SURGICAL SITE INFECTION IN PATIENTS UNDERGOING BREAST SURGERY

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ABSTRACT

Background: Breast pathologies frequently warrant surgical intervention. Surgical site infection is a common post-operative complication that is associated with significant morbidity and mortality. The current research determines incidence of surgical site infection in patients undergoing breast surgery. This will help implement preventive measures in this regard.

Objective: To determine the incidence of surgical site infection in patients undergoing breast surgery.

Materials and methods: It was a cross-sectional descriptive study conducted from 1st July 2023 to 31st march 2024 (9 months) in surgery unit of Khyber Teaching Hospital, Peshawar. Female patients above 15 years of age undergoing breast surgery were included while non-consenting patients were excluded. Patient's blood specimen was sent to Pathology department for determination of blood counts and chemistry. Wound swab was obtained from the cases with infected wounds and were sent to microbiology section for culture to identify causative organism. Mean and standard deviation were used to compute quantitative variables. Frequency and percentages were used for qualitative variables.

Results: Mean age of 80 study subjects is 58±29.5 (Range:39-69) years. The commonest breast procedures performed were Modified Radical Mastectomy with axillary dissection and lumpectomy which were performed in 33(41.3%) and 18(22.5%) cases respectively. The mean Hemoglobin level was 10.7 ± 1.37 (6-13). Rate of surgical site infection was 0(0%).

Conclusions: The incidence of surgical site infection in patients undergoing breast surgery is negligible, which is attributed to the strict infection control measures in our operation theatre.

Keywords: Axillary dissection, breast surgery, modified radical mastectomy, surgical site infection.

INTRODUCTION

Surgical site infection (SSI) is a common post-operative complication after breast surgery. [1] SSI is defined as superficial or deep infection at the site of surgical wound.[2, 3] SSI are classified as either superficial; where the infection is confined to the skin and subcutaneous tissue; or deep; where infection involves deeper issues.[2] The common risk factors associated with development of SSI include diabetes mellitus, smoking, and obesity.[4, 5]

The most common indication for breast surgery is breast carcinoma. According to a report, more than 2 million women are diagnosed with breast cancer annually.[1] Mastectomy is the commonest surgical procedure performed for breast cancer.[1] The breast cancer surgery is associated with a high rate of SSI, ranging from 3% to 15%.[6] However, the incidence of SSI reported from different parts of the world varies.[7, 8] According to literature, the rate of SSI in breast surgery patients vary from 1% to 42%.[9, 10, 11]

The SSI associated with breast surgery causes impaired quality of life, cosmetic disfigurement, delay in starting chemotherapy and prolonged hospital stay[12]. This leads to poor prognosis and adds up to the burden on health care facilities[13]. Thus, SSI in breast surgery patients is a major public health issue.[14-17]

To our knowledge, there is scanty data regarding incidence of post-operative SSI in breast cancer patients. Therefore, the current study was conducted to determine incidence of SSI in breast cancer patients undergoing breast surgery in our region.

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MATERIALS AND METHODS

This Cross-sectional descriptive study was carried out after obtaining Ethical approval from the hospital ethical committee. The study was carried out for a duration of nine months i.e. from 1st July 2023 to 31st March 2024 in Surgery unit of Khyber Teaching Hospital, Peshawar.

Inclusion criteria consisted of female patients above 15 years of age presenting to surgery unit with breast diseases that warranted surgical intervention. Exclusion criteria consisted of non-consenting patients. Informed consent was obtained from the patients and they were counselled about confidentiality of their data. Two ml of venous blood sample was collected each in purple top EDTA tube and yellow top gel tube. The blood specimens were sent to Laboratory for determination of complete blood counts (CBC) for hemoglobin levels (Hb), total leukocyte count (TLC) and platelet counts. Alongside, serum bilirubin, serum electrolytes, and serum creatinine were also performed.

Breast surgery was performed in Operation theatre under General anesthesia by a consultant surgeon. Strict aseptic measures were ensured to avoid wound contamination during surgery which include wearing sterilized gown by surgeons and staff, ensuring regular disinfection of the operation tables, ensuring wearing head caps during surgery and using sterilized instruments. The breast tissue or lump was sent to Pathology department for histopathology review and to make definitive diagnosis. Laboratory investigations were interpreted by a consultant Pathologist. After the surgery, patient was kept in ward for follow up observation. Discharged patients were advised to follow up and report any non-healing and discharging wound. Surgical site infection was confirmed by wound discharge, oozing, erythema around the wound and/or wound dehiscence.[2] The surgical wounds were examined as per Center for Disease Control (CDC) and Prevention guidelines for SSI surveillance.[18] In case of infected wound, a wound swab was taken from the wound and sent to microbiology section for culture and sensitivity report to identify the causative micro-organism.

Data regarding patient's characteristics was noted on a proforma and then entered in SPSS version 18 software. Data was analyzed and the results were reported. Quantitative data was analyzed by mean and standard deviation, while qualitative data was analyzed with frequency and percentages.

RESULTS

The characteristics of 80 study subjects are depicted in table 1. incidence of surgical site infection in patients undergoing breast surgery is shown in figure 1.

As shown in table 1, the mean age of the study sample was 58±29.5 years. The commonest indication for breast surgery was Modified Radical Mastectomy with axillary dissection, which was observed in 33(41.3%) cases, followed by Lumpectomy, which was seen in 18 (22.5%) cases.

As shown in table 2, the surgical site infection was present in none of the patients, i.e. all the 80 patients were free from surgical site infection.

Table 1: Characteristics of 80 study subjects

Population characteristics	Values **Mean** ± SD (Range)
Age (years)	58±29.5 (39-69)
Indication for breast surgery	**n (%)**
Axillary dissection	6 (7.6%)
Lumpectomy	18 (22.5%)
Wire guided excision	3(3.8%)
Modified Radical Mastectomy with axillary dissection	33(41.3%)
Wide local excision with axillary dissection	11(13.8%)
Breast conservation surgery	5(6.3%)
Mastectomy	3 (3.8%)
Incision and Drainage of breast abscess	1 (1.8%)
Hematological parameters	
Hemoglobin (gm/dl)	10.7 ± 1.37 (6-13)
Total leukocyte count (/mm^3)	8.3 ± 1.9 (5-20)
Platelet counts (/mm^3)	283 ± 72.91 (89-521)
Chemistry	
Alkaline phosphatase (U/L)	96.6 ± 40 (37-982)
Alanine aminotransferases (U/L)	34.16 ± 30 (1.23-211)
Bilirubin (mg/dl)	1.3 ± 5.9 (0.2-32)
Urea (mg/dl)	26 ± 16 (3.1-243)
Creatinine (mg/dl)	0.57 ±.396 (0.01-10)
Serum electrolytes	
Sodium (mEq/L)	147 ± 23.47 (134-268)
Potassium (mEq/L)	4.0 ± 3.3 (3-25)
Chloride (mEq/L)	102 ± 5.31 (82-126)

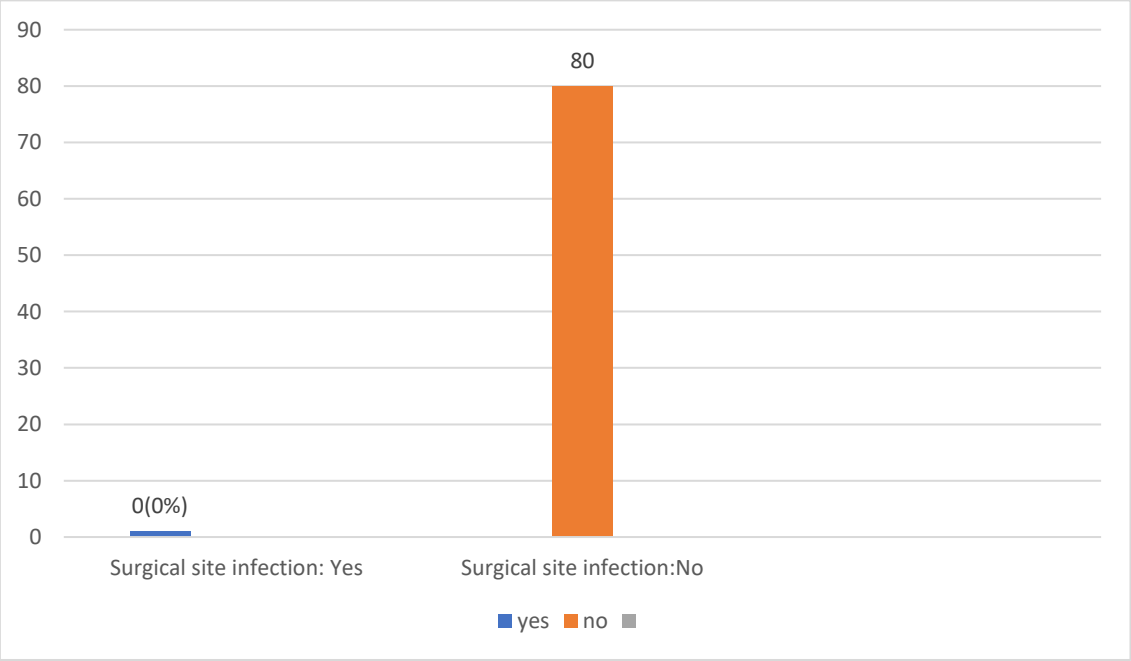

Figure 1: incidence of surgical site infection in Breast surgery patients

DISCUSSION

In the current study, the mean age of the study sample was 58 years. A higher age of 62 years is reported by Adwell et al.[1] Similarly, higher age of 62 years is reported by other studies.[6, 14] The lower age in the current study as compared to other studies suggests that patients present earlier to health care facilities for checkup and treatment.

In the present study, it was seen that surgical site infection was seen in none of the patients. So, the incidence of SSI was 0%. This is in contrast to various studies done where a significant proportion of patients had Surgical site infection after performing breast surgery. Overall, the reported rate of SSI associated with breast surgeries worldwide as per literature varies from 2% to 30%[19, 20]. A higher rate pf 14% is reported by Adwell from Sweden.[1] In another study done by Pastoriza et al, the rate of SSI in breast surgery patients reported was 2.1%.[14] In another study done in Karachi by Sattar et al, rate of SSI reported was 3.5%.[21] The highest rate of SSI reported so far is from Brazil, where Torres et al reported SSI rate of 25%.[18] Similar high rates were reported by various studies worldwide [12, 22-24]

The rates of SSI associated with breast surgery in our study are quite lower as compared to the studies mentioned. This can be due to the strict sterile measures adopted during breast surgery.

CONCLUSION

Breast surgery related Surgical Site Infection rates are very low in our setup. This is attributed to sterile surgical measures adopted in operation theatres such as disinfection of operation theatres, use of sterilized gowns and shoe covers and adoption of aseptic techniques by the health care workers in operation theatres.

LIMITAITONS OF THE STUDY

The current study was conducted in a single tertiary care center and thus the results may not be the projection of actual data.

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CONFLICT OF INTEREST

The authors declare no conflict of interest

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