helped reduce negative appendectomies, he said.

However, other surgeons disagree about what caused the decline in negative appendectomies.

Dr. Birkmeyer believes the data indicate that the decline was driven largely by the rise in preoperative testing.

"I think surgeons should be slow to point to radiologists in terms of improving this particular outcome," he said.

The surgical community remains strongly divided over the use of preoperative CT and US scans. Several recent reports challenge the SCOAP findings. In a study published this month in a European surgical journal, surgeons from the University of California, Los Angeles, reported that preoperative CT scans did not decrease the negative appendectomy rate at their institution (*Eur Surg Res* 2008;40:211-219). Some surgical leaders argue that widespread use of preoperative CT scanning could adversely affect outcomes, by delaying operative intervention, potentially increasing perforation rates (*J Gastrointest Surg* 2007;11:1417-1421).

Other reports on scanning have highlighted the importance of using CT scans in the right patients because of the radiation risks of more CT. A controversial report in *The New England Journal of Medicine* in November 2007 suggested that up to 2% of all cancers in the United States may be caused by radiation from CT scans, although the authors noted there are no published studies directly linking CT scans to cancer (357:2277-2284). Dr. Flum suggests CT or US scans be used routinely for patients at highest risk for misdiagnosis—young and old patients, and women.

The American Surgical Association was founded in 1880 and is the country's oldest surgical organization.