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KEY POINT

High-risk scenarios for retained foreign bodies are emergency operations, an unplanned procedure change, and operations in obese patients.

The persistent problem of the retained foreign body

What the 'Captain of the Ship' must know about incidence and high-risk groups for this operative error.

Errors due to the failure to remove sponges or surgical instruments at the end of a procedure may not get the public attention of wrong-site surgery, but such mistakes are no less egregious.¹

The true incidence of retained foreign bodies after surgery has been difficult to determine. One reason may be that surgeons and operative personnel would rather keep silent about such events.² One report estimated the incidence of retained foreign bodies after operations at 1:1000–1500,³ although a more recent foreign report estimated that at 1:5000.⁴

A retained laparotomy sponge does not appear to be a random event. A 2003 study found that retained foreign bodies were most likely to occur in these three scenarios: during an emergency operation; after an unexpected change in operative procedure; and in obese patients.⁵

Morbidity may be 50% in these patients, with mortality around 10%.⁶ The medicolegal consequences can be obvious for the surgeon, operating room (OR) team, and institution.

Keeping count

Obviously, foreign bodies get left behind after closure because of an error in the instrument count. Routine intraoperative x-rays may be a useful adjunct for detecting retained foreign bodies in high-risk settings.⁶

One study recommended routine exploration of the abdomen before closure; use of only sponges with radiopaque markers; use of a “fish” rather than laparotomy pad to facilitate closure; two counts after fascial closure and by the new personnel at shift change; and routine abdominal roentgenograms before closure in trauma cases.⁷

Use of the simple preventive measure of counting sponges, sharps, and other instruments, however, is not universal. As the Recommended Practices Committee of the Association of Perioperative Registered Nurses (AORN) stated: “Legislation does not prescribe how counts should be performed, who should perform them, or that they need to be performed. The law only requires that foreign bodies not be negligently left in patients.”⁸ This committee developed sponge-count practices effective in 2000 (**TABLE**).

These cases illustrate the medicolegal consequences of retained foreign bodies.

CASE 1 Change of procedure in an obese patient

An obese 65-year-old man was found to have colon cancer in the distal sigmoid. During endoscopy, the gastroenterologist did not tattoo the cancer site, and the mass could not be found during surgery.

The surgeon performed an intraoperative colonoscopy with a rigid scope through a small enterotomy. The mass was located just proximal to the splenic flexure and removed. The intraoperative colonoscopy made closure difficult due to the insufflated air, and the surgeon used a blue towel as a “fish” to facilitate closure.

Sponge, needle, and instrument counts were correct, and the patient had an unremarkable recovery.

Six months later, the patient’s primary care physician obtained an abdominal computed tomography (CT) to rule out liver metastases. A mass with no radiopaque marker was found adjacent to the anterior abdominal wall (**FIGURE**). The radiologist thought the mass might be a recurrence.

However, after reviewing the operative note, the surgeon concluded that the mass was a retained towel. He apologized to the patient and family before and after the surgery. A retained towel was found at laparotomy, which was easily removed without bowel resection. As a result of the excellent patient-surgeon rapport, the patient did not file suit.

CASE 2

Emergency surgery

A woman underwent emergency Cesarean and tubal ligation. Nine years later, a clamp was incidentally found on physical examination. The clamp was removed but the surgery was complicated by a colon perforation and necrotizing fasciitis requiring resection.

The patient required multiple surgeries that resulted in a large ventral hernia. The patient sued the hospital and surgeons.

VERDICT: The patient was awarded \$2.7 million. The hospital was found 44% liable and the surgeons 56%.

‘Captain of the ship’

Although the responsibility for performing sponge counts lies with the OR nursing service, for practical purposes the legal responsibility usually extends to the

TABLE

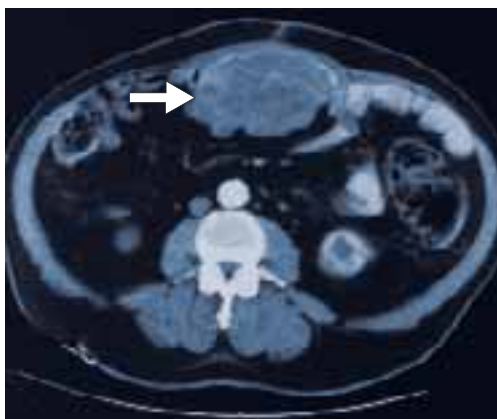
AORN guidelines for sponge counts

The Association of Perioperative Registered Nurses recommends counting sponges at these intervals in all procedures in which a sponge could be retained:

- Before the procedure.
- Before closure of cavity.
- Before wound closure.
- Upon skin closure or the end of procedure.
- Upon permanent relief of either the scrub person or the circulating nurse.

FIGURE

Locating the towel



Abdominal computed tomography showed a mass with no radiopaque marker adjacent to the anterior abdominal wall (arrow).

surgeon. This can be true even when an intraoperative x-ray fails to detect a retained sponge.⁹

In the case *Ravi v Williams*, the Alabama Supreme Court invoked the “Captain of the Ship” doctrine, reasoning “that the surgeon remains responsible for what he [or she] put in the patient’s abdomen, despite the fact that the general custom and practice ... is to delegate the task of accounting for sponges to the OR nurses.”¹⁰ Delegating that task to the nurses does not relieve the surgeon of the responsibility to remove them; that responsibility is the surgeon’s alone.¹¹

That said, not all jurisdictions recognize the “Captain of the Ship” doctrine.¹²

KEY POINT

Although the responsibility for sponge counts lies with the OR nursing service, for practical purposes that responsibility usually extends to the surgeon.

STEPPED-UP MEASURES TO CURB RETAINED FOREIGN BODIES

At the Central Texas Veterans Healthcare System, we are experimenting with the following measures to eliminate retained foreign bodies:

- Continue aggressive use of AORN recommendations.
- Minimize nursing personnel turnover during cases.
- Perform counts when nursing personnel changes.
- Develop and maintain specialty teams that are familiar with surgeons' procedures and routines.
- Obtain routine x-rays in the following situations:
 - After emergency surgery.
 - After any change in the planned surgical procedure.
 - With obese patients.
 - When blood loss exceeds 750 cc by anesthesia estimates.
 - When any member of the team is permanently replaced (eg shift change).
 - When any team member requests it.

We are also considering routine x-ray on all abdominal cases, and applying the above practices to all cases in which a body cavity is opened.

KEY POINT

The best preventative measure today is a combination of counts, surgeon and nurse diligence, and radiologic examination.

Another legal principle can come into play in such cases: *res ipsa loquitur*. This legal principle holds that documentation of an adverse occurrence is evidence of possible substandard and negligent care.¹³

In the case of a retained sponge, the doctrine of *res ipsa loquitur* means that the presence of a retained foreign body implies a breach of the standard of care by both nursing staff and surgeon.¹¹ Although the doctrine of *res ipsa loquitur* is not always applicable, settlements and trial verdicts suggest that juries typically assume both surgeons and nurses had a role in the negligence.^{9,13}

Most patients with retained foreign bodies do well except for the need for a second surgery. As a result, some authors have suggested establishing a standardized indemnity payment to avoid the need for medicolegal actions in such cases.

Preventative measures

Even with an effective team approach, retained foreign bodies remain a fact of life. Our goal remains to keep this complication to a minimum. Sponge and instrument counts alone, however, cannot

solve this problem.

In most cases of retained foreign bodies, the counts are correct. A combination of counts, surgeon and nurse diligence, and radiologic examination is the best solution we have now. In the future, bar code, radiofrequency identification or other tracking technology may prove to be the best solution. ■

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