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CASE REPORT

Wrong side surgery: Are we on the 'right side' of patient care?

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Wrong-site surgery (WSS) is probably the most dramatic, visible and devastating experience for the patient and can have serious detrimental impact on the surgeon and anesthesiologist involved. Even with formal site verification, surgery at a site other than that involved in the disease process continues to occur frequently. It is arguably the error most feared by surgeons and anesthesiologists alike! We describe two cases of wrong-sided surgery as a platform to summarize the available literature with an emphasis on strategies to prevent such errors from harming patients and the role of anesthesiologist in implementation of these strategies.

1. Case 1

A 20 year old woman presented to the outpatient surgical service with complaints of a lump in her left breast. On clinical examination and later on histopathological examination this was diagnosed as a case of left breast fibroadenoma. However, on the out-patient department (OPD) card, the treating surgeon inadvertently entered the examined site as a right breast fibroadenoma and planned for lumpectomy of a right breast lump. The resident doctor on the surgical floor that day, without reexamining the patient clinically, entered the site and name of surgery in patient's records merely on the basis of OPD card which mentioned the site of surgery and surgical intervention by the treating surgeon.

After getting routine investigations and preanesthetic checkup the patient was placed on the next morning's operating room (OR) list which was made one day prior to surgery. The OR list mentioned the site of surgery as the right breast and the name of surgical intervention planned.

The patient was transferred to the preoperative room on day of surgery. The staff nurse in preoperative room labeled with tape, the site of surgery by looking at the OR list and reading the patient's file. In the OR, standard American Society of Anesthesiologists (ASA) monitors were applied and the anesthetist planned for administering general anesthesia to the patient. The operating surgeon meanwhile went for scrubbing and hand wash prior to surgery. As a routine protocol followed in our anesthesia department, we reconfirmed the surgical intervention and site of surgery by looking in the patient file and asking the patient of the side of surgery. To our great surprise we found that the side of surgery labeled and printed on OR list and patient case file was not matching the patient's

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verbal statement. We immediately reported the error to the operating surgeon who described and reexamined the patient and confirmed the reported error. All records were rechecked, and clinical findings were reconfirmed. Patient was instituted general anesthesia and surgery was successfully done.

Postoperatively a detailed analysis of possible errors was done by the surgical team with the anesthetist, staff nurse and the resident doctors. The possible causes of errors were evaluated and a meticulous protocol for prevention was established for all patients posted for surgery. The protocol was circulated to all concerned departments and followed with strict compliance.

2. Case 2

A 5 year old child was admitted for ambulatory care squint surgery on the right eye on the same day in morning at our hospital. Routine investigations, which were done one day prior to the surgery, were normal and thus the patient was wheeled in OR. The pre-anesthesia room nursing staff labeled the right eye of the child with a small adhesive tape place just above the right eyebrow, after verifying the surgeon's OPD card as per routine protocol in the ophthalmology department. In preoperative room, the child was accompanying his father and was waiting for his turn to get operated. Meanwhile the adhesive tape on the child's right eye accidentally fell off and his father unknowingly placed it again above child left eye instead of right eye. The child accompanying his father was wheeled inside the OR and anesthesia senior resident planned for institution of general anesthesia immediately. Surgeons without confirming the eye to be operated immediately went for scrubbing. Meanwhile the anesthesia consultant entered the OR and enquired senior resident whether he asked the child father about the side of eye the child have to be operated. Senior resident, who was newly recruited in the department, was not aware of the routine protocol being followed prior to surgery and denied asking for the mandatory confirmation as required. Immediately the father was asked. He told the anesthetist that the child suffers from a problem in the right eye. The surgeon when informed checked the records and re-examined the patient. The surgeon found that it was the right eye which is to be operated. It was revealed afterwards by the child's father that he by mistake had placed the adhesive plaster over the child's left eye as he was not aware of the importance of that tape. Surgery underwent uneventful and postoperatively the detailed discussion of the fallacy was again discussed and a protocol was made to mark the eye to be operated with a skin marker pen.

3. Discussion

Wrong-site surgery is perceived as a medical error that should never happen, not a medical risk that the patient must accept, and therefore a core patient safety problem. Legally, it qualifies under the principle of *res ipsa loquitur* (Latin for "the thing speaks for itself").In many states in the United States of America, wrong site surgery is considered as a serious reportable event, commonly referred as "never events" [1,3]. They impose heavy fines and take strict disciplinary actions against the surgeons and the anesthesiologist involved.

The National Quality Forum has published an updated report on the serious reportable events in healthcare in the United States. The most recent version of this report categorises events into six categories: surgical, product or device, patient protection, care management, environmental, and criminal events. The first category- surgical events is further subdivided into (A) surgery performed on the wrong body part. (B) Surgery performed on the wrong patient and (C) wrong surgical procedure performed on a patient [1].

Furthermore, wrong-site errors affected the patient can be classified into four groups. (1) Errors whose implications did not reach the patient (near misses where the error was caught before any care was rendered, documentation errors, or management of specimens). (2) Errors touching the patient, but not violating the informed consent (topical drugs instillation in wrong eye, surgical preparation involving the wrong site, or preliminary radiological imaging in the wrong patient). (3) Errors that resulted in initiating procedures covered by consents and belated recovery (regional anaesthesia, skin incisions, or incomplete operations) and (4) errors resulting in completion of wrong-site definitive procedures in an OR (both open and closed) [2].

Several policies and protocols have been made by various health organizations and societies to eliminate wrong site surgery [4–9]. Surgical site marking has been recommended as one of the most pivotal aspects of patient care to prevent wrong site surgery. According to the Universal Protocol promulgated by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the mark must be made using an indelible marker that is sufficiently permanent to remain visible after completion of the skin preparation [4]. After a review of the available evidences, it has been concluded that surgical site marking does not affect the sterility of the surgical field. Surgeons should be more confident in confirming preoperative marking as an effective component in preventing wrong side surgery [10].

All these protocols have highlighted the importance of doing a preoperative verification involving the patient, marking the operative site, doing a time-out just before starting the procedure, reviewing the radiological investigations before surgery, and confirmation of the procedure performed postoperatively [4–9]. To date, no definitive scientific studies have been published on the efficacy of these recommendations and no one has reported a significant decrease in the incidence or number of wrong-site surgery events. It is difficult to determine a true incidence, not only because of a lack of a standard threshold for what constitutes wrong-site surgery and documented under-reporting by healthcare providers but also because the denominator of the potential opportunities for each of the distinct wrong-site errors is unknown.

The anesthesiologist plays an important role in preventing wrong-site peripheral nerve blockade and surgery. The "preanesthetic site verification" is an integral part of preventing wrong site block and surgery. To ensure that it is carried out before every peripheral nerve block, a unique multidisciplinary approach was adopted in which the block needles were removed from anesthesia carts and transferred to a separate container in the area of the circulating nurse. The anesthesiologist must now request a block needle from the circulating nurse immediately prior to block performance and confirm the site at that time. This safety process emulates the presurgical site verification that takes place before a scalpel is passed to a surgeon [11,12].

More high-technology and fail-safe systems for preventing wrong-side error do exist like a surgical navigation system and

intraoperative magnetic resonance imaging units .These adjuncts though available in some modern operating units are time consuming and have not been found to be cost effective [13].

The opportunities for wrong-site surgery occur nearly all the time, given high-risk patient situations and the realities of human behaviour, such as confirmation bias. It has been seen that prior knowledge of the patient, marking the operative site, nor a formal time-out process just before incision are full proof sufficient barriers to prevent wrong-site surgery. In ideal circumstance, site verification needs to start with the initial patient encounter with the surgeon, continue through the initial reconciliation and verification process during the preoperative nurse and patient encounter, occur at multiple critical points in the OR, and actively engage the members of the patient's operating team, especially the surgeon and anaesthesia provider.

Neily et al. looked at incorrect surgical procedures reported from Veterans Health Administration (VHA) Medical Centers from 2001 to mid-2006 and provide proposed solutions for preventing such events. The categories included 5 incorrect event types (wrong patient, side, site, procedure, or implant), major or minor surgical procedures, location in or out of the OR, therapeutic or diagnostic events, adverse event or close call, inpatient or ambulatory events, specialty department, body segment, and severity and probability of harm. They found that most common root cause of events was lack of communication. They concluded that incorrect surgical procedures are not only an OR challenge but also a challenge for events occurring outside of the OR [14].

After an extensive literature review we have found that wrong side surgery is considered as the most common reason for wrong site surgery .These were closely followed by other wrong-part reports involving wrong locations, wrong procedure and even the wrong patient [2].

Wrong procedures were significantly more likely to be continued to completion. It was seen that the most common theme for wrong procedures was that the actions were based on faulty documented information and/or reliance on memory. Wrong-patient errors were significantly more likely to be caught as near misses at the beginning of the case and less likely to be caught after patient contact, specifically during anaesthetic blocks. Most wrong-site surgeries involved symmetrical anatomic structures. Wrong-side errors were also significantly more likely to be caught as near misses or during the injection of anaesthesia in the wrong location and less likely to go on to complete wrong-side operations [2].

World Health Organization (WHO) aims to improve communication and cohesiveness among team members at three key mileposts: Before anesthesia is induced—"Sign In" Before the skin incision—"Time Out" and before the patient leaves the OR—"Sign Out". A new **19-item checklist for safe surgery** from the World Health Organization (WHO) aims to improve communication and cohesiveness among team member's at all three key mileposts [8]. The American Association of Nurse Anesthetists (AANA) has endorsed processes described by external organizations for the purpose of promoting safe surgery and anesthesia. These include the World Health Organization's (WHO) World Alliance for Patient Safety "Safe Surgery Saves lives" initiative, the WHO "Surgical Safety Checklist" and The Joint Commission's "universal protocol." The goal of the WHO Safe Surgery Saves Lives Campaign is to improve the safety of surgical care around the world by ensuring adherence to proven standards of care in all countries. The WHO Surgical Safety Checklist has improved compliance with standards and decreased complications from surgery in eight pilot hospitals where it was evaluated [9].

Wrong site surgeries could affect a physician's license to practice medicine and also could have impacts from regulatory and accreditation perspectives, which could then have significant public relations implications for the surgeon and any associated health care organization. If a wrong site surgery case does make it to trial, there is a significant potential for a punitive damage award by a jury, if pled or an inflated reward to the patients.

At our 1000 bedded tertiary care centre in India we have successfully implemented the "Safe Surgery Saves Lives Checklist" and are actively educating all members of the various operating teams to follow the simple and easy to use checklist. The results will not be immediate but we do hope to achieve a near 100% error free operating room record in the years to come. We also initiated the concept of the "OR briefing" as a safety measure, in resident doctors and nurse training programmes. Incorporating the "OR briefing" into residency training for surgery and anaesthesiology residents, nursing training, and medical student training may prove beneficial in improving care coordination and reducing the incidence of wrong-site surgery [15].

In general, wrong-site surgery does not "just happen" to surgeons and surgical facilities. It is a monitor of the accuracy and completeness of the information brought to the point of care, the quality of professional communication, and the degree of teamwork among the members of the operating team.Systems must be developed to ensure maximum patient safety and minimize preventable adverse events. The rate of occurrence of wrong site surgery and related operating room procedures is of much concern in today's era of modern medicine. All anaesthesiologists are urged to be vigilant—to do your part to prevent the tragedies resulting from surgery performed on the wrong patient, a procedure other than the specific procedure intended, or on a wrong surgical site. Probably the most important methods of reducing WSS is to have a consistent and robust protocol that is universally followed.

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