



E-Tags Could Prevent Surgical Errors

Embedding sponges with electronic locators useful, but expensive, experts say.

By Randy Dotinga
HealthDay Reporter

MONDAY, July 17 (HealthDay News) -- A Pittsburgh company says it's developed a new way to prevent doctors from leaving surgical sponges inside patients: by embedding radio frequency-equipped tags inside the sponges.

According to company officials, surgeons or nurses could wave wands over patients near the end of their operations and detect any leftover sponges still in the body. According to a newly released study, none of eight patients had any problems when tagged sponges were briefly placed into their bodies during operations.

"Our study found the device works 100 percent of the time," said lead author Dr. Alex Macario, professor of anesthesia at Stanford University, in Stanford, Calif.

However, a leading critic of radio-frequency identification (RFID) devices questioned whether simpler and less-expensive devices could serve the same purpose.

At issue is the rare but potentially deadly problem of surgical devices left in patients during operations.

According to Macario, an estimated 1,500 objects are left in patients after surgery in the United States each year; the accidents occur in about one out of every 10,000 surgeries that involve an open cavity.

Emergency procedures make the accidents more likely, as do operations on obese people, Macario said.

As for sponges, surgeons do make what Macario calls "labor-intensive" efforts to count them before and after surgical procedures, but the sponges are still sometimes left in patients.

"Two-thirds of all objects left in the body cavity are sponges," he said, adding that "retained sponges may be asymptomatic and remain undiscovered for decades." In the worst cases, they can lead to infection and death.

According to Macario, an operating-room nurse came up with the idea of RFID-tagged sponges and patented the idea. RFIDs have become quite common in recent years, especially in the retail industry. Among other things, they help manufacturers track merchandise; the tags can be programmed with a variety of information.

RFIDs are also used to tag pets with individual ID numbers so they can be reunited with their owners if lost. Recently, Pfizer Inc. announced plans to tag bottles of Viagra with RFIDs to help fight drug counterfeiting.

In the new study, researchers tested the so-called SmartSponge in eight patients undergoing pelvic or abdominal operations at Stanford University Medical Center. Two of the study's three authors work for ClearCount Medical Solutions Inc., which is developing the product. The study itself was partially funded by the U.S. National Institutes of Health.

A surgeon placed eight regular sponges and 28 RFID-equipped sponges in the patients and pulled the edges of the cavities together to hide the sponges. Then another surgeon tried to find them with a handheld, battery-powered detector.

The study results appear in the July issue of the journal *Archives of Surgery*.

The researchers reported that RFID-equipped sponges were easily detected, while the others were not.

Macario acknowledged that the potential health risks of RFIDs left in patients are "unknown," but he pointed out that they are currently implanted in pets.

What's next? "The real challenge is how you incorporate a new device into the workflow of the operating room," Macario said.

The cost of an RFID-based detection system is unclear, but the study reports that surgeons who used it would be willing to pay an average of \$144 per patient.

That number caught the eye of Katherine Albrecht, co-author of *Spychips: How Major Corporations and Government Plan to Track Your Every Move With RFID*, who's familiar with the study findings.

She said surgeons would pass the costs of the system on to patients. "They're just shifting the cost to the consumer or the HMO," she said.

She also questioned why the system relies on RFID chips, which can provide an identification code. Cheaper devices -- like the theft-prevention devices placed on clothes in a department store -- would work just as well, she said.

"I don't need to know it's sponge 248347," Albrecht said. "I just need to know there's a sponge in there."

However, Gautam Gandhi, founder and chief marketing officer of ClearCount Medical Solutions, said the RFID system "enables you to actually count sponges, not just detect their presence." And, Gandhi added, with RFID "we are also able to differentiate between the different types of sponges used."

More information

For more on surgical errors, visit the American Academy of Orthopaedic Surgeons (orthoinfo.aaos.org).

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