

**Primary Closure with Suction Drain of Acute Breast Abscess After Incision, Drainage, and Curettage**Jyotirmaya Nayak<sup>1</sup>, D.V Ravi Kumar<sup>2</sup>, Sridhar Panda<sup>3</sup>, Debabrata Barik<sup>4</sup><sup>1</sup>Assistant Professor, Department of General Surgery, SCB Medical College, Cuttack<sup>2</sup>Assistant Professor, Department of Anaesthesiology, SCB Medical College, Cuttack<sup>3</sup>Assistant Professor, Department of General Medicine, SCB Medical College, Cuttack<sup>4</sup>Senior Resident, Department of Microbiology, Dharanidhar Medical College, Keonjhar

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**Abstract**

Breast abscess is a typical problem for both the surgeon and the patient. Breast abscess may be treated in a variety of ways. We conducted a prospective research on the primary closure of a breast abscess in situ using a suction drain after incision, drainage, and curettage. Over the course of 34 months, 38 patients were included in the research. The third decade was shown to be the most prevalent age group. The most prevalent risk factor was lactation. The most prevalent organism in pus was *Staphylococcus aureus*. The average length of stay in the hospital was just 4.18 days. The average duration for recovery was 12.03 days (range: 3-16 days). A comparison of other comparable research was performed. We found that primary suturing after incision and drainage with curettage is a better technique for a big breast abscess and should be done whenever feasible to avoid patient morbidity and pain.

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**Introduction**

An acute breast abscess is a painful pus accumulation in the breast. The majority of abscesses form just under the skin and are caused by a bacterial infection. Breast abscesses are characterised by painful, swelling lumps as well as severe mastitis. Breast abscess is a typical problem for both the surgeon and the patient. The traditional technique has been abscess incision and drainage, followed by secondary intention healing. Some surgeons recommend additional suturing once the wound granulates. However, this requires the patient to be hospitalised at a centre with surgical capabilities and is accompanied with significant morbidity in the form of daily dressing, which causes pain and suffering. In our institute, we conducted a study of primary closure with a suction drain in situ for managing breast abscess in order to reduce morbidity and overall resource expenditure, as well as to achieve complete early resolution of the disease by incorporating incision and drainage with curettage in the treatment procedure.

**Aims and Objectives**

- To study clinical, ultrasonographical, microbiological, and histopathological aspects of acute breast abscess.
- To study the feasibility and morbidity of the procedure.

**Material and Method**

All patients in the trial were admitted to an outpatient department or a casualty department, and they were informed about the study and process. Patients were then given a complete clinical examination as well as radiological examinations to determine the size and location of the abscess. The patient was placed in the emergency surgery theatre after providing written informed permission. A 10-ml syringe and a 22-gauge needle were used to collect pus for culture and sensitivity at the commencement of the treatment while under anaesthesia and after all aseptic measures. Following antibiotic administration, incision, drainage, and curettage were performed. Histopathology was performed on the curette material. The abscess chamber was completely cleaned, and a Romovac suction drain was placed within it and attached to healthy skin. Finally, the abscess chamber was sutured and a sterile dressing with a breast bandage was placed. After the surgery, the patient was monitored and then released with a drain in place when he or she was ready to go home. A follow-up was performed after three, five, seven, ten, and fourteen days, and a record of the drain fluid and its kind was recorded. When the drain fluid was minimal, the drain was removed. Sutures were removed after the skin had

recovered fully. Co-amoxiclav was the antibiotic

utilised throughout the surgery (Fig. 1).



**Figure 1: Primary suture of abscess cavity with suction drain in situ**

### Criteria of Inclusion

All cases of acute breast abscess involving at least two quadrants of the breast

### Criteria of Exclusion

- Chronic breast abscesses
- Malignant breast abscesses
- Breast abscesses less than 4 cm in size or involving only single quadrant of the breast
- Presence of unhealthy skin over abscess cavity

### Study Design

It is a prospective simple case series analysis over a period of 12 months from September 2021 to August 2022.

### Results and Observations

Patients aged 18 to 60 are included in this research. The youngest female patient was 18 years old, while the oldest female patient was 35 years old. There were just two men, one 48 years old and the other 60 years old. Thus, based on the age distribution of patients, it is clear that the third decade of life is the most prevalent age group of presentation with a breast abscess (mean age, 26.24 years). In this research, the female-to-male ratio is 18:1. The vast majority of patients, 31 out of 38, were married lactating females. Three of the non-lactating patients were married women, two were single women, and two were men.

In this research, 50% of breast abscesses were on the right side and 50% on the left. There were no bilateral breast abscesses among the patients. *Staphylococcus aureus* was found in pus culture samples from 23 of 38 patients, and all were responsive to the co-amoxiclav combination. Fifteen of the 38 patients exhibited no growth in their pus culture samples, and they were also given co-amoxiclav. According to the findings of histological studies of curettage samples, all of the patients had inflammatory tissue.

Complications occurred in four of the 38 individuals. One had a recurrence, two had suture cuts, and one developed a milk fistula. Twenty-five of the 38 patients were released from the hospital within five days. Only 13 patients had to remain in the hospital for up to ten days, with only one patient being released on the tenth day. None of the patients had to remain in the hospital for longer than 10 days.

The average hospital stay is 4.18 days (range: 2-10 days). Drain removal might take anything from 3 to 16 days. The bulk of drains were removed on days 7 (52.63%) and 10 (23.68%). Only 15.79% of the time was it eliminated on the fifth day. The average time for drain clearance was 7.7 days. Suture removal takes anything from 3 to 16 days, with a mean of 12.03 days. Sutures were removed on day 14 (55.26%) and day 10 (34.21%) in the majority of cases. Sutures were removed on day 7 in two instances (5.26%).

**Table 1: Different methods used to treat breast abscess**

Author	Method used
Benson et al. [7] 1970	Incision, drainage, and primary closure with deep vertical mattress suture
Khanna YK et al. [1] 1989	Incision, drainage, and primary closure with corrugated rubber drain
Harish SK et al. [9] 1997	Incision, drainage, and primary closure with red rubber catheter
Dieter et al. [2] 2004	Incision, drainage, and primary closure with red rubber catheter
Tewari Mallika et al. [3] 2005	US-guided aspiration and placement of a simple catheter
Faisal et al. [4] 2007	Percutaneous placement of catheter with suction drain
Vishal Dubey et al. [5] 2013	Serial needle aspiration
Present study 2016	Incision, drainage, and primary closure with closed suction drain
	Incision, drainage, curettage, and primary closure with closed suction drain

## Discussion

The current study's minimum age of presentation is 18 years, which is similar to previous studies [1-4], but one study's minimal age of presentation is just 6 years. The greatest age at presentation in the current analysis is 60 years, which is similar to two other studies [4, 5], although the maximum age indicated by other studies is 35 years [1, 39 years [2, 3], which is much lower than the current study. The mean age at presentation in the current research is 26.24 years, which is close to 26 years [6], but lower when compared to 32 years [2] and 31.93 years [4]. However, it is worth noting that the majority of patients in several studies [1, 2, 4, 6, 7] including the current research are in their third decade of life. The vast majority of instances included female patients. There were just two men among the patients. The F:M ratio in this research is 18:1, however one study [5] reported the F:Mratio to be 1.2:1, which is much lower than the F:Mratio in this study. Many studies [1-4, 6, 7] exclusively looked at female patients with acute lactating/puerperal breast abscesses. Breast abscess is more prevalent among nursing mothers, according to our research. In the current research, 81.58% of the female patients were lactating and married, whereas the remaining 18.42% were non-lactating, including three married female patients, two unmarried female patients, and two male patients. In the current research, the proportion of lactating (81.58%) to non-lactating (18.42%) breast abscess is similar to just one study [8] (77% lactating and 23% non-lactating). Some studies [1, 3, 9] limited their focus to lactating/puerperal breast abscesses. One research [4] found a nearly similar percentage of lactating (53.3%) and nonlactating (47.7%) breast abscesses. According to many researchers [1, 7, 9, 10], the skin overlaying the abscess should be healthy for improved healing in cases of primary suturing of the abscess. Only a few research [11] used abscesses with poor skin for primary closure. They [11] removed the problematic skin before performing a primary abscess closure with similar outcomes. Patients who had poor skin above an abscess were excluded from the current research. Unmarried and non-lactating ladies had circumareolar incisions made. Lactating females were given radial incisions to protect their lactiferous ducts. Scars were considerably better than with traditional incision and drainage with subsequent intention healing.

### Different Techniques Used by Different Workers for Closed Drainage of Breast Abscess

Various workers have attempted primary closure and alternative procedures to drain soft tissue abscess (Table 1). The majority of them had positive outcomes. However, widespread approval of any particular strategy is unlikely. There has

been no standardisation of any particular procedure. One major research [12] found that initial closure of incised and drained abscesses leads in quicker healing and comparable low abscess recurrence rates to secondary closure. The drain's primary function is to maintain the abscess chamber empty, allowing it to granulate and heal by secondary intention quickly and continuously. Daily dressings are required for corrugated rubber drains and red rubber catheters, negating the aesthetic element of the wound and the discomfort associated with dressing. Suction drain actively maintains the abscess chamber closed [13, 14], eliminating the need for daily dressing and discomfort, as well as the associated morbidity of daily dressing. In the event of primary suturing, a drain should be employed anytime the abscess chamber is more than 4 in. 1/2 in. 1 in. or larger than 50 ml, according to one worker [15]. The goal of having a drain in the cavity is to keep the cavity empty at all times so that healing may occur continuously and quickly. The suction drain was never stopped in the current research (this might be because we utilised to suck the drain tubing with a syringe and cleanse the suction drain tube throughout the daily quantity evaluation). Several studies [16, 17] found that the most prevalent organism in pus culture is *Staphylococcus aureus*, which is comparable to the current research. *Staphylococcus aureus* susceptible to coamoxiclav was found in 60.53% of the cases. The remaining 39.47% saw little cultural progress. *Staphylococcus aureus* was detected on culture in 89% of the samples in one investigation [2]. Another research [3] discovered *Staphylococcus aureus* culture in 53.33% of patients (responsive to co-amoxiclav), which is lower than in the current study, and culture did not reveal any growth in 26.66% of patients, which is also lower than in the current study. Some researchers [18, 19] discovered *E. coli* growing on culture. Other researchers [20, 21] discovered group B streptococcus growing on culture.

Histopathological analysis of curettage specimens from all instances revealed inflammatory cells consistent with an acute inflammatory lesion. The current investigation identified no neoplastic or granulomatous lesions. Our results are comparable with one research [7], which recommends a biopsy of the abscess cavity wall to ensure that the admittedly uncommon inflammatory cancer of pregnancy is not overlooked.

### Hospital Stay

The hospital stay varied from 2 to 10 days, with just one patient being released on the 10th day. Twenty-five of the 38 patients were released from the hospital on or before the fifth day. The current research's mean hospital stay is 4.18 days, and the range of hospital stay, i.e., 2-10 days, is similar

with one study [2] but greater when compared to another study [5].

It is worth noting that some staff [3, 4] simply treated their patients as outpatients, with several trips to the OPD if necessary.

### Drain Removal

In the current research, patients were checked on the third, fifth, seventh, tenth, and fourteenth post-operative days, and the drain and sutures were removed. When the drain fluid was less than 10 mL and serous in character, the drains were removed. The drain was removed on day 7 (52.63%) or day 10 (23.68%) in 76.31% of patients. The range of drain removal in this research is 3-16 days, with a mean of 7.7 days, which is greater than the mean of 6.4 days [2] and 4.5 days [3] in previous studies.

### Complications

The current research revealed a 7.9% complication rate.

Two complications occurred: a cut through the sutures and a mammary fistula. All of the difficulties were satisfactorily resolved. The current research's complication rate is 7.9%, which is similar to one study [1] (6%), but higher when compared to some other studies [3, 5] (0%) and lower when compared to just one study [4] (16.67%).

The lone incidence of recurrence was treated using the standard procedure. The recurrence rate in the current research is 2.63%, which is similar to two studies [5, 9], but greater than one previous study [3].

### Milk Suppression

Milk suppression was not employed in this trial, and patients were instructed to maintain nursing from the contralateral breast and milk expression from the ipsilateral breast. Only one patient was given milk suppression as a consequence of mammary fistula. Oral stilbesterol was used to reduce milk production in a number of trials [1, 7, 8]. Other trials [2, 3, 9] did not utilise milk suppression. The literature search revealed no clear recommendations for milk suppression, however it should be used only in certain chosen individuals. Breastfeeding should be maintained even from the afflicted breast, according to several research [16, 17, 19].

### Mean Healing Time

Wound healing is a lengthy process, however for certain individuals, an approximation of the cut skin borders is healing; if this criteria is used, then the mean healing time for the current research is the removal of the sutures. Sutures were removed on day 14 (50%) or day 10 (34.21%) in 84.21% of

patients. The mean healing time in previous research is compared to the suture removal time in this study (Fig. 3). The current research's mean healing time is 12.03 days (range 3-16 days), which is greater than previous studies (mean 7.12 days) [1] (mean 4.5 days, range 3-8 days) [3], but lower than one other study (mean 20.1 days) [9]. The current study's mean healing time is similar to the range of healing time provided by one worker [5]. Recent research indicated that breast abscesses with a physical diameter of less than 5 cm may be efficiently treated with repeated aspirations with satisfactory aesthetic effects. Incision and drainage should only be used in individuals with bigger abscesses [22]. We chose individuals who had breast abscesses in at least two quadrants of the breast.

### Conclusion

Breast abscess ultrasound-guided repeated aspirations are only helpful for tiny abscesses. Percutaneous suction drain installation is a useful alternative in appropriately chosen patients, however it is a blind technique that does not give tissue diagnosis. When compared to conventional incision and drainage with gauze packing, primary closure of acute breast abscess after incision, drainage, and curettage is a good method in properly counselled and informed patients with large breast abscess, with the added benefit of tissue diagnosis and less morbidity, more patient comfort.

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