

## Original Research Article

# The efficacy of primary closure following incision and drainage of lactational breast abscess over traditional open method

Ruksana Parvin<sup>1\*</sup>, Ahmed Sharif<sup>2</sup>, Mosammat Bilkis Parvin<sup>3</sup>, Kazi Sohel Iqbal<sup>1</sup>,  
Golshan Ara Kohinoor<sup>3</sup>, Riddita Mustica<sup>1</sup>, M. Sourav Hossain<sup>1</sup>

<sup>1</sup>Department of Surgery, <sup>3</sup>Department of Gynaecology and Obstetrics, MH Samorita hospital and Medical College, Dhaka, Bangladesh

<sup>2</sup>Department of Urology, Holy Family Red Crescent Medical college and hospital, Dhaka, Bangladesh

**Received:** 13 September 2021

**Revised:** 22 September 2021

**Accepted:** 26 October 2021

### \*Correspondence:

Dr. Ruksana Parvin,

E-mail: [ruksanaparvin@yahoo.com](mailto:ruksanaparvin@yahoo.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** The incidence of breast abscess ranges from 0.4 to 11% of all lactating mothers. Although breast abscess is a serious common complication of mastitis with high morbidity rate, there is a lack of high-quality randomized trial to demonstrate the best treatments.

**Methods:** The Study was conducted in the Department of Surgery of Universal medical college and hospital, Dhaka, Bangladesh and MH Samorita hospital and medical college. It was a randomized controlled trial to see the efficacy of primary closure following incision and drainage of lactational breast abscess over traditional open method. Total 120 population were randomly selected in group A (60 patients) and group B (60 patients) and data was collected with their signed ethical consent. The study was conducted from January 2014 to December 2019. Collected data were classified, edited, coded and entered into the computer for statistical analysis by using Statistical package for social sciences (SPSS) version 22.

**Results:** In patients of group A, most breast abscesses healed successfully with a nicer circumareolar scar, earlier healing, lesser number of hospital visits and lower total cost as compared to patients in group B. There was early resumption of breastfeeding and better patient satisfaction seen in group A.

**Conclusions:** Primary closure of lactational breast abscess following incision and drainage is an effective modality of treatment of lactational breast abscess and it should be the first line of treatment, especially for larger and multilocular breast abscesses while traditional incision and drainage should be reserved for abscesses with gangrenous skin changes, where primary closure is not justified.

**Keywords:** Breast abscess, Incision and drainage, Lactation, Primary closure

## INTRODUCTION

The outmoded management of breast abscesses contains incision and drainage of pus along with anti-staphylococcal antibiotics, but this is related with prolonged healing time, regular painful dressings, trouble in breast feeding, and the prospect of milk fistula with substandard cosmetic outcome. Image guided Needle aspiration of pus with antibiotic is still the primary mark

treatment for small abscess, but its use is imperfect in large (>5 cm) abscess, while most of the lactational abscesses are now large by the time patient gets to a surgeon in a developing nation like Bangladeshi. We described a different technique of applying primary conclusion after incision and drainage of large lactational breast abscesses. Most breast abscesses develop as a complication of lactational mastitis. As the frequency of breast abscess ranges from 0.4 to 11% of all lactating mothers, this is a

potentially substantial health issue.<sup>1</sup> Despite breast abscess flatterer less common in economically developing countries, it has continued one of the principal causes of morbidity in women here in Bangladesh. Nipple fissures and milk stasis are key reasons for the development of lactational breast abscess. Other risk factors contributive to breast abscess as the decline of lactational mastitis contain age, primiparity, gestational age over 41 weeks, obesity, and tobacco consumption. Breast abscesses are more communal in obese patients and smokers than in the overall population.<sup>2</sup> Breast abscesses are difficulties of infectious mastitis and generally happen in young women. The organism most usually concerned is *Staphylococcus aureus* (83.3%), almost half being methicillin-resistant *S. aureus* (MRSA). Others involved coagulase-negative *Staphylococcus*, *Enterococcus* spp., *Streptococcus* spp., *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Candida* spp., and acid-fast bacilli., which gains entry via a cracked nipple.<sup>3</sup> Infrequently, the infection is hematogenous. The pathological process is matching to acute inflammation happening elsewhere in the body, although the loose parenchyma of the lactating breast and the stagnant milk of an engorged segment allow the infection to spread speedily both within the stroma and through the milk ducts, if unimpeded.<sup>6</sup> In the milk the bacteria are defecated. There is no study has been done in Bangladesh where frequency of breast abscess presence emergency department is high (0.877%) of all lactational difficulties due to lack of knowledge of proper breast feeding, lack of education in mothers, poor hygiene, long humid summer and poverty. Most of the patients with lactational breast abscess present late with reflective and large abscesses (often with skin involvement) where outdated incision and drainage remained as the only option, which has also some negative issues, example- regular (almost daily) painful dressings which render the patients to fall out, comparatively higher cost of consistent dressings, ugly scar of the healed wound and overall poor patient gratification.<sup>4</sup> So, a cost worthy less painful treatment algorithm is needed which also must be more cosmetically acceptable.

The goal of this article is twofold: to compare the efficacy of the two treatment methods described in this article and to propose a treatment algorithm validated by the concrete data.

### **Objectives**

The aim of the study was to determine the efficacy of primary closure following incision and drainage of lactational breast abscess over traditional open method.

### **METHODS**

The Study data from two studies have been combined for this paper, reflecting a diverse range of women attending the Department of Surgery of Universal Medical College and Hospital, a private, tertiary referral center and MH Samorita Hospital and Medical College (private hospital).

Inclusion criteria in both studies included lactational breast abscess size >5 cm, intact overlying skin, having no co-morbid conditions. A telephone interview at six weeks postoperative included questions about breastfeeding problems. A follow up visit at 12 weeks postoperative was requested for assessing the cosmetic outcome, scar complications and satisfaction level of the patients with the scar and overall treatment experience. 120 cases female population were randomly selected in group A-60 patients were managed by primary closure following incision drainage and in group B-60 patients were managed by incision and drainage. Clinical examination and evaluation were done from January 2014 to December 2019. Inclusion criteria were breastfeeding females, age ranging from 18 to 45, confirmed diagnosis of lactational breast abscess (as mentioned above), measurable swelling by ultrasonography (size more than 5 cm) and obtainment of written informed consent. Exclusion Criteria were incapable of giving informed consent (example- linguistic reasons), features suggestive of tuberculous or idiopathic granulomatous mastitis, concomitant vital organ dysfunction, hematological diseases, mental disorders, history of breast carcinoma or history of breast surgeries, patients with surgical contradictions (example- severe hyperglycemia, severe coagulation disorders, and unstable hemodynamics), immunocompromised conditions (example- patients with histories of chemotherapy, organ transplant, and any immuno-deficient diseases) and known allergy to study medications. Awareness of trial details as well as agreement with the study process, intervention, and follow-up. Other necessary investigations were done if clinically indicated and to prepare the patient for anesthesia. Statistical analysis of the results was obtained by using window-based computer software devised with Statistical packages for social sciences (SPSS-22).

### **Interventions**

#### *Abscess drainage in Group A*

Primary closure following Incision and drainage: The abscess was incised near the areolar margin under general anesthesia. All pus was evacuated and a sample sent for culture and sensitivity. All loculi were broken down digitally. The abscess cavity was thoroughly irrigated with normal saline and a biopsy was taken. Hemostasis was secured. A wide bore drain tube (18 Fr) was placed in the cavity and fixed. Wound was closed with 3-0 cutting prolene. The wound was examined and dressing was done at an interval of 5 days. The drain was removed at 10-14 days i.e., until the drain bag collection became nil. Stitches were removed at 18th postoperative day. The healing time in this group was the time from incision and drainage to stich removal.

#### *Abscess drainage in Group B*

The abscess was incised near the areolar margin under general anesthesia. All pus was evacuated, a sample sent for culture and sensitivity. All loculi were broken down digitally. The abscess cavity was thoroughly irrigated with

normal saline and a biopsy was taken. Hemostasis was secured. The wounds were loosely packed with sterile gauze and dressed daily until the wound was clean. The wound was examined and dressing was done daily until the wound was healed by secondary intention. The healing time in this group was the time from incision and drainage to wound healing. All patients were treated as inpatients. The following information was recorded in a computerized database for each patient: age and parity, localization and diameter of abscess, duration of lactation and of symptoms, history of breast infection previously, number of dressings needed in both groups, healing time, results of pus culture, whether there was any recurrence or sinus formation in postoperative period, cosmetic outcome at 12 weeks. The treatment value of these techniques was then investigated. Patients were encouraged to continue breastfeeding from the unaffected breast. All patients were followed up throughout the lactation period.

**RESULTS**

The purpose of the present prospective study was to compare primary closure following incision and drainage against incision and drainage alone for the treatment of breast abscesses in lactating women.

**Table 1: Time to complete resolution of breast abscess (resolution of abscess was defined as complete wound healing).**

Group	n=120	Time for healing (Day)	Mean ±SD	P value
Group A	60	16-18	17.05±1.72	0.476
Group B	60	25-30	27.27±1.28	

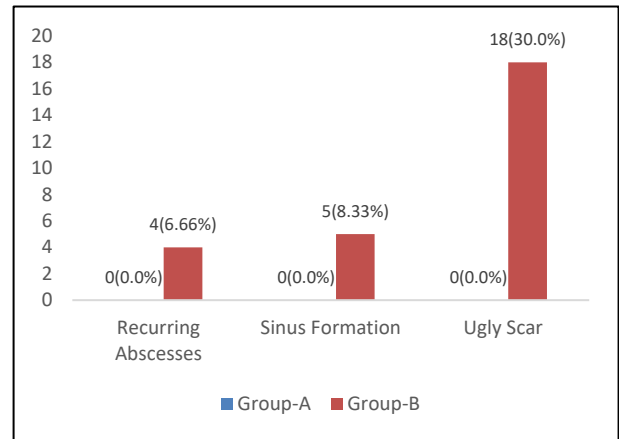
**Table 2: Number of follow-up visits for dressings.**

Group	n=120	Number of dressings required	Mean ±SD	P value
Group-A	60	3-5	3.85±0.88	0.829
Group-B	60	12-15	12.92±0.89	

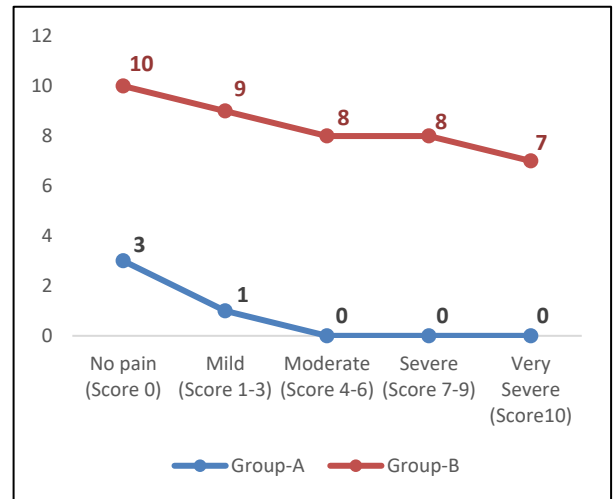
During the 6-year study period, patients with breast abscesses were randomized 1:1 to undergo either primary closure following incision and drainage (Group A=60 patients) or incision and drainage alone (Group B=60 patients). The treatment value of each of these techniques was investigated. In the Group A (primary closure following incision and drainage), overall, 60 patients healed successfully with dressings at 5days interval, no patient (0%) developed recurrent abscess formation.

**Table 3: Duration of hospital stay.**

Group	n=120	Time Duration (Day)	Mean ±SD	P value
Group A	60	1-2	1.44±0.7	0.02
Group B	60	4-7	5.76±1.2	



**Figure 1: Distribution of complication of primary closure following incision and drainage of lactational breast abscess over traditional open method.**



**Figure 2: Distribution of pain management scale of primary closure following incision and drainage of lactational breast abscess over traditional open method.**

Most of the patients were satisfied with the final scar at 12 weeks. In Group B (incision and drainage only group) all (60patients) were treated successfully with regular frequent dressings, but 2 patients (3.33%) had a recurrence 28days after surface healing and 26 patients (43.33%) in this group were not pleased with the cosmetic outcome. The mean pain score was 4.6±0.9 at surgery day, and

2.2±0.7, 1.6±0.6, and 1.2±0.5 at day 1, day 2, and day 3 after surgery, respectively. The mean duration of antibiotics use was 4.3±1.3 days (range 3-7 days). The results of bacterial cultures were mostly *Staphylococcus aureus* (27/36, 75%) with MRSA being less common (4/36, 11.1%), while sterile were found in 8.3% cases.

## DISCUSSION

We studied 120 patients of lactational breast abscess. The mean age of patients was 26 years in our study. This result is comparable with our study but in two other studies.<sup>7,9</sup> The mean±SD time to complete resolution of breast abscess (resolution of abscess was defined as complete wound healing) was 17.05±1.72 days. The duration of symptoms in other study was 8-14 days.<sup>11</sup> The difference may be due to our selection criteria. We selected the patient with abscesses larger than 5 cm while other study included the patients with abscess less than 2 cm. Our selected patients presented late and having large breast abscesses.<sup>5</sup> The mean hospital stay in primary closure group was 1.44 ±0.76 days and it was 2.76±0.92 days in open group. This difference is statistically significant. Our result showed that hospital stay is shorter in primary closure group. Santosh and colleagues also observed shorter hospital stay in 12 primary closure group. Similar results were 18 found in the study conducted by Raj. The prolong stay in the hospital in open group is due to difficulty in managing the open wound and also more painful dressing of open wound requiring more potent analgesic to control pain and also it requires more trained staff for change of dressings. Shorter hospital stay decreases the cost of treatment and also helps in better use of limited hospital resources. The mean±SD number of follow-up visits for dressings was 5.85±0.88 times in Group-A and 12.92±0.89 times in Group-B. The mean wound healing time in primary closure group was 8.16±2.13 days and 19.12±8.36 days in open group. This difference in healing time is statistically significant. The other studies also reported the decrease in healing time after primary closures.<sup>10,13,14,15</sup> The healing by primary intention in primarily closed wounds is faster than healing by secondary intention in open wounds. The mean number of post-operative hospital visits was 2.84±1.9 days in primary closure group and 8.72±4.98 days in open group. The difference is highly significant between two groups.

The mean pain score was 4.6±0.9 at surgery day, and 2.2±0.7, 1.6±0.6, and 1.2±0.5 at day 1, day 2, and day 3 after surgery, respectively. The average time of fever resolution was 1.8±0.9 days for 33 patients with preoperative symptoms.

In our study, no patient underwent the condition of hemorrhaging and hematomas, and the postoperative pain is mild and tolerable for the majority of patients in Group A. The more frequent hospital visits were required in open group for change of dressing as there is more frequent soakage of dressings in open wounds. Other studies also show less frequent hospital visits in primary closure

patients.<sup>8,13,17</sup> The shorter hospital stays, faster wound healing and less frequent hospital visits in primary closure technique decrease the cost of treatment and also more convenient for patients and hospital staff. There were two cases of recurrence in open group (4%) and no recurrence observed in primary closure group as already observed by Santosh and others.<sup>7,18</sup> The difference in the recurrence is not statistically significant in our study. Other studies reported more recurrences in primary closure group may be due to not using drains.<sup>14,17,18</sup>

### Limitation of the study

This was a cross-sectional study with a small sized sample. So, the findings of this study may not reflect the exact scenario of the whole country.

## CONCLUSION

The treatment of large lactational breast abscesses by primary closure technique with Group-A has advantages of less painful dressings, shorter hospital stays, faster wound healing time, less frequent hospital visits and better cosmetic outcome. All these advantages make this technique more cost effective, more convenient for patient and health care professionals involved in the patient management. The primary closure technique should be applied in all late presenting and large breast abscesses.

### Recommendations

This is to recommended for engaging much larger research involving multiple centers to see the nationwide picture. Need to use modern models for future use and emphasize points to ensure better management and adherence.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Dener C, Inan A. Breast abscesses in lactating women. *World J Surg.* 2003;27(2):130-33.
2. Bharat A, Gao F, Aft RL. Predictors of primary breast abscesses and Recurrence. *World J Surg.* 2009;33(12):2582-6.
3. Berens PD. Prenatal, intrapartum, and postpartum support of the lactating mother. *Pediatr Clin North Am.* 2001;48(2):365-75.
4. Kvist LJ, Rydhstroem H. Factors related to breast abscess after delivery: a population-based study. *BJOG.* 2005;112(8):1070-4.
5. Rizzo M, Peng L, Frisch A. Breast abscesses in nonlactating women with diabetes: clinical features and outcome. *Am J Med Sci.* 2009;338(2):123-6.
6. Benson EA, Goodman MA. Incision with primary suture in the treatment of acute puerperal breast abscess. *Br J Surg.* 1970;57(1):55-8.

7. Dalvi S, Gurav P, Maurya A, Kumar S. Analytical study of drainage of breast abscess by open drainage with primary suary suturing with negative suction drain and conventional incision and drainage. *Med PulseInternational Medical Journal.* 2017;4(2):210-2.
8. Karvande R, Ahire M, Bhole M, Rathod C. Comparison between aspiration and incision and drainage of breast abscess. *Int Surg J.* 2016;3(4):1773-80.
9. Odiya S, Mathur R, Arora S. Comparative study of conventional incision and drainage versus percutaneous placement of suction drain: changing trend of breast abscess management. *Int surg J.* 2016;3(3):1580-4.
10. Sheikh B, Shah AA, Sohu KM, Solangi RA. Needle aspiration in the treatment of breast abscess. *Rawal Med J.* 2014;39:58-60.
11. Javed MU, Aleem S, Asif SJ, Iqbal J. Breast abscess; comparison of recurrence rate between incision drainage and multiple needle aspiration. *Professional Med J.* 2017;24(1):89-94.
12. Mwenda AS, Wasike R. Breast Abscess Management and the Role of Post Incisional Antibiotics. *Ann Afr Surg.* 2016;13(2):63-6.
13. Raj MRM, Aareb A. Acute Abscess Management – Comparative Study between Primary Closures versus Healing by Secondary Intention. *Int J Sci Stud.* 2016;4(2):260-2.
14. Abraham N, Doudle M, Carison P. Open versus closed surgical treatment of abscesses: A controlled clinical trail. *Aust NZJ Surg* 1997;67:173-6 20. Dubey V, Choudhary SK. Incision and drainage versus incision and drainage with primary closure and use of closed suction drain in acute abscesses wounds. 2013;25:58-60.
15. Kale A, Athavale V. A comparative study of conventional incision and drainage versus incision and drainage with primary closure of wound in acute abscesses. *Med J DY Patil univ.* 2014;7:744-7.
16. Trop I, Dugas A, David J, et al. Breast Abscesses: Evidence Based Algorithms for Diagnosis, Management and Follow-Up. *Radiographics.* 2011; 31: 1683-99 23. Irusen H, Rohwer AC, Steyn DW, et al. Treatments for Breast Abscesses in Breastfeeding Women. *Cochrane Database of Syst Rev.* 2015;(8):CD010490.
17. Ulitzsch D, Nyman MK, Carlson RA. Breast abscesses in lactating women: US-guided treatment. *Radiology.* 2004;232:904-9.
18. Roberts KL. A comparison of chilled cabbage leaves and chilled gelpaks in reducing breast engorgement. *J Hum Lact.* 1995;11(1):17-20.
19. Fu SM, Wang XM, Yin CY. Effectiveness of hemostasis with Foley catheter after vacuum-assisted breast biopsy. *J Thorac Dis.* 2015;7(7):1213-20.
20. Larson KE, Valente SA. Milk fistula: diagnosis, prevention, and treatment. *Breast J.* 2016;22(1):111-2.

**Cite this article as:** Parvin R, Sharif A, Parvin MB, Iqbal KS, Kohinoor GA, Mustica R et al. The efficacy of primary closure following incision and drainage of lactational breast abscess over traditional open method. *Int Surg J* 2021;8:3501-5.