

## Assigning Responsibility for Gossypiboma (Abdominal Retained Surgical Sponges) in Operating Room

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### ABSTRACT

**Background and objective:** Retained surgical gauze is a well known but less frequently reported surgical error. Several factors can lead to this mishap. It remains under-reported due to medico legal issues associated with its occurrence. This study was carried out to determine the view of health care providers at risk of committing this error regarding accidental abandonment of surgical gauze in surgical patients.

**Type:** Cross sectional study.

**Place:** Civil Hospital Karachi.

**Method:** A questionnaire was distributed among the participants by investigators. The participants were divided into categories of faculty, surgical trainees and scrub Nurses. The responses of the participants were entered and analyzed on SPSS version 11.

**Results:** A total of 254 participants completed the survey form. Majority of the participants were trainees and scrub nurses.i.e.159 (62.5%) and 51(20.1%) respectively. Quite a few participants supported the idea of introduction of medical ethics in curriculum 108 (42.5%), active legislation regarding abandonment of swabs by PMDC 52 (20.4%), application of white boards in swab counting i.e. 80 (31.4%), and barring of surgeon if found involved in such accident 53 i.e. (20.8%). Most participants thought swab counting was practiced in the operation theater (195/254)(76.7%) and that radio opaque swabs should be used (182/254)(71.6%). Most participants thought it was the responsibility of the scrub nurse to count the swabs (156/254) (61.4%). The two most common responses by participants in an event that a swab was found in a patient post operatively were, to make an attempt to bury the issue between the surgeon and scrub nurse (129/254) (50.7%) and to inform the hospital administration (74/254) (29.1%) respectively.

**Conclusion:** Retained surgical gauze is an important surgical error in terms of medico-legal issues and patient morbidity. Health care providers fear its' outcomes and so standard guidelines need to be in practice to prevent patients and health care providers from this mistake and its adverse outcomes.

**Key words:** Surgical gauze, medical ethics.

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### INTRODUCTION

Retained surgical gauze in the abdominal cavity may cause symptoms, both in the early postoperative period as well as months or years after the original operation.<sup>1</sup> The term "gossypiboma" is derived from the *gossypium* (cotton) and the *boma* (place of concealment) and describes a mass within a patient's body comprising a cotton matrix surrounded by a foreign body granuloma.

According to a recent review, so far there have been 254 gossypiboma cases reported in the medical literature.<sup>2</sup> Gauze sponges typically used for surgery are fibrous, absorbent materials composed of sterile cotton or synthetic fabrics. The large variety of different sponge types, the small size of many of the sponges, and large number of sponges (from 5 to 75 depending on the surgery) used in surgical cases contribute to their risk of retention. Once soaked in blood, sponges change in size and shape and can be difficult to distinguish from surrounding tissue. The incidence of this mishap has been reported as 1 in 1000 to 1500 in intra-abdominal open surgeries and 1 in 3000 in all surgical interventions.<sup>3,4</sup> True worldwide incidence is unknown possibly due to medico-legal implications and consequences the health care professionals have to face due to this error. In Pakistan, Jaffary et al<sup>5</sup> in their study on retained surgical sponges after surgery

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reported a total of 14 cases in a period of over 15 years. The most common surgeries performed on these patients were obstetrical and general surgical.

The present study was conducted to determine the view point of healthcare providers involved in general surgical care regarding the accidental abandonment of swabs in surgical patients.

## MATERIAL AND METHOD

A questionnaire was distributed among the faculty, surgical trainees and scrub nurses of general surgery and allied specialties in major tertiary care hospitals of Karachi. The Category of faculty included Professors, Associate and Assistant professors and Senior registrars. The category of surgical trainees included Post graduate trainees and House officer while scrub nurses consisted of senior and junior scrub nurses. A group of medical students' interested in research were recruited as investigators for distribution, explanation and collection of questionnaires. The questionnaire was available in both Urdu and English languages. The information on the questionnaires was entered on a computer and analyzed on SPSS 11.

## RESULTS

A total of 254 participants completed the survey form. Male to female ratio was 3.7:1 i.e. 200 males and 54 females. Mean age of the participants was 30.5 + 13.2 years. Majority of participants belonged to the category of trainees and scrub nurses i.e. 159 (62.5%) and 51 (20.1%) respectively (Table I).

Table I: Distribution of different categories

| Category                   |                                   | Total |
|----------------------------|-----------------------------------|-------|
| Faculty<br>N=44            | Professor                         | 7     |
|                            | Associate Prof.                   | 11    |
|                            | Assistant Prof/ Senior Registrars | 26    |
| Surgical Trainees<br>N=159 | Post Graduates                    | 100   |
|                            | House officer                     | 59    |
| Para Medics<br>N=51        | Senior and Junior scrub nurses    | 51    |
| Total                      |                                   | 254   |

A total of 108/254 (42.5%) participants believed teaching regarding medical ethics should be part of curriculum. Minority of surgical faculty (15/44) (34%) and trainees (70/159) (44%) responded with a "Yes" to question regarding inclusion of medical ethics in education (Table II).

In response to question regarding active legislation in PMDC on retained swabs; only 52/254 (20.4%) participants believed it should be done (Table II).

Most of the participants believed practice regarding swab counting was applied in the operating room i.e. (195/254) (76.7%) (Table II).

Regarding effectiveness of white boards in keeping count of swabs in the operating room, 80/254 (31.4%) participants believed they were effective. Opinion was divided with respect to different categories with majority of faculty (28/44) (63.6%) and only 34/159 (21.3%) trainees and 18/51 (35.2%) scrub nurses considering white boards useful (Table II).

Majority of participants (180/254) (70.8%) believed operating surgeons should not be barred from practice in an event of a retained swab in a patient post operatively. Only 1/44 (2.27%) participants from the faculty and 36/159 (22.6%) trainees had the view that operating surgeons should be banned from operating any further (Table II). Similarly, a majority of participants (182/254) (71.6%) from different categories believed there should be a radio-opaque marker in swabs for post operative detection (Table II).

Most of the participants (156/254) (61.4%) thought it was the responsibility of the scrub nurse to keep count of swabs. Majority of scrub nurses 42/51 (82.3%) had a similar response (Table III).

The two most common responses by participants in an event that a swab was found in a patient post operatively were, to make an attempt to bury the issue between the surgeon and scrub nurse (129/254) (50.7%) and to inform the hospital administration (74/254) (29.1%) respectively (Table III).

Table II: Response of participants with respect to different categories

| Question                     | Category            |                       |                         | Total<br>N=254 (%) |
|------------------------------|---------------------|-----------------------|-------------------------|--------------------|
|                              | Faculty<br>N=44 (%) | Trainees<br>N=159 (%) | Scrub Nurse<br>N=51 (%) |                    |
| Medical ethics in curriculum | 15(34)              | 70(44)                | 23(45)                  | 108(42.5)          |
| Legislation in PMDC          | 12(27.2)            | 25(15.7)              | 15(29.4)                | 52(20.4)           |
| Swab Count applied           | 40(90.9)            | 108(67.9)             | 47(92.1)                | 197(77.6)          |
| Effectiveness of white board | 28(63.6)            | 34(21.3)              | 18(35.2)                | 80(31.4)           |
| Barring of Surgeon           | 1(2.2)              | 36(22.6)              | 16(31.3)                | 53(20.8)           |
| Radio opaque swabs           | 37(84)              | 106(66.7)             | 39(76.4)                | 182(71.6)          |

Table III: Response of participants with respect to different categories

| Question                        | Response                | Category            |                       |                         | Total<br>n=254 (%) |
|---------------------------------|-------------------------|---------------------|-----------------------|-------------------------|--------------------|
|                                 |                         | Faculty<br>N=44 (%) | Trainees<br>N=159 (%) | Scrub Nurse<br>N=51 (%) |                    |
| Responsible for counting swabs  | Surgeon                 | 11(25)              | 10(6.28)              | 0                       | 21(8.2)            |
|                                 | Assistant               | 0                   | 8(5)                  | 1(1.9)                  | 9(3.5)             |
|                                 | Scrub Nurse             | 21(47.7)            | 93(58.4)              | 42(82.3)                | 156(61.4)          |
|                                 | All                     | 11(25)              | 48(30.1)              | 8(15.6)                 | 67(26.3)           |
|                                 | Don't know              | 1(2.2)              | 0                     | 0                       | 1(0.4)             |
| Action in case of retained swab | Bury the matter         | 16(36.3)            | 69(43.3)              | 44(86.2)                | 129(50.7)          |
|                                 | Inform Hospital Admin   | 15(34)              | 59(37.1)              | 0                       | 74(29.1)           |
|                                 | Inform press            | 0                   | 4(2.5)                | 0                       | 4(1.5)             |
|                                 | Inform patient/Relative | 11(25)              | 15(9.4)               | 29(3.9)                 | 28(11)             |
|                                 | Don't know              | 2(4.5)              | 12(7.5)               | 5(9.8)                  | 19(7.4)            |

## DISCUSSION

Retained surgical foreign bodies are one of the most dreaded complications of surgical care. Their incidence remains poorly reported due to an unwillingness among different hospitals and health care providers to share their mistakes with other institutions.<sup>6,7</sup> Theoretically preventable, their reported incidence is 0.3 to 1.0 per 1,000 abdominal operations.<sup>3,8</sup> Also, these events are frequently under-reported due to medico legal concerns.<sup>9</sup> In the present study, only 52/254 (20.4%) of the participants agreed to development of an active legislation in Pakistan Medical and Dental Council (PMDC) regarding retained sponges. This probably represents the reservations of our health care providers to complexities of existing medico legal system. Similarly only 53/254(20.3%) of the participants believed a surgeon involved in such an event should be barred from the practice. Only 1 out of 44 (2.2%) members from the faculty approved of the idea of imposing a ban on the involved surgeon. In response to a question regarding the action a participant would take if an operating surgeon was found involved in an incidence of retained swab, the most common reply was to bury the matter between the surgeon and scrub nurse (129/254) (50.7%).

Formal teaching of ethics in the medical school curriculum in the West has increased greatly during the past 25 years. Yet, in some developing countries this is not the case.<sup>10</sup> Regarding the introduction of medical ethics in curriculum in our country, surprisingly only 15/44 (34%) of the faculty supported the view. Overall 108/254 (42.5%) of the participants supported the introduction of medical ethics in curriculum. It has been shown that problems in communication and flow of information between members of the operating team can increase the risk of a surgical

accident.<sup>11</sup> If an incorrect count occurs, inequities of power between surgical team members may be difficult to overcome. For example, the surgeon may insist on accepting the wrong count without re-exploring the wound or allowing an x-ray to be taken to verify that the missing item is not in the patient. A diligent and deliberate sponge count is essential for an error free count.<sup>12</sup> In the present study, most participants 156/254 (61.4%) agreed it is the responsibility of the scrub nurse to ensure proper count of sponges. Majority of scrub nurses 42/51 (82.3%) also agreed it was their responsibility to ensure proper counts of sponges. However the adequacy of the method applied remains to be determined.

It is recommended that circulating nurse and scrub person should count sharps and miscellaneous items for all procedures and should count instruments for all procedures in which the likelihood exists that an instrument could be retained.<sup>13</sup> Incorrect performance of sponge count or completely omitting this step definitely leads to an increased risk of retained swabs.<sup>14</sup> All participants in this study were involved in direct operative care of surgical patients and a majority of them 197/254 (77.6%) believed a proper swab count was applied in the procedures. However in the absence of a definite guide line for proper swab count, this remains a grey area.

Institutional policies to encourage taking x-rays of patients who are at high risk for having a retained swab could identify most items left behind in case radio-opaque swabs are used.<sup>15</sup> Use of non radio opaque swabs is considered an independent risk factor for retained swabs.<sup>16</sup> In the present study, 182/254(71.6%) of the participants believed a policy of use of radio opaque swabs should be in place as it can decrease the likelihood of a retained swab in the post operative period.



Retained gauze that was enveloping the loops of ileum and was taken out when the patient underwent a second laparotomy for a palpable mass in the right iliac fossa.

## CONCLUSION

The undue attention given to such accidents by the media and other social associations perhaps has a role in the under-reporting of this condition. This study clearly demonstrates that a good number of surgical team members and scrub nurses believe the latter should be responsible for swab and instrument count. Implementation remains a grey area that can only be improved by better communication and admission of error by health care providers.

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