



Approach of forensic medicine to gossypiboma

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ABSTRACT

Objective: The aim of this study was to assess the risk factors and preventive measures for gossypibomas and their medico-legal implications in forensic medicine in the Turkish legal system.

Material and Methods: This study involved a retrospective analysis of the records of 39 patients with gossypiboma. Records were available from the Istanbul Forensic Medicine Institution and were surveyed for faulty treatment between 2008 and 2012. Parameters such as distribution of the cases according to specializations, elective and emergency procedures, surgical procedures, radio-opaque sponge and fluoroscopy availability, routine sponge and instrument counting, number of nurses for counting, and control of the operative field by a second surgeon were investigated.

Results: All cases were evaluated by the Istanbul Forensic Medicine Institute 3rd Expertise Committee. This committee comprised of specialists from the departments of forensic medicine, orthopedics and traumatology, general surgery, neurology, internal medicine, pediatrics, chest disease, and infectious diseases. All cases were considered as poor medical practice (malpractice) and surgeons were found to be responsible. In 16 of these 39 cases (41%) emergency procedures were performed. No unexpected event was reported in any procedure. In 16 cases (41%), sponge count was performed and was reported to be complete. Operation notes were available in 16 (41%) cases. Control of the operative field was performed by 1 surgeon, and sponge and instrument count was performed by 1 scrub nurse. Radio-opaque sponge and fluoroscopy were available in 9 (23%) centers in these cases.

Conclusion: Gossypiboma can be prevented not only with surgeons' care but also with adequate support of medical device and material. However, it is considered as a poor medical practice. Presence of only 1 general surgeon in the expertise committee and ignorance of the working conditions by the surgeons should be questioned.

Keywords: Gossypiboma, forensic medicine, complication, surgery

INTRODUCTION

Gossypiboma refers to a mass consisting of accidentally forgotten cotton materials such as gauze or compress during surgery within the body. In addition to the medical consequences such as morbidity or even mortality, it may be troublesome for the physician in terms of forensic issues. The actual incidence in addition to forensic cases is not known due to reluctance in reporting to protect colleagues. The medical and legal aspects of forgotten materials within the abdomen have been examined in several publications. Articles investigating the medical aspects focus on risks and preventive methods in decreasing these risks, while those examining the legal aspects focus on the results of expert or court decisions (1-6). However, no study has yet addressed if physicians have access to such preventive methods within the hospital they work in and if expert committees have considered these conditions. In our study, we aimed to evaluate both medical and legal aspects in combination and analyze the risk factors, the frequency of application of preventive measures and how the forensic institution approaches to such cases.

MATERIAL AND METHODS

This retrospective study included 39 files that were referred for expert opinion to Istanbul Forensic Medicine Institute between 2008-2012. The expert opinions were reviewed. The distribution of the files was made according to surgical specialties. Parameters such as number of urgent / elective surgeries, type of surgery, unexpected events during operation, use of radio-opaque sponges, the availability of a scope, sponge count, the number of nurses performing sponge count, and control of the operative field by a second surgeon have been investigated.

Statistical Analysis

Rates and distribution in this case series are shown as percentage and frequency.

RESULTS

Files were assessed by the Istanbul Forensic Medicine Institute 3rd Expertise Committee. The assembly consisted of forensic medicine experts, orthopedics and traumatology specialist, general surgeon, neurologist, internal medicine specialist, pediatrician pulmonologist and infectious diseases specialist. In all files, gossypiboma was unanimously evaluated as error in medical practice, and physicians were found

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Table 1. Diagnosis and operation types

Diagnosis	Operation	Number
Penetrating trauma	Vascular repair+small bowel repair	1
Myoma uteri	Total abdominal hysterectomy	2
Pregnancy	C-section	5
Acute cholecystitis	Cholecystectomy	7
Renal cell cancer	Nephrectomy	3
Perforated appendicitis	Appendectomy	3
Pancreatic cancer	Whipple's operation	3
Splenic injury	Splenectomy	1
Incisional hernia	Mesh repair	2
Liver hydatid cyst	Cystotomy-drainage	2
Sigmoid colon tumor	Sigmoid colectomy	4
Coronary artery disease	Coronary by-pass	2
Breast cancer	Modified radical mastectomy	1
Oesophagus cancer	Transhiatal oesophagectomy	1
Gastric cancer	Total gastrectomy	2
Total		39

to be faulty. Twenty-seven out of the 39 surgeons in the study were male and 12 were female, with a mean age of 42. The distribution of files by surgical specialties was as follows: 26 (66.6%) general surgery, 7 (17.9%) obstetrics and gynecology, 3 (7.7%) cardiothoracic surgery, and 3 (7.7%) urology. 16 of the 39 surgeries (41%) were emergency surgeries. There were no unexpected events during the operation in any of the files. In 16 cases (41%), sponge counts were made and were reported to be complete. The control of the operation area was done by one physician, and sponge and tool counts were made by one nurse. An operative report was present in 16 (41%) files. Radio-opaque material coated surgical sponges were being used in 18 (46%), and fluoroscopy device was available in 13 (33%) centers where the surgeries were performed. There were 9 (23%) hospitals with both. Types of surgical operations are given in Table 1.

DISCUSSION

The final decision in the judicial proceedings in medical matters is dependent on the judge's discretion; nevertheless, since a judge's average knowledge in such cases is insufficient, expert opinion reports have a significant impact on the decision. Surgical interventions inherently carry some risk. The actual risks are accepted as complications if physicians show the necessary professional care and attention and act in accordance with the general rules of medical science; otherwise, they are evaluated as malpractice. While in our country gossypiboma used to be considered as a complication until the 1980s, currently it is considered to result from carelessness, and physicians are deemed faulty (7). Physicians in all 39 files examined in our study were decided to be faulty. Therefore, it has been recognized as a medical malpractice. Although we cannot make a precise conclusion since we could not access court decisions, it can be suggested that the physicians were most likely punished.

Some risk factors for gossypiboma were identified in the literature. These include emergent operations, obesity and unexpected events such as bleeding or organ injuries during operations (2-5). In our study, 41% of the operations were emergency operations. There was no data associated with patient's obesity status. There were 16 files with an operative note, but these did not report any unexpected events. In the literature gossypiboma prevalence in case of emergency operations ranged from 13.3-85.7% (2, 4, 5). In our study, although gossypiboma seems to be more common in elective surgery, when it is considered that emergency surgeries were much less as compared to elective surgeries in this series, it may be considered that the actual rate is higher in emergency operations. In addition, inadequacy and lack of recorded data are important issues.

Obtaining accurate count of sponges and materials is critical to prevent gossypiboma. In the review of articles published in the literature, Stawicki et al. (8) stated that appropriate and accurate counting of sponges is the primary requirement in reducing these cases. However, how sponge counts are performed is also important. It is important that a second nurse other than the scrub nurse counts sponges and material (5). 82% of cases can be prevented by this method only. In 72-88% of studies on foreign bodies forgotten in the abdomen, it has been reported that the sponge count was incorrectly identified as complete. In 16 cases (41%) materials and sponges were counted by one nurse, and they were reported as a complete count. Thus, the counting was incorrect. These results suggest that sponge count was not given the required attention. Controlling the operation area by another physician is the second recommended method (1). This method was not used in any of the files. This may be due to the fact that the surgeon was working alone, or because they were not aware of such a method.

Radio-opaque coated sponge material and fluoroscopy devices are necessary to reduce and even prevent these types of cases (1). Gravende et al. (2) reported that using radio-opaque material coated sponge in operations particularly at risk reduce the frequency of gossypiboma. Only nine of 39 centers evaluated in this study used both radio-opaque material coated sponge and a scope. Nine centers only had radio-opaque material coated sponge, and only four centers used a scope. In other words, only nine centers had the necessary technical equipment. Based on these results it can be concluded that our centers was inadequate in terms of technical requirements.

Regenbogen et al. (1) stated that 82% of the cases could be prevented by evaluation of the sponge count and the operation site carefully by a separate team, 97.5% by using x-ray equipment, and 100% by application of radiofrequency barcode devices. Therefore, even when doctors and health care staff are diligent, there is an 18% risk of leaving medical materials within the abdomen. For that reason, not only physician awareness but also technical possibilities do play a role.

The studies evaluating risk factors for gossypiboma compared each case with four cases who were operated in similar circumstances but did not have gossypiboma. The files included in this study were from different regions of our country, with no data on operation conditions due to lack of medical recording. Therefore, we were unable to assess the significance of our findings in terms of risk factors.

CONCLUSION

The Forensic Medicine Institute considers gossypiboma as malpractice. Prevention is not only possible with the attention of the physician, but also by support from medical equipment and supplies. Participation of only one general surgeon in the expert committee, and disregarding the conditions of the working environment by the committee need to be further questioned.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Istanbul Forensic Medicine Institute.

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