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**Sam Vivek G**  
Assistant Professor,  
Department of General Surgery,  
Guntur Medical College &  
Hospital, Guntur,  
Andhra Pradesh, India

**B Sankararaman**  
Professor,  
Department of General Surgery,  
Vinayaka Missions Medical College,  
Karaikal, Tamilnadu, India

## A comparative study of open drainage versus suction drainage and primary closure in the management of breast abscess at a tertiary care center

**Sam Vivek G and B Sankararaman**

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### Abstract

**Background:** Breast abscess, localized collection of pus in the breast, are most common in young lactating women.

**Aim & Objectives:** The main aim of the current study were to compare open versus closed modalities of treatment of breast abscess and also to develop an effective technique for management of breast abscess with less morbidity and its efficacy over conventional method.

**Methods:** A cross sectional prospective study was conducted in Department of Surgery from October 2017 to October 2019 at Guntur Medical College & General Hospital, Andhra Pradesh, India, among the breast abscess cases (both open and closed) was conducted in a group of 100 cases of breast abscess, divided in to two groups, the open group comprising of 60 cases and closed group comprising of 40 cases. The pain in the post-operative patients measured by using Visual analogue scale (VAS). The statistical analysis was done by the unpaired t-test.

**Results:** The incidence of breast abscess was most commonly seen in young women between the age group 21-30 years (35%). The VAS in group A and group B at days 1,2,3,4 respectively in both the groups were  $9 \pm 1.2$ ,  $6.2 \pm 1.1$ ;  $7.2 \pm 2.1$ ,  $4.2 \pm 0.9$ ;  $5.2 \pm 1.2$ ,  $3.1 \pm 1.6$ ;  $2.5 \pm 1.2$ ,  $1.2 \pm 0.7$ . We observed that there was a significant ( $p < 0.001$ ) VAS score in group A compared to Group B. The hospital stay was  $13 \pm 2.1$  days in group A and  $7 \pm 1.2$  days in group B. Hospital stay was significantly higher in group A compared to Group B. Wound healing significantly ( $p < 0.001$ ) faster in group B ( $9 \pm 1.2$ ) compared to group A ( $11 \pm 2.4$ ).

**Conclusions:** On comparing the two methods of treatment of breast abscess, the primary closure technique was superior to the conventional technique in terms of duration of healing, post operative pain, number of dressings required, length of hospitalization, post operative complications and quality of healing.

**Keywords:** breast abscess, primary drainage, conventional method, wound healing

### Introduction

Breast abscess is an acute inflammatory process resulting in the formation and collection of pus under the skin in the breast tissue. Typically, there is a painful erythematous mass formation in the breast with occasional draining through the overlying skin of nipple areolar complex. 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 it. For the treatment of the breast abscess, options include repeated aspiration, incision and drainage, incision and drainage with primary closure or conservatively treated by giving antibiotics.

The incidence of breast abscesses in lactational mastitis ranges from 0.4 to 11% in Indian subcontinent [1]. Risk factors for lactational breast abscess are primipara, gestational age >40 weeks and history of mastitis. A stage of mastitis precedes abscess formation. Sonography became an important diagnostic modality in the diagnosis of breast abscess which differentiates between mastitis and abscess [2].

The established principle of surgical management of abscess has been incision and free drainage; or treatment by secondary closure [3]. This modality of treatment has been challenged with the introduction of antibiotics. Ellis taught that the abscess wall prevented access to the abscess cavity and that if this wall was curetted away the cavity could fill with antibiotic-laden blood clot, preventing safe primary closure.

The primary closure technique is supported by many surgeons who showed its effectiveness in the treatment of breast abscess. Advantages of primary closure technique are faster healing rate,

**Corresponding Author:**  
**B Sankararaman**  
Professor,  
Department of General Surgery,  
Vinayaka Missions Medical College,  
Karaikal, Tamilnadu, India

less hospital stay and early return to work, lesser recurrence than the conventional method, better scar healing and finally reduced cost of labour and material and may be recommended as an alternative treatment which is superior to the orthodox technique [4].

In our study, we compared the outcome of conventional incision and drainage of acute abscess versus incision and drainage with primary closure of wound with negative suction drain in breast abscess, with regards to wound healing, intensity of postoperative pain and duration of hospital stay.

**Methodology**

**Data Collection**

A comparative analytical study was designed to compare the breast abscess cases (both open and closed) admitted in Department of Surgery and Department of Obstetrics and Gynaecology, Guntur Medical College & General Hospital, Andhra Pradesh, India from October 2017 to October 2019. All the studied cases were subjected to clinical assessment using signs, symptoms and laboratory criteria, which were recorded in the proforma.

**Inclusion and Exclusion Criteria**

The patients who satisfied inclusion and exclusion criteria were selected for the study.

**Inclusion criteria**

All breast abscess cases with intact overlying skin of abscess were included in the study and

**Exclusion criteria**

The exclusion criteria include skin necrosis where primary suturing is not possible, burst open abscess, multiple abscess, and recurrent abscess after a previous surgical drainage, abscesses associated with underlying malignancy, tuberculosis etc and we have also excluded cases with associated co-morbid condition like Diabetes Mellitus, H.I.V., Hepatitis B, and immuno compromised state

**Study population**

The sample size was 100 cases selected for the study and divided into two groups, the open group (Group A) and the closed group (Group B). Out of which 60 were allocated in the open group which were treated by incision, drainage and packing and the remaining 40 cases were allocated in closed group, treated by primary closure technique with a drain *in situ*. Detailed history was taken regarding complaints, duration, severity, and onset of symptoms, mode of onset, progression of symptoms, and change in the pattern at time of presentation. Enquiries about history of diabetes and immuno-compromised state were made. Patients were also asked about their personal habits regarding diet, appetite, sleep, bowel and bladder habits. Detailed history was taken regarding lactation status of the patient, parity of the patient and similar past history. General physical examination was done regarding built, nutritional status, hydration, general appearance and presence of systemic illness. Vitals were recorded for every case. Systemic examination was done to rule out any systemic disease. Thorough local examination was done by inspection and palpation of the breast and for presence of any regional lymph nodes. Routine blood and urine investigations were done in all cases. All the cases were screened for HIV and Hepatitis- B and if found positive those cases were excluded.

All patients received a loading dose of antibiotic (inj. Amoxicillin + clavulanic acid 1.2 mgs intravenous), 1 hr before the contemplated procedure. Patient was kept nil by orally for 5 to 6 hours before the procedure. The procedure was done under short general anaesthesia or general anaesthesia depending upon the age and general condition of the patient and site of abscess. The frequency of dressing was decided upon soakage from the wound. Patients were allowed to breast feed their child from affected breast after complete healing of abscess and were asked for review on O.P.D. basis weekly; up to 6 weeks. In closed group dressing were done once in 2 or 3 days till the healing occurred. The drain removal was done when drain was nil after confirming that there is no blockage. Breast feeding from affected breast is allowed after drain removal. Suture removal was done usually on 8th or 9th postoperative day.

**Statistical Analysis**

The cases were analysed using descriptive statistics and inferential statistics using chi-square test and z-test for difference between two means. The statistical software used in the analysis was SPSS (statistical presentation system software) version 17.0 and Graph Pad Prism 4 and the results were tested at 5% level of significance.

**Results and Discussion**

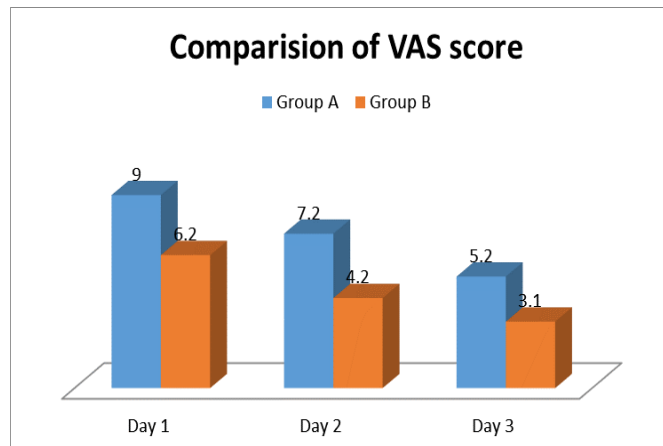
**Table 1:** Age wise distribution of cases in Group A and Group B

Age (In years)	Group A & B	Percentage
11-20	6	6%
21-30	40	40%
31-40	30	30%
41-50	15	15%
51-60	10	10%
61-70	00	09%
Total	100	100%

In the present study, majority of the abscess were seen in the age group 21-30 (40%) followed by 31-40 (30%).

**Table 2:** Comparison of VAS in Group A & B

Days	Group A (n=60)	Group B (n=40)	P- value
Day 1	9±1.2	6.2±1.1	<0.001
Day 2	7.2±2.1	4.2±0.9	<0.001
Day 3	5.2±1.2	3.1±1.6	<0.001
Day 4	2.5±1.2	1.2±0.7	<0.001

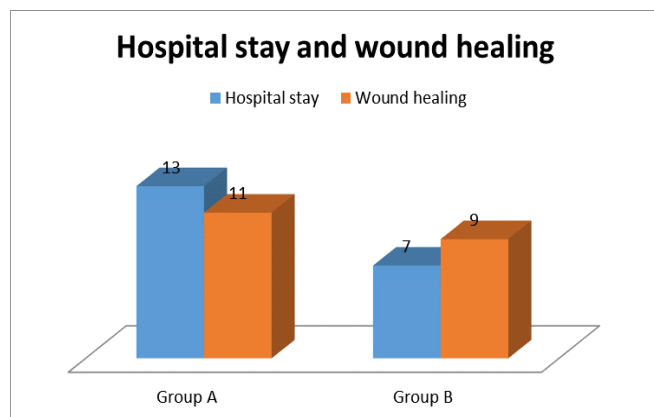


**Fig 1:** Comparison of VAS in Group A & B

The above table 2 & Fig 1 showed visual analogue score in both group A & B after post operative treatment. VAS score is significantly ( $P<0.001$ ) low in Group B compared to Group A.

**Table 3:** Distribution of the patients in Group A and Group B respect to outcome

Out come	Group A	Group B	P-value
Hospital stay (In days)	13±2.1	7±1.2	<0.001
Wound healing (In days)	11±2.4	9±1.2	<0.001



**Fig 2:** Distribution of the patients in Group A and Group B respect to outcome

In table 3 & fig 2 depicts that hospital stay and wound healing in the both groups. We found that hospital stay and wound healing is significantly less in group B.

In the present study, 100 cases of breast abscess admitted in our hospital were studied and divided in two groups, 60 patients underwent open drainage with primary closure with negative suction drain i.e. Group A and 40 patient underwent conventional incision and drainage. i.e. Group B and comparison study is done in regards with postoperative pain, duration of hospital stay.

In present study 35 patients (35%) are in the age group of 21 to 30 years while according to Oliwale *et al* most common age group was 21 to 30 years which is comparable [5]. 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 [6].

In present study mean duration of hospital stay in group A is 13 days while in group B is 7 days with ( $p$  value = <0.001) suggestive of mean duration of hospital stay is significantly less in group B. A similar finding was observed in a study conducted by Abraham *et al.* [7]. They found that hospitalisation 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.* [8]. In present study post operative pain is measured quantitatively according to no. of days of analgesic required.

In group A mean duration of post operative pain is 2.5 days and in group B mean duration of post operative pain is 1.2 days with ( $p$  value = <0.001) suggestive of significantly lower duration of postoperative pain in group 2. Similar findings were observed by Edino *et al.* [9]. A study done by Dubey and Choudhary correlates with present study [10].

## Conclusion

Breast abscess is most common in age group 21-30 years of age. All the patients complained of swelling, pain and almost all the patients showed all signs of inflammation i.e. rubor, calor, dolor and tumor. Most common etiological factor responsible for

breast abscess is lactation. Open drainage with primary closure is effective alternative method of treatment to incision and drainage in properly selected patient and with timely support by sonologist. Furthermore, wound healing and hospital stay will be less in primary close use drainage compared to conventional treatment.

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