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No sponge left behind

It's rare, but it happens: surgical staff lose track of an item in a patient. But a new scan could eliminate such gaffes.

By Susan Brink, Times Staff Writer
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In the leap of faith that is surgery — counting backward from 100 to oblivion, waking to the faces of kindly strangers — one can only hope everyone in the operating room gets the sponge count right.

In a rare but distasteful complication in about 3,000 of the 40 million surgeries performed in the United States each year, somebody forgets something inside someone. The majority of forgotten items, about two-thirds, are surgical gauze sponges.

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A new study holds the promise that technology will soon help doctors and nurses, with the wave of a wand, make sure they have taken everything out of a patient's surgical cavity that they brought in — including the gauze pads that may not show up on a post-surgical X-ray.

In the study, published last week in the journal Archives of Surgery, eight patients undergoing abdominal or pelvic surgery at Stanford University School of Medicine agreed to have surgeons use gauze sponges tagged with radio-frequency identification chips during their procedures. After the operation was complete, and

before the patient's wound was closed, one surgeon turned away while another placed a tagged sponge inside the cavity.

When the first surgeon then passed a hand-held, wand-like scanning device over each patient, he or she could correctly pinpoint the location of the tagged sponge left behind. Within three seconds, the sponges were found and removed.

The study shows that the solution to this particular medical mistake is likely to be technological, says Dr. Atul Gawande, surgeon at Boston's Brigham and Women's Hospital who has studied surgical mistakes. Operating room personnel are supposed to count every instrument and sponge three to four times before and after surgery, he notes.

"At first, you think, 'How stupid could nurses and doctors be? This is a problem of negligence,'" he says. "But if you've ever had to count 52 cards in a deck, you know that once in a while you get it wrong."

There's an especially high chance someone will get the count wrong — or skip it altogether — after a catastrophe such as a car accident, when seconds count in saving lives. In a landmark 2003 study in the New England Journal of Medicine, Gawande reviewed 54 malpractice cases involving retained foreign objects. He found that what puts patients at risk are emergency situations, midsurgery changes in the operating plan, and obesity.

"In an obese patient, with a standard opening, things can go farther away inside," he says.

Scissors, scalpels, needles and pins also get left behind in an estimated 1,000 surgeries a year. But metal, at least, can be detected in an X-ray. It's the softer stuff, such as pea-sized cotton swabs, that are more likely than hardware to be left inside a patient. "Even if you X-ray the patient, you may not see them," says Dr. Alex Macario, lead author of the new study of tagged sponges, and professor of anesthesia and health research and policy at Stanford University School of Medicine.

Most swabs, pads and bits of gauze that enter a patient's body have a tiny blue tail, sometimes just a piece of string, impregnated with barium. They show up on X-rays, but can be missed by radiologists because of their small size.

In June 2005, the Joint Commission on Accreditation of Healthcare Organizations, which evaluates 15,000 hospitals and healthcare organizations, added "unintended retention of a foreign object in an individual after surgery" to its list of medical events requiring immediate investigation and response. (Other events on the commission's list of so-called sentinel events include surgery on the wrong person or wrong body part, and discharge of

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an infant to the wrong family.)

In addition, Dr. Verna C. Gibbs, a UC San Francisco surgeon who worked with the commission as it amended its list, has begun a project she calls "NoThing Left Behind," to educate operating room staff to methodically examine wounds before closure, improve methods of counting equipment and get quicker responses from radiology departments if a post-surgical X-ray is needed.

"This has been a problem throughout the history of surgery," Gibbs says.

A little piece of sterile gauze can peacefully coexist within a body for decades. But stomach-churning reports pepper the medical literature. One 42-year-old woman in India became incontinent 18 months after having a hysterectomy. Bits of sponge had migrated to her bladder. Surgery to remove the forgotten gauze corrected her problem.

In a case in Japan, physicians thought a 61-year-old man had a malignant tumor on his thigh, but found, after it was removed, that it was a piece of gauze, embedded 40 years earlier following surgery for a fractured leg.

Other problems can include intestinal blockages, abscesses, sepsis infection and even death. "A sponge can erode into the bowel, begin to extrude through the skin, rub against the heart causing irritation. Or they can be completely silent," Gibbs says.

Patients undergoing surgery can be assured that, with a 3% national surgical complication rate, 97% of the time, things go as expected, and that abandoned sponges are among the rare problems that surgeons are trying to fix.

Other technologies to catch wayward surgical hardware and soft fabrics are being tested, including sponges with bar codes or ones implanted with tiny bits of metal that will respond to metal detectors.

Two of the authors on the paper hold patents related to the tagged sponges.

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