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Wand May Confirm Post-Op Instrument Count

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MedPage Today Action Points

- Explain to interested patients that although surgical teams make every effort to ensure that no sponges or instruments are left in patients at the end of an operation, an item goes uncollected in about one in 10,000 cases.
- Explain that the experimental system described here might help surgeons account for all materials used in the operative field.

Review

STANFORD, Calif., July 17 -- When the circulating nurse loses count, a sponge check with an RF-sensitive hand-held wand could save the day in the OR before closing.

With the wave of a wand, surgeons could determine whether there's something still in the patient that shouldn't be there, specifically radiotagged sponges, suggested anesthesiologist Alex Macario, M.D., M.B.A., of Stanford, and colleagues.

In a pilot study, the device was able to correctly identify 28 of 28 radiotagged sponges placed in volunteers who were undergoing elective procedures, he and colleagues wrote in the July issue of the *Archives of Surgery*.

Despite the checking and re-checking of instruments and sponges at the end of surgery to ensure that none has been left behind in the patient, an estimated one in 10,000 patients is wheeled into recovery with some overlooked foreign object still inside, researchers have found.

Dr. Macario cited a 2003 study in the *New England Journal of Medicine* by Atul A. Gawande, M.D., and colleagues at Brigham and Women's Hospital noting that 88% of cases of retained foreign bodies in which counts were performed involved a final count that was erroneously thought to be correct.

Cases where retained surgical sponges or instruments are most likely to occur include emergencies, unplanned changes in procedure (such as converting from a laparoscopic to an open technique), and when the patient has a high body mass index, wrote Dr. Gawande.

Although many patients with retained sponges can go for years without problems and without the foreign body being detected, others may have complications ranging from sepsis, intestinal obstruction, fistulization, and even death, Dr. Macario and colleagues reported.

But he and his co-authors, Dean Morris, director of ClearCount Medical Solutions, Inc., the company that's developing the sponge-spotting system, and Sharon Morris, R.N., a consultant to the company, think they have found a way to prevent the problem.

They conducted a prospective, blinded pilot trial testing the hand-held wand scanner in eight patients who were undergoing elective abdominal or pelvic surgical procedures and who agreed to participate. The experiment was performed at the end of each procedure, just before surgical wound closure.

A total of 28 sponges containing a radiofrequency ID chip were placed in the patients, and each patient also received a standard non-tagged sponge as a control. The controls were placed to test the false-positive rate; that is, to see if the device would falsely identify a non-tagged sponge as radio-tagged sponge.

In each patient, one surgeon placed one RF-tagged sponge in the surgical site while the second surgeon was looking away, and other sponges in one of four abdominal quadrants selected at random by a computer. In five randomly selected patients, two tagged sponges were placed side-by-side to see whether the scanner could discriminate both.

The edges of the wounds were then held closed, without sutures, while the second surgeon passed the wand, magician-like, over the patient. The RF wand device detected all sponges correctly, in less than three seconds on average, with no false-positive or false-negative results.

All sponges were then removed and the surgical procedures were completed.

When the surgeons were later asked to rate the device, they reported that it was too large (the 1.5 lb battery-operated device measures 10 x 10 x 1.5 inches, the authors reported), and expressed concern that it would not be able to eliminate the element of human error.

"For example, if the scan is performed incorrectly (e.g., the wand scan is performed farther away than a few inches from the skin or the device does not cover the entire surface area of the surgical site), retained sponges can be missed," the study authors acknowledged.

"Retained sponges could also be missed, even if the technical detection works accurately, if the scan were performed too early, such as if an additional sponge were placed in the wound to help with closure after the final RFID scan had been performed," they added.

Timothy J. Gardner, M.D., medical director for the Center for Heart and Vascular Health at Christiana Hospital in Wilmington, Del., commented in an interview that "it doesn't happen very often, but it happens enough that we're looking for ways to avoid this unfortunate complication."

He said some hospitals -- not many any more -- used to recommend routine x-rays before a patient left the operating room after a major invasive abdominal or chest incision. "And certainly all of us still will get a routine x-ray if there's any discrepancy in the instrument count or the sponge count," Dr. Gardner said.

"So having a technique that maybe is a little simpler than an x-ray and maybe faster to use would be very practical," he added.

"It can be a very problematic situation for the patient, and obviously a concern for the doctor and the hospital."

Primary source: Archives of Surgery

Source reference:

Macario A et al. "Initial Clinical Evaluation of a Handheld Device for Detecting Retained Surgical Gauze Sponges Using Radiofrequency Identification Technology." *Arch Surg.* 2006;141:659-662

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