

Original Research Article

Comparison of Primary Closure Following Incision and Drainage in Treating Lactational Breast Abscess as a New Treatment Method

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Abstract: *Background:* Although breast abscess is a serious common complication of lactational mastitis with a high morbidity rate, there is a lack of high-quality trials to define the best treatment option. The traditional management of lactational breast abscesses involves incision and drainage of pus along with antibiotics, which is associated with prolonged healing time, regular painful dressings, difficulties in breastfeeding, and the possibility of milk fistula with unsatisfactory cosmetic outcomes. We reported a novel way of applying primary closure after incision and drainage. The new method is applicable on all sizes of lactational breast abscesses, has a shorter healing time, no need for frequent painful dressings, early return to breastfeeding, and a more acceptable scar. *Aim of the study:* The aim of this study was to compare the effectiveness of primary closure following incision and drainage in treating lactational breast abscesses with the traditional open method. *Methods:* This prospective, randomized controlled trial was conducted in Universal Medical College and Hospital Limited, Dhaka, Bangladesh, and MH Somorita Hospital and Medical College, Dhaka, Bangladesh during the period from January 2020 to March 2021. In total 50 lactating women with breast abscesses were selected as the study population who were divided into two groups. In group A, 25 patients were managed by primary closure following incision and drainage and in group B, other 25 patients were managed by incision and drainage. All data were processed, analyzed, and disseminated by MS Office and SPSS version 26.0. *Results:* In group A, the VAS scores were lower than those of group B. In every day's comparative VAS scores, there were significant correlations between the groups where p values <0.0001. The mean (\pm SD) hospital staying periods were 1.2 \pm 0.3 and 3.1 \pm 0.5 days in group A and group B respectively. The mean (\pm SD) healing times were 18.7 \pm 3.4 and 26.4 \pm 5.8 days in group A and group B respectively. In both the durations, p values were less than 0.0001. So, those differences were considered extremely statistically significant. In this study, 'recurrence', 'sinus formation' and 'ugly scar' were found in 8%, another 8%, and 28% participants respectively in only group B patients as major complications. But in the group A, no such complication was observed. *Conclusion:* Primary closure of lactational breast abscess following incision and drainage is an effective modality in treating patients with lactational breast abscess and it should be the first line of treatment, especially for larger and multilocular breast abscesses with intact overlying skin.

Keywords: Primary closure, Incision and drainage, Lactational, Breast abscess, Pain.

I. INTRODUCTION

The traditional management of breast abscesses involves incision and drainage of pus along with antibiotics, which is associated with prolonged healing time, regular painful dressings, smelly irritating bandage, difficulties in breastfeeding, and the possibility of milk fistula with unsatisfactory cosmetic outcomes. We reported a novel way of applying primary closure after incision and drainage of breast abscess, which is applicable on all sizes of lactational

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breast abscesses, has a shorter healing time, no need for frequent painful dressings, light and dry bandage, early return to breastfeeding, and a more acceptable scar. Breast abscesses develop as a complication of lactational mastitis in most cases. The incidence of breast abscesses ranges from 0.4 to 11% of all lactating mothers [1]. This is a potentially significant health issue. It has remained one of the leading causes of morbidity in lactating women in developing countries. Nipple fissures and milk stasis are primary reasons for the formation of lactational breast abscess [2, 3]. Other risk factors contributing to breast abscess as the deterioration of lactational mastitis include age, primiparity, gestational age over 41 weeks, obesity, and tobacco consumption [4]. Sonography became an important diagnostic modality in the diagnosis of breast abscess which differentiates between mastitis and abscess [5]. The established principle of surgical management of abscess has been incision and drainage; followed by regular dressing or secondary closure [6]. But as secondary closure of lactational breast abscess is associated with high rate of recurrence, the common treatment being regular dressing until wound healing by secondary intention remains the safer choice. This article describes a novel technique of primary closure of lactational breast abscess. The primary closure technique is already supported by many surgeons who showed its efficiency in the treatment of breast abscesses. Advantages of primary closure technique are no or minimal pain during dressing, faster healing rate, less hospital stay and early return to work, lesser recurrence than the conventional method, better scar healing, and finally reduced cost of labor and material and may be recommended as an alternative treatment which is superior to the orthodox technique [7]. The three major objectives of this study were to review the clinical features of lactational breast abscesses, to compare the efficacy of the two treatment methods described in this article, and to propose a treatment algorithm validated by concrete data.

II. OBJECTIVE

General Objective

To compare the effectiveness of primary closure following incision and drainage in treating lactational breast abscess with traditional open method.

Specific Objective:

- To assess the demographic status of participants.
- To compare the post-operative complications,
- To compare VAS⁹ scores and recovery times between the groups.

III. METHODOLOGY

This prospective, randomized controlled trial was conducted in Universal Medical College and Hospital Limited, Dhaka, Bangladesh, and MH Somorita Hospital and Medical College, Dhaka, Bangladesh during the period from January 2020 to March 2021. In total 50 lactating women with breast abscesses were selected as the study population who were divided into two groups. In group A, 25 patients were managed by primary closure following incision as well as drainage and in group B, other 25 patients were managed by incision and drainage. Informed written consent was obtained from all patients. Data from two hospitals have been combined for this paper. 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.

Eligibility Criteria

Confirmation of the diagnosis for lactational breast abscess is based on both clinical manifestation and ultrasonography. Features of clinical manifestation include a localized mass with fever, pain, tenderness, skin redness, and swelling. Sonographic characteristics of lactational breast abscess included a multi-loculated, localized swelling, with irregular fluid-filled sonolucent (hypochoic) area, non-homogenous echoes, and inflammatory axillary lymph nodes.

Inclusion Criteria:

- Breast feeding females, age ranging from 18 to 45 years.
- Confirmed diagnosis of lactational breast abscess.
- Measurable swelling by ultrasonography.
- Obtainment of written informed consent before inclusion.
- Awareness of trial details as well as agreement with the study process, intervention, and follow-up.

Exclusion Criteria:

- Incapable of giving informed consent.
- 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 (severe hyperglycemia, severe coagulation disorders, and unstable hemodynamics).
- Immunocompromised conditions (patients with histories of chemotherapy, organ transplant, and any immunodeficient diseases).
- Known allergy to study medications.

Abscess Drainage

Primary closure following incision and drainage (Group A)

The abscess was incised near the areolar margin under general anesthesia. All pus was evacuated, pus sent for culture and sensitivity and 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 (18Fr) was placed in the cavity and fixed. The wound was closed with 3-0 cutting prolene. The wound was examined and the dressing was done at an interval of 5 days. The drain was removed at 10-14 days depending on the amount of drain bag collection. Stitches were removed on the 18th postoperative day. The healing time in this group was the time from incision and drainage to stitch removal.

Incision and drainage (Group B)

The abscess was incised near the areolar margin under general anesthesia. All pus was evacuated, pus sent for culture and sensitivity and 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 the dressing was done regularly. In this group, the healing time was from incision and drainage to wound closure.

A sample of pus was sent for bacteriological examination for each patient. 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 in the postoperative period, cosmetic outcome; the treatment value of these techniques was then investigated. The breast with the abscess in Group-B was emptied by means of a pump to prevent milk stasis. All patients were followed up throughout the lactation period and encouraged to continue breastfeeding from the unaffected breast. All patients were given Cefixime 200 mg twice daily orally for 7 days.

Outcome Measures

Primary Outcomes

1. Time to complete resolution of breast abscess (resolution of abscess was defined as no recurrence of abscess or need for any intervention). Time was defined by the authors as time of presentation for care or from time of intervention.
2. Patient satisfaction with the postoperative scar.
3. VAS scores⁹ of all patients were measured and analyzed.

Secondary Outcomes

1. Number of follow-up visits for dressings.
2. Post-operative complications/morbidity.
3. Duration of hospital stay.

All data were processed, analyzed and disseminated by MS Office and SPSS version 26 as per need.

IV. RESULT

In this study, the mean (\pm SD) ages of group A, group B, and total participants were 24.66 \pm 2.95, 23.97 \pm 3.43, 24.13 \pm 3.57 years respectively. In both the groups, the highest number of patients were from 18-25 year's age groups. In analyzing the mean VAS (\pm SD) scores of day-1, day-4, day-8 and day-12 of both the groups' patients, we observed, in group A, the VAS scores were significantly (extremely) lower than those of group B. In fixed day's comparative VAS scores, there were significant correlations between the groups where p values were less than 0.0001. The mean duration of fever was also significantly lower in group A (2.1 days) than that (3.2 days) of group B. The mean (\pm SD) hospital staying periods were 1.2 \pm 0.3 and 3.1 \pm 0.5 days in group A and group B respectively. Besides these, the mean (\pm SD) healing times were 18.7 \pm 3.4 and 26.4 \pm 5.8 days in group A and group B respectively. In both the durations p values were less than 0.0001, So, those difference was considered as extremely statistically significant. The culture-sensitivity reveals the presence of *S. aureus* and *S. pyogenes* in 86% and 14% respectively. In analyzing the post-operative complications among both group patients, we observed, as major complications, 'recurrence', 'sinus formation' and 'ugly scar' were found in 8%, another 8%, and 28% participants respectively in group B patients only. But among the group A patient, no such complication was observed.

Table 1: Age distribution of patients (N=50)

Age in year	Group A		Group B		Total	
	n	%	n	%	n	%
18-25	13	52	12	48.0	25	50
26-35	8	32	9	36.0	17	34
36-45	4	16	4	16.0	8	16
Mean (±SD)	24.7±2.9		23.9±3.4		24.1±3.6	

Table 2: Comparison of VAS score between the groups (N=50)

Days	Group A	Group B	p-Value
Day 1	5.52±1.41	8.16±1.71	<0.0001 ^s
Day 4	2.07±1.25	7.18±1.61	<0.0001 ^s
Day 8	1.68±1.61	5.38±1.41	<0.0001 ^s
Day 12	1.29±1.18	4.33±1.25	<0.0001 ^s

Table 3: Comparison of mean ± SD recovery time between the groups (N=50)

Time (Day)	Group A	Group B	p-Value
Hospital staying	1.2±0.3	3.1±0.5	<0.0001 ^s
Healing time	18.7±3.4	26.4±5.8	<0.0001 ^s

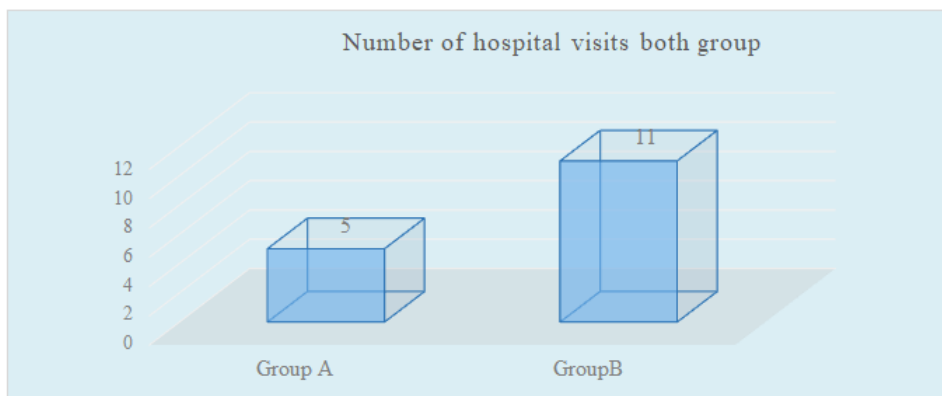


Figure I: Mean Number of follow up hospital visits in both groups (N=50)

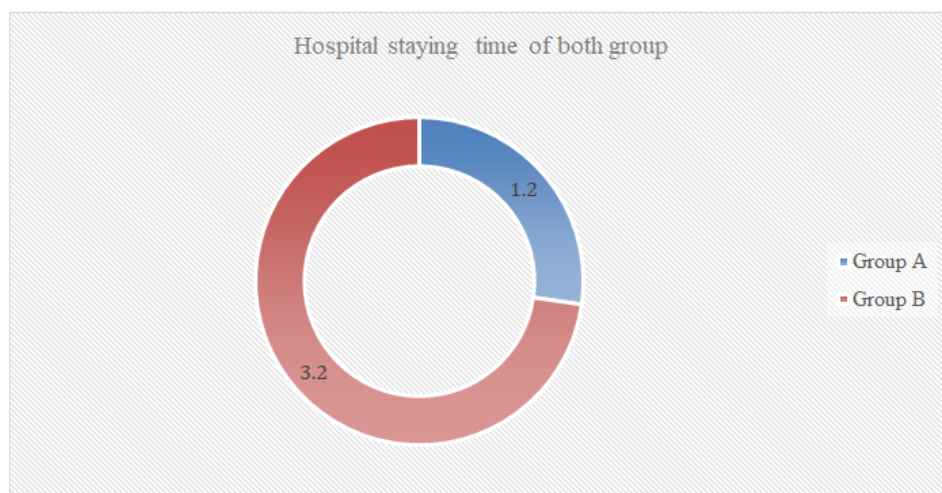


Figure II: Mean Time of hospital stay in both groups (N=50)

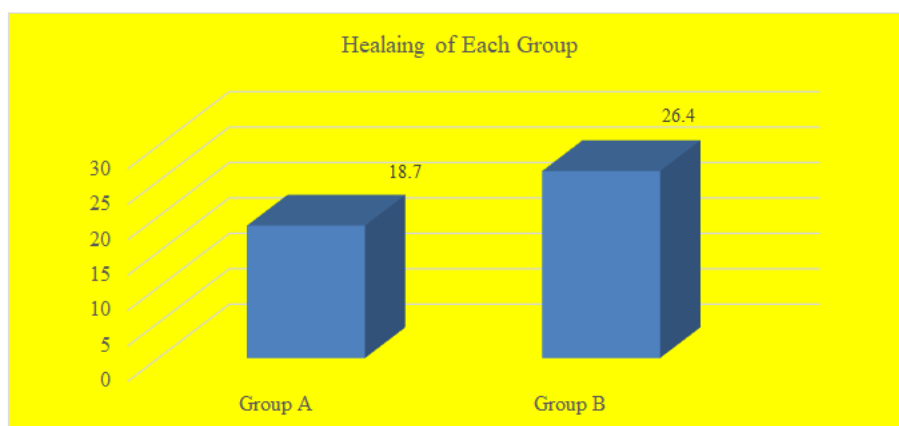


Figure III: Mean healing time of both groups (N=50)

Table 4: Distribution of post-operative complications (N=50)

Complications	Group A		Group B	
	n	%	n	%
Recurrence	0	0	2	8
Sinus formation	0	0	2	8
Ugly scar	0	0	7	28

V. DISCUSSION

The aim of this study was to compare the effectiveness of primary closure following incision and drainage in treating lactational breast abscesses with the traditional open method. The patient’s age range has some similarity with the findings of Dixon *et al.*, and Dener *et al.*, [10] who demonstrated that ‘breast abscesses’ most commonly affects women aged between 18 and 50 years, in our comparative study. The incidence of breast abscesses in lactational mastitis ranges from 0.4 to 11% in Indian subcontinent [11]. In our study 60% of patients were primiparae and 40% were multiparae, a similar incidence has been described by Dener *et al.*, [10]. This is similar to the literature, which describes primiparous women to be at a greater risk for the development of breast abscess during lactation than multiparous women [12]. Breast abscess is frequently located in the upper and outer quadrant, which fits with the fact that most of the breast parenchyma is located in this quadrant [13] which is almost similar to our observation. In this current study, all the patients in both groups manifested pain as a general feature. In analyzing the mean VAS (\pm SD) scores of day-1 to day-4 of both the groups’ patients, we observed, in group A, the VAS scores were lower than those of group B. In every day’s comparative VAS scores, there were significant correlations between the groups where p values were less than 0.0001. On the other hand, the mean duration of fever was also significantly lower in group A (2.1 days) than that (3.2 days) of group B. All these observations are similar to the findings of Dener *et al.*, [1]. In our study, the culture-sensitivity reveals the presence of *S. aureus* and *S. pyogenes* in the majority of infected cases which was similar to the findings of Walker *et al.*, [14] In this study we found some special benefit of primary closure following incision and drainage in treating lactational breast abscess. Once an abscess is established, management involves incision and drainage by providing general anesthesia however this is associated with regular dressing, prolonged healing time, difficulty in breast feeding, possible unsatisfactory cosmetic outcome, rupture and recurrent breast abscess [15]. Hence now-a-days treatment of breast abscess by repeated needle aspiration with or without ultrasound guidance gained importance [16]. This procedure has been used successful and is associated with less recurrence, excellent cosmetic result and has less costs [17]. Primary closure method may ensure less frequent hospital visits for the patients. In some other studies they also shown less frequent hospital [18, 19] visits in primarily closed patients. Considering all the benefits of primary closure following incision and drainage method, it may be considered as the method of choice in treating lactational breast abscess in future.

Limitation of the study

This study was conducted with small sample size. The management of two different hospitals might have some dissimilarities which might affect the findings. That’s why the findings of this study may not reflect the exact scenario of the whole country.

VI. CONCLUSION & RECOMMENDATION

Primary closure of lactational breast abscess following incision and drainage is an effective modality in treating patients with lactational breast abscess and it should be the first line of treatment, especially for larger and multilocular breast abscesses while incision and drainage should be reserved for abscesses with imminent skin changes, where

primary closure is not justified. All the findings of this study may open a new era in treating patients with lactational breast abscesses in Bangladesh. The results of this study may increase the confidence of the surgeons trying to find out more effective and acceptable treatment methods for such cases. For getting more specific information regarding this issue we would like to recommend conducting more studies in several places with larger samples.

REFERENCES

1. Dener, C., & Inan, A. (2003). Breast abscesses in lactating women. *World journal of surgery*, 27(2), 130-133.
2. Roberts, K. L., Reiter, M., & Schuster, D. (1995). A comparison of chilled and room temperature cabbage leaves in treating breast engorgement. *Journal of Human Lactation*, 11(3), 191-194.
3. Arora, S., Vatsa, M., & Dadhwal, V. (2008). A comparison of cabbage leaves vs. hot and cold compresses in the treatment of breast engorgement. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*, 33(3), 160-162.
4. Nikodem, V. C., Danziger, D., Gebka, N., Gulmezoglu, A. M., & Hofmeyr, G. J. (1993). Do cabbage leaves prevent breast engorgement? A randomized, controlled study. *Birth*, 20(2), 61-64.
5. Hayes, R., Michell, M., & Nunnerley, H. B. (1991). Acute inflammation of the breast--the role of breast ultrasound in diagnosis and management. *Clinical radiology*, 44(4), 253-256.
6. Benson, E. A., & Goodman, M. A. (1970). Incision with primary suture in the treatment of acute puerperal breast abscess. *Journal of British Surgery*, 57(1), 55-58.
7. Tan, S. M., & Low, S. C. (1998). Non- operative treatment of breast abscesses. *Australian and New Zealand journal of surgery*, 68(6), 423-424.
8. Bharat, A., Gao, F., Aft, R. L., Gillanders, W. E., Eberlein, T. J., & Margenthaler, J. A. (2009). Predictors of primary breast abscesses and recurrence. *World journal of surgery*, 33(12), 2582-2586.
9. Couper, M. P., Tourangeau, R., Conrad, F. G., & Singer, E. (2006). Evaluating the effectiveness of visual analog scales: A web experiment. *Social Science Computer Review*, 24(2), 227-245.
10. Dixon, J. M. (1988). Repeated aspiration of breast abscesses in lactating women. *BMJ: British Medical Journal*, 297(6662), 1517-1518.
11. Garg, P., Rathee, S. K., & Lal, A. (1997). Ultrasonically guided percutaneous drainage of breast abscess. *Journal of the Indian Medical Association*, 95(11), 584-585.
12. Kvist, L. J., & Rydhstroem, H. (2005). Factors related to breast abscess after delivery: a population- based study. *BJOG: An International Journal of Obstetrics & Gynaecology*, 112(8), 1070-1074.
13. Inch, S. (1997). Mastitis: a literature review. World Health Organization Division of Child Health and Development, Geneva.
14. Walker, A. P., Edmiston, C. E., Krepel, C. J., & Condon, R. E. (1988). A prospective study of the microflora of nonpuerperal breast abscess. *Archives of surgery*, 123(7), 908-911.
15. Benson, E. A. (1989). Management of breast abscesses. *World J Surg*, 13, 753-756.
16. Schwarz, R. J., & Shrestha, R. (2001). Needle aspiration of breast abscesses. *The American journal of surgery*, 182(2), 117-119.
17. Strauss, A., Middendorf, K., Müller-Egloff, S., Heer, I. M., Untch, M., & Bauerfeind, I. (2003). Sonographically guided percutaneous needle aspiration of breast abscesses-a minimal-invasive alternative to surgical incision. *Ultraschall in der Medizin (Stuttgart, Germany: 1980)*, 24(6), 393-398.
18. Raj, M. R., Karthik, M., & Aareb, A. (2016). Acute Abscess Management-Comparative Study between Primary Closures versus Healing by Secondary Intention. *International Journal of Scientific Study*, 4(2), 260-262.
19. Kale, A., Athavale, V., Deshpande, N., Nirhale, D., Calcuttawala, M., & Bhatia, M. (2014). A comparative study of conventional incision and drainage versus incision and drainage with primary closure of the wound in acute abscesses. *Medical Journal of Dr. DY Patil University*, 7(6), 744.

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