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The Retained Surgical Sponge

C. William Kaiser, M.D.,*† Sissie Friedman, B.S., M.A.,‡ Kathleen Pfeifer Spurling, R.N., J.D.,‡ Timothy Slowick, B.S., M.B.A.,‡ and Holly A. Kaiser, B.A.

From the Department of Surgery, Department of Veterans Affairs Medical Centre, Manchester, New Hampshire; Harvard Surgical Service, New England Deaconess Hospital and Harvard Medical School,† Boston, Massachusetts; and the Medical Professional Mutual Insurance Company (ProMutual), Boston, Massachusetts‡*

Objective

A review was performed to investigate the frequency of occurrence and outcome of patients who have retained surgical sponges.

Methods

Closed case records from the files of the Medical Professional Mutual Insurance Company (ProMutual, Boston, MA) involving a claim of retained surgical sponges were reviewed for a 7-year period.

Results

Retained sponges occurred in 40 patients, comprising 48% of all closed claims for retained foreign bodies. A falsely correct sponge count after an abdominal procedure was documented in 76% of these claims. Ten percent of claims involved vaginal deliveries and minor non-body cavity procedures, for which no sponge count was performed. Total indemnity payments were $2,072,319, and defense costs were $572,079. In three cases, the surgeon was deemed responsible by the court despite the nursing staff's admitting liability and evidence presented that the surgeon complied completely with the standard of care. A wide range of indemnity payments was made despite a remarkable similarity of outcome in the patients studied.

Conclusions

Despite the rarity of the reporting of a retained surgical sponge, this occurrence appears to be encountered more commonly than generally is appreciated. Operating teams should ensure that sponges be counted for all vaginal and any incisional procedures at risk for retaining a sponge. In addition, the surgeon should not unquestioningly accept correct count reports, but should develop the habit of performing a brief but thorough routine postprocedure wound/body cavity exploration before wound closure. The strikingly similar outcome for most patients would argue for a standardized indemnity payment being made without the need for adversarial legal procedures.

The retained surgical sponge represents the *bête noire* of the healthcare provider because in most jurisdictions, the doctrine of *res ipsa loquitor* may be applied against the parties deemed responsible for the act. This legal principle essentially holds that the documented presence of such an adverse occurrence represents evidence that substandard and negligent care may be presumed to have taken place.

The reported frequency of sponge retention after surgery is not high. Whether this is because of the relative rarity of occurrence or to the medicolegal implications therein is not clear.

Address reprint requests to C. William Kaiser, M.D., VA Medical Centre, Department of Surgery, 718 Smyth Road, Manchester, NH 03104.
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Table 1. OCCURRENCE VARIABLES

Type of surgical sponge
Elective or emergency case
Shift change
Operative procedure
Duration of procedure
Count performed
Count correct
Claim or suit filed
Medical outcome
Indemnity payment
Defense payment

To determine the cause and result of retained sponges that resulted in claims of malpractice, 9729 closed case files from the Medical Professional Mutual Insurance Company (Promutual, formerly the Massachusetts Medical Professional Insurance Association, Boston, MA), which underwrites malpractice coverage for more than 70% of all healthcare providers in Massachusetts, were reviewed for the years 1988 to 1994.

METHODS

Sample Selection and Record Review

Closed malpractice claims against ProMutual-insured professionals and healthcare facilities for 1988 to 1994 in which a retained sponge was alleged were reviewed by malpractice claims representatives and a physician. Information from these selected cases was recorded onto a work sheet and entered into an EXCEL spreadsheet (Microsoft, Redmond, WA) and a PARADOX database (Borland Corp., Scotts Valley, CA) (Table 1). Results were reported as numbers of the studied population. Data were stratified for occurrence variables, and probability values from a binomial distribution, nonparametric analyses with the Wilcoxon option, and Fisher's exact test, were calculated using the SAS software package (SAS Institute, Inc., Cary, NC).

ProMutual differentiates a claim from a case. A claim is an action brought on behalf of a patient against one physician covered under one insurance policy. A case is an action brought on behalf of a patient, regardless of the number of defendants. For example, a patient diagnosed with a retained surgical sponge brings an action against his surgeon, the assistant, and the hospital. ProMutual considers this example to be three claims, but only one case.

RESULTS

Of the 9729 closed claims reviewed, 67 (.7%) were found to involve 40 patients having retained surgical sponges. These claims were filed against 40 physicians and 27 institutions. Most of the cases (22/40, 55%) involved abdominal surgery, and 11 cases involved uncomplicated vaginal deliveries (Table 2).

Table 2. OPERATIVE PROCEDURES

Pocedure	No.
Caesarean section	6
Staging laparotomy	1
Appendectomy	2
Repair of colovesical fistula	1
Laminectomy	2
Caldwell-Luc	1
Thoracoabdominal laparotomy	1
Coronary artery bypass graft	1
Anterior exenteration/ileal loop	1
Hysterectomy	4
Splenectomy	1
Pelvic lymphadenectomy	1
Pacemaker insertion	1
Cholecystectomy	1
Right colectomy	1
Bilateral tubal ligation	1
Left colectomy	2
Iliac crest bone graft harvesting	1
Vaginal delivery	11

Eighteen cases (45%) were against a single defendant, occurring in 8 of the 11 vaginal claims (74%), but in only 10 of the 29 nonvaginal cases (34%). Total indemnity and defense expenditures were $2,644,398 (Table 3). Not all claims resulted in the filing of lawsuits. Of the 29 nonvaginal procedure claims, 59% involved suit. For the 11 vaginal procedures, 50% resulted in suit. Indemnity payments of $2,072,319 were made in 32 (80%) of the 40 patients' claims against the 67 healthcare providers, ranging from $1890 to $800,000 by claimant, with a mean of $51,808 and a median of $20,000. Mean and median payments for vaginal sponges were $6859 and $5063, with a median of $68,857 and a mean of $32,500 being spent for claims involving abdominal procedures (Table 4). The distribution of indemnity payments was $1,762,163 for physicians and $909,706 for healthcare institutions and their employees.

These figures may be somewhat misleading because

Table 3. TOTAL DOLLAR EXPENDITURES

	No.	Indemnity ($)	Expense ($)
Claim	29	553,390	64,242
Suit	38	1,518,929	507,837
Total	67	2,072,319	572,079

Table 4. TOTAL DOLLAR EXPENDITURES BY PROCEDURE

	Nonvaginal Procedure			Vaginal Procedure		
	No.	Indemnity ($)	Expense ($)	No.	Indemnity ($)	Expense ($)
Claim	22	524,000	63,305	6	27,500	937
Suit	31	1,472,866	442,748	8	47,953	65,089
Total	53	1,996,866	506,053	14	75,453	66,026

Massachusetts, unlike 35 other states that have abolished charitable immunity, observes a limitation on tort liability to certain charitable organizations. The Massachusetts Legislature has limited the liability of a hospital or other charitable institution in any such cause of action to $20,000, exclusive of interest and costs.

Defense costs were $572,079, ranging from $0 to $74,048, with a mean of $8538 and a median of $1839. Mean and median defense payments for abdominal sponge claims were $17,450 and $9924, respectively, and $6002 and $450 for vaginal sponge claims. The remaining eight claims were concluded without any payment by ProMutual.

Five of these cases were not pursued to suit against ProMutual- insured defendants because of uncertain damages; one case was dropped because the sponge most likely was left in by a foreign hospital.

There was no relationship between amount of defense costs and indemnities paid, except for suits proceeding through trial, which resulted in higher expenses than for claims/suits that were settled without judicial intervention (Table 3). Length of time to discovery ranged from the same day to 16½ years after the occurrence, with a mean time of 198 days and a median of 25 days. The time period between discovery of the sponge and the date of the original procedure was related significantly to the case payment per se, with the higher payments reflecting complications and difficulties experienced with the surgery for removal.

Of the 29 nonvaginal cases, failure to perform sponge counts accurately (falsely correct) was observed in 22 (76%); in 3 of these 29 cases (10%), no sponge count was done. False-negative intraoperative x-ray results were responsible for sponge retention in 3 of 29 other cases having incorrect sponge counts. Poor-quality films, multiple known radiopaque operative densities, and radiologists' unawareness of the surgical team's foreign body concerns were deemed responsible. In the 1 remaining case of the 29, the sponge count was incorrect, but the surgeon declined to delay wound closure or obtain an intraoperative X-ray.

Sponge counts were not performed in any of the 11 vaginal procedures. Sponge counts also were not done in a pacemaker implantation and an emergency cesarean section, in which the operative team relied on intraoperative x-rays. Unfortunately, these studies were read as being negative for a retained foreign body.

Both physician and nursing staff problems resulted in sponge retention. Surgeons did not request sponge counts, dismissed incorrect counts, or did not verify cor-

Table 5. EXPLANATIONS GIVEN FOR INCORRECT COUNT

Team fatigue
End of shift
Adherent sponges
System problem
Surgeon declined repeat count
Falsely negative intraoperative x-ray
Excessively bloody procedure
Incorrect package count
Conversation in the OR
OR RN left OR
No count performed
Sponge looked for, not found

OR = operating room; RN = registered nurse.

Table 6. SIGNIFICANCE OF OCCURRENCE VARIABLES

Item	No.	Item	No.
Sponge	32	Laparotomy pad	8*
Emergency	8	Elective	26*
Shift change	5	No shift change	31*
Body cavity	36	Nonbody cavity	4*
Count performed	27	No count performed	12*
Count incorrect	4	Count correct	23*
Procedure <2 hr	15	Procedure >2 hr	10
Indemnity payments			
Vaginal	$76,452	Nonvaginal	$1,996,866*
Surgeon	$1,162,613	Health care facility	$909,706*
For surgeon	40	For health care facility	27*

* $p < 0.05$.

rect counts with wound exploration. Nursing staff members either did not perform sponge counts or allowed incorrect counts to be accepted.

The most common explanations for falsely correct counts were that the operative procedure was difficult, there was practitioner fatigue, sponges stuck together, and a poor tracking system was in place (Table 5).

Most retained sponges occurred in elective, nonvaginal body cavity procedures not involving a nursing shift change, and for which a sponge count was performed. Small sponge size (non-Mickulicz laparotomy pad) and an incorrectly correct count were more commonly associated with sponge retention. Amount and frequency of indemnity payments on behalf of the operating surgeon were in excess of those for health care facilities (Table 6).

Of the 29 abdominal sponges retained, 22 were small (10 × 19 cm; 76%). The larger 33 × 30-cm laparotomy (Mickulicz) pads comprised the remainder (24%). In one patient undergoing an emergent cesarean section, two laparotomy pads were left behind, despite an incorrect sponge count. One patient having a cholecystectomy had two retained laparotomy pads, despite a correct sponge count. The probability of successful defense of claims was not related to the size of the retained sponge.

Operative procedures primarily were abdominal, although there were five nonextensive extracavitary procedures (Table 2), underscoring the need for careful wound inspection when sponge counts are not performed.

The amount of indemnity payments was significantly higher for the operating surgeon than the healthcare facility, except for cases in which the surgeon declined to perform further investigative measures in the absence of a correct sponge count. However, the frequency of settlement was greater for the healthcare facility, possibly secondary to the charitable immunity statute. Only five cases (1%) went to trial.

In 22 of 29 patients, discovery of intra-abdominal sponges was occasioned by a postoperative nonsymptom-directed x-ray. The seven patients with symptomatic detection had developed an abdominal mass, evidence of an intra-abdominal or wound infection, abdominal cramping, or frank small bowel obstruction. All vaginal sponges were discovered because of local signs and symptoms.

Damages in 26 of 29 patients consisted of the need for a second operative procedure to remove the foreign body with drainage of any associated infectious collection. One patient suffered a nonfatal pulmonary embolus after surgical removal of a retained sponge. No long term sequellae ensued. The patient was awarded the maximum $20,000 for her claim filed against the hospital, in accordance with the charitable immunity cap statute extant in Massachusetts. The case resulted in a plaintiff's verdict against the surgeon in excess of $150,000. Two patients declined removal of the identified sponge because they were asymptomatic, but filed claims for damages anyway.

DISCUSSION

The flow of malpractice claims filed against healthcare providers and in dollar awards to plaintiffs has continued relatively unabated, despite an acute awareness of risk management activities by medical, nursing, and paramedical professionals.[1]

Consequently, most institutions and professional insurance underwriters have individuals specializing in risk management issues on their staffs. Indeed, in some states, there is a requirement for formal risk management training to maintain active professional licensure.

Nevertheless, our review demonstrated that despite such activity, in Massachusetts, the problem of retained surgical sponges would seem to be an area in which we must continue to make significant attempts at improvement.

The incidence of retained sponges can never be determined precisely because of the difficulty in obtaining an accurate figure for the occurrence of new cases. Similarly, the prevalence of this complication cannot be calculated without knowing the denominator of all patients who have undergone surgical procedures, although it generally is believed that this complication is uncommon.

Additionally, because most patients with intra-abdominal sponges remain asymptomatic, discovery often is an incidental event, after an abdominal x-ray for some other indication. Also, not all patients suffering this postoperative complication will file claims against a healthcare provider, further decreasing the number of known occurrences using our identification means.

In a recent review of more than 31,000 records of hospitalized patients,[2] no adverse event or claim involving a retained surgical sponge was observed, suggesting that this mishap is a rare occurrence.

However, our data, demonstrating a prevalence of 40 cases over a 7-year period, with an expenditure of $572,079 for defense costs and $2,072,319 in indemnity payments, indicate that this issue may reflect a more widespread and significant problem than generally is appreciated.

Retained surgical sponges after an operating room procedure represented 48% of all claims for retained foreign bodies in the 7-year period reviewed. This figure is astonishing, in view of the sponge-counting measures routinely performed in all hospitals, in accord with the Association of Operating Room Nurses' standards addressing this issue. Specifically, it is recommended that

only x-ray–detectable sponges should be used and counts should be performed on all surgical procedures.[3]

The responsibility for accurate sponge counts rests with the circulating nurse and scrub individual, and the performance of such counts is essential to safe operating room practice.[4]

Thus, the occurrence of sponge retention and payment of $773,000 on behalf of hospital nursing staff in these cases is not surprising. However, in three cases, the operating surgeon was deemed at trial to be responsible and $1,015,500 indemnification was paid as a consequence of these claims.

This result flies in the face of conventional surgical wisdom, *i.e.*, that the nursing staff generally is perceived to be solely responsible for any inaccurate or nonperformed sponge count. Our data show that this is not always the case.

Examples of physician responsibility in this series included the following: failure to explore carefully the abdomen of a patient after completion of an emergency cesarean section in which there was no time for a sponge count; failure to inspect a pacemaker pocket and a laminectomy wound when no sponge count was performed; declination of a third count after two correct counts; and radiologist's misreading of a intraoperative x-rays on three occasions.

However, it generally is accepted by the medical community that barring instances such as those cited in the seven aforementioned cases, the operating room nursing staff bears the medical and legal responsibility for accurate accounting of surgical sponges.

Nevertheless, our data revealed surprising judicial results. In one case, a sponge was left during a cholecystectomy, and despite the nursing staff's admitting liability and expert defense testimony given that the surgeon had complied with the standard of care and that the nursing staff had failed to provide him with adequate information, a jury returned a verdict in excess of $100,000 against the surgeon.

In another case, a laparotomy pad was discovered 3 years after a caesarean section, for which the sponge count was reported to have been correct on four occasions. Although several defense experts testified that the surgeon had no independent responsibility to be aware of the number of sponges within the abdomen, the sole plaintiff expert disagreed, and the jury awarded $100,000 against the defendant operating room nurses, and $700,000 against the surgeon.

In an additional case, a patient undergoing a Hartmann procedure was found to have a retained sponge despite two correct sponge counts. The hospital and its employed nurses admitted liability, and settlement was made on the institution's behalf before filing of the suit. The jury found for the plaintiff, awarding $156,160 against the surgeon.

The concept of charitable immunity may play a role in the exposure of the surgeon to claims. This statute holds that the liability of hospital or other charitable entity healthcare providers is limited to $20,000, reducing any verdict award to this level, regardless of the liability or admission of same by the institution's employee. Therefore, to achieve a dollar award that is most beneficial to the patient, the plaintiff's attorney often will pursue aggressively the insurance exposure of the surgeon, who generally has a much higher liability indemnification coverage. Because of the contingency fee arrangement for most plaintiff's attorneys, a higher dollar award is of benefit to him/her as well.

The judicial outcome of these three cases suggests that it is important for the surgeon to insist on sponge counts being performed for any or all incisional surgical procedures in which a sponge could possibly be left and not be obvious. The high number of vaginal retained sponges in our series (11/40, 28%) after uncomplicated delivery for which no sponge count was routinely performed speaks strongly for this approach. In those instances in which patient condition militates against formal counting, the surgeon should perform a rapid examination of the wound and body cavity before closure.

Additionally, even when the sponge count is reported to be correct, the benefits of a methodical wound/body cavity examination to exclude a retained sponge would seem to outweigh any possible risk.

When the sponge count is incorrect, unless the patient is unstable, wound closure absolutely must not be completed until the missing or miscounted sponge is located. The tendency for the surgeon to decline further confirmatory counts or only to order an intraoperative x-ray could be a dangerous practice.

Our data reveal that in three cases, a negative intraoperative x-ray for retained foreign body failed to provide incontrovertible proof against sponge retention. Accordingly, the operating surgeon should be wary of accepting negative readings as absolute. Both direct communication with the radiologist and methodical preclosure exploration of the wound and body cavity would seem advisable in this instance.

The average indemnity payment of $51,808 does not reflect exceptionally high exposure compared with other claim areas, although even in cases that were settled for low amounts, significant expenses were generated in their conclusion. Thus, the problem of sponge retention would seem to be an area in which we can make significant attempts at improvement so that all of these potentially avoidable cases may be prevented.

In 39 cases in which the surgeon relied on the nursing and radiology staffs for avoidance of a retained sponge,

indemnification of $965,500 and defense costs of $593,768 were paid, with a wide range of plaintiff awards, despite nearly identical claims and damages. Such financial outlay seems unnecessarily costly to society. Furthermore, the requisite reporting of these judgments to the National Practitioners' Data Bank could be damaging to the competent surgeon's record, and might not be an accurate methodology for assessing surgeon competency in all cases.

In terms of allegations and damages, it is clear that a significant number of claimants did not, in fact, have any objectively quantifiable damages, except for the need for a second surgical procedure (76%). Nevertheless, the total $834,563 indemnity and $344,650 defense cost payments that these 32 cases generated for their resolution is a significant amount, not to mention the nonfinancial stresses and demands placed on the surgeons by these claims, no matter how tenuously founded. Therefore, all parties except plaintiff attorneys would benefit if surgeons could improve their practices in this regard.

Some have called for legislative attention to be drawn to this issue, with an eye toward establishing some standard compensatory award for aggrieved patients, without the need for stressful, prolonged, costly discovery and courtroom processes that often result in arbitrary dollar awards to the patient and his/her attorney. This question would seem to deserve further study.

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