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Radio Wand May Help Detect Sponges Left in Surgery Patients

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"A handheld wand scanning device that detects surgical sponges tagged with radiofrequency identification chips could help operating room personnel detect sponges that have been inadvertently left inside patients."

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A preliminary study suggests that a handheld wand scanning device that detects surgical sponges tagged with radiofrequency identification chips could help operating room personnel detect sponges that have been inadvertently left inside patients after procedures, according to a report in the July issue of the Archives of Surgery, one of the JAMA/Archives journals.

One large study estimated that a foreign object is left in patients after one of 10,000 surgical procedures involving open cavities, with two-thirds of the objects being surgical sponges, according to background information in the article. In some cases, these sponges may cause no symptoms and can remain undiscovered for decades; however, they add an average of four days of hospital stay after surgery and may also lead to sepsis (toxins in the blood or tissues), obstruction of the intestines and death. The currently recommended procedure for preventing foreign bodies being left in patients requires operating room staff to count sponges and surgical instruments three times: once before surgery, once during and again when the incision is closed.

Alex Macario, M.D., M.B.A., Stanford University School of Medicine, Calif., and colleagues tested a 1.5-pound battery-powered handheld scanning device on eight patients undergoing elective abdominal or pelvic surgery. Before each patient's wound was closed, one surgeon placed a tagged or untagged sponge inside the patient while the other surgeon looked away. The edges of the wound were pulled together to cover the inside of the abdominal cavity and the second surgeon used the wand to determine the existence and placement of the tagged sponge. The surgeons and nurses who used the device took a survey about their experience afterward.

The wand detected the tagged sponges 100 percent of the time in an average of less than 3 seconds. There were no false positives-meaning the wand did not indicate there was a tagged sponge in the cavity when there was not-and no false negatives, meaning that the wand did not fail to detect sponges that were placed. Surgeons and nurses said the device was easy to use and could improve patient safety, but gave it lower marks for efficiency and requested a smaller version. They also expressed concern that human error could interfere with the system's effectiveness.

If such a device were to be used in the operating room, "the surgical team will remain responsible for inspecting the surgical site and avoiding retained foreign bodies," the authors write. "Technologies to increase safety in the operating room, such as the radiofrequency identification wand device described in this article, deserve further study to assess if they should be added to manual counting (rather than replace it). However, related human and system factors need to be addressed as well because it is likely that technology alone will not be foolproof in solving the retained foreign-body program." (Arch Surg. 2006;141:659-662)