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## Analytical study of drainage of breast abscess by open drainage with primary suturing with negative suction drain and conventional incision and drainage

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### Abstract

We present a comparative study of conventional incision and drainage vs minimally invasive percutaneously placed suction catheter in patients of puerperal breast abscess. The aim was to develop an effective technique for management of breast abscess giving less morbidity and its efficacy over conventional method.

**Methods:** Sample size was 100 patients of age ranged from 18 to 40 years and duration of 15 Months, at Chamarajanagara institute of medical sciences, which was divided in two groups of 50 patients each. First group was treated by incision and drainage and second by percutaneous suction drainage, selection of patients was on alternate basis. Informed consent was taken from each patient before procedure. In suction drain placement procedure under local, 0.5% lignocaine with adrenaline, infiltration anesthesia 16F suction catheter was placed percutaneously in abscess cavity for 3-5 days.

**Results:** There was complete resolution of symptoms in all patients however healing time was significantly less in aspiration group (5 to 10 days) as compared with surgical drainage (9-18 days). There was 1 (2%) patient in drain group who required conversion to open surgical drainage. There were 3 cases presented with fistula out of 50 Incision and drainage patients. Breast feeding/ emptying was not interrupted in any patient of this minimally invasive method.

**Conclusions:** This technique is technically safer, effective, very less painful, cosmetically more promising and healing is quicker in this technique compare to conventional incision and drainage.

**Keywords:** Breast abscess, puerperal breast abscess, drain placement, catheter placement

### Introduction

Breast abscess is an acute inflammatory process resulting in the formation and collection of pus under the skin in breast tissue. Typically, there is painful erythematous mass formation in the breast occasionally with draining through the overlying skin of nipple duct opening. Breast abscess if not treated in time and in proper way, can result in deformation of breast which ultimately can result in loss of self-esteem of the female who suffers from abscess. For the treatment of the breast abscess, options include repeated aspiration, incision and drainage, incision and drainage with primary closure and conservatively treated by giving antibiotics. The established principle of surgical management of abscess has been incision and free drainage; this permits healing by secondary intention or treatment by secondary closure. This modality of treatment has been challenged with the introduction of antibiotics.

### Classification of breast abscesses

Breast abscesses can be classified according to clinical presentation, location, or pathogenic organism. Most abscesses result from secondary bacterial infection from skin contamination. Although *Staphylococcus aureus* is by far the main pathogen, other microorganisms can be encountered, for example *Staphylococcus epidermidis*, *Streptococcus pyogenes*, and anaerobes such as *Peptostreptococcus* and *Bacteroides* <sup>[1]</sup>. A sterile culture with absent growth of bacteria is reported in 21%–45% of cultures, although this may be a false-negative finding due to previous treatment with antibiotics <sup>[2-4]</sup>. Less commonly, in specific clinical settings, breast infections secondary to tuberculosis and other mycobacteria, fungi, or parasites can occur.

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## Materials & Methods

- 1. Conventional incision and drainage:** drainage under short GA with placement of small corrugated drain and repeated dressings in post op period.
- 2. Percutaneous suction drainage:** done for the other 50 patients.

## Discussion

In present study, of 15 months, 100 cases of breast abscess admitted in our Chamarajanagara institute of medical sciences & hospital were studied and divided in two groups, 50 patients underwent open drainage with primary closure with negative suction drain i.e Group 1 and 50 patients underwent conventional incision and drainage. i.e Group 2 and comparison study is done in regards with postoperative pain, duration of hospital stay, cost of treatment, appearance of scar, residual abscess and recurrence. In present study 62 patients (62%) are in the age group of 18 to 30 years while according to Oliwale *et al* most common age group was 21 to 30 years which is comparable. Mean age of occurrence of breast abscess in our study is 25.28 years while Dener *et al* found mean age of breast abscess as 26 years. In present study 37 patients (74%) were lactating suggesting that stasis of milk and carrier state of infant play key role in development of breast abscess as also supported by previous study. In present study 27 patients (54%) had breast abscess on right side while in 23 patients (46%) which is comparable to results reported by Newnham *et al* reported in their study that 61.7% patients had right breast abscess while 31.7% had left breast abscess. In present study mean duration of hospital stay in group 1 is 4.48 days while in group 2 is 6.44 days with (p value = 0.0002) suggestive of mean duration of hospital stay is significantly less in group 1. A similar finding was observed in a study conducted by Abraham *et al*. They found that hospitalization was reduced by 40-60% in group with closure of superficial abscess. Also similar finding were observed in study conducted by Ajao OG *et al*. In present study post-operative pain is measured quantitatively according to days of analgesic required. In group 1 mean duration of post-operative pain is 2.16 days and in group 2 mean duration of post-operative pain is 4.36 days with (p value = 0.0006) suggestive significantly lower duration of postoperative pain in group 1. Similar findings were observed by Edino *et al*. A study done by Dubey and Choudhary correlates with present study. In present study cost of treatment of every patient is calculated by including daily charges for number of days patient is admitted in hospital, investigation charges, OT charges, charges for material required during operation, charges for dressing materials and dressing. 1. Cost of increased duration of hospital stay and cost of daily dressing resulted in increased cost of treatment in group 2 as compared to group 1. Finding in present study is consistent with study done by Edino *et al*, khanna Y K *et al*, Dubey and choudhary and Ajao OG. In present study size and appearance of scar is measured quantitatively using Manchester scar scale in group 1 mean score is 6.8 and in group 2 mean score is 11.56 with (p value = 0.0008) suggestive of better scar in group 1 as compared to group 2. Similar findings were observed in study. Dubey and Choudhary with P value < 0.05. And Ajao OG *et al*. In present study there is 2 (8%) cases of residual abscess in group 1 and no cases of residual abscess in group 2. It is comparable with study by khanna YK *et al* which show residual abscess in 6% of cases of primary closure and study of Dubey V *et al* which shows residual abscess in 4.4% of cases of primary closure. In present study no recurrence is seen in group 1 and there is 2 cases of recurrence out of 50 cases (4%) in group 2

suggestive of more recurrence in group 2 as compared to group 1. Similar finding were observed in study by Anirrudha K where recurrence was 3 times more in cases of conventional incision and drainage as compared to primary closure. Similar findings were observed in study by Khanna *et al*.

## Conclusion

- All breast abscesses should be treated with abscess drainage and concurrent empiric antibiotic therapy.
- Needle aspiration either with or without ultrasound guidance should be employed as first-line treatment of breast abscesses. However, multiple aspiration sessions may be required.
- Ultrasound-guided percutaneous catheter placement may be considered as an alternative approach for drainage of larger (>3 cm) abscesses.
- Surgical incision and drainage is required if needle aspiration or catheter drainage is unsuccessful and there is progression of infection.
- Surgical incision and drainage should be considered for first-line therapy of large (>5 cm), multiloculated or long-standing breast abscesses.
- Cultures should be obtained at the time of abscess drainage and antibiotic management tailored to the infecting organism's susceptibility profile.
- Empiric antibiotics targeting methicillin-resistant *S. aureus* may be required for patients who are known to be colonized or considered to be at high risk.
- For breastfeeding women, the infant should not nurse from the breast with the abscess but may continue nursing from the contralateral, uninfected breast.
- Future research should prospectively evaluate the utilization of aspiration or percutaneous catheter drainage techniques in terms of frequency of progression of infection requiring surgical management in order to limit selection biases. The optimal frequency of aspirations, time interval between aspirations and duration of catheter placement also requires further study.

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