DOI: https://doi.org/10.47648/jswmc2023v13-01-66

Original Article

Drainage Followed by Primary Closure with Suction Drain Versus Drainage Only in the Treatment of Breast Abscess

*Podder S[1], Chowdhury DAH[2], Azad MAS[3].

Abstract

Background: Breast abscess is a common inflammatory condition among young lactating women. Although initial stages of breast abscess can be managed with antibiotics, surgery may be required in advanced stages in the form of incision and drainage with or without placement of a surgical drain. There are various methods for the treatment of breast abscesses.

Objectives: To compare the outcome of drainage followed by primary closure with suction drain and drainage only in the treatment of breast asbscess.

Methods: A total of 74 diagnosed cases of lactational breast abscess who underwent surgery were included in this prospective observational study. The patients were divided into two groups, 37 patients who underwent primary closure with suction drain were considered as group- A and the rest 37 patients who underwent drainage only were considered as group-B. Diagnosed cases of lactational breast abscess who underwent drainage of the abscess by either of the two above-mentioned methods were enrolled in this study. Statistical analyses of the results were obtained by using windows-based computer software Statistical Packages for Social Sciences (SPSS-22).

Results: The mean age was 24.16±4.02 years in group-A and 23.27±3.63 years in group-B. More than half (54.1%) patients were primipara in group-A and 24(64.9 %) in group-B. More than half (56.8%) patients had S. aureus in pus culture in group-A and 28(75.7%) in group-B. The differences were statistically not significant (p>0.05) between the twogroups. The mean healing time was 8.95±1.51days in group-A and 25.76±4.23 days in group-B. The mean duration of hospital stay was 5.14±1.03 days in group-A and 26.05±4.03 days in group-B. The mean time required to resume of breastfeeding was 4.57±1.04 days in group-A and 25.73±4.2 days in group-B. The mean score of postoperative pain (visual analog scale) was 1.35±0.48 in group-A and 3.76±0.6 in group-B. The mean requirement of analgesia was 5.24±1.28 days in group-A and 13.95±2.75 days in group-B. More than half (51.4%) patients had better scar quality in group-A and 26(70.3%) had good scar quality in group-B. The differences were statistically significant (p<0.05) between the two groups.

Conclusion: Primary closure with suction drain results better outcome than conventional incision & drainage in the treatment of breast abscess.

Keywords: Incision, drainage, breast abscess, drain placement, conventional method, wound healing, postoperative pain, primary suction closure

JSWMC 2023 [13(01)] P: 63-68

Introduction

A breast abscess is a localized collection of pus in the breast.[1]

1. Dr. Suravi Podder , Assistant Professor, Dept. of Surgery, SWMCH, Sylhet, Bangladesh.
2. Dr. Dewan Ali Hassan Chowdhury Professor and Head of the Dept. of Surgery, Sylhet M A G Osmani Medical College & Hospital, Sylhet, Bangladesh.
3. Dr. Mohd. Abdus Samad Azad Former Associate Professor of the Dept. of Surgery, Sylhet M A G Osmani Medical College & Hospital, Sylhet, Bangladesh.

Corresponding author: Dr. Suravi Podder,
Assistant Professor, Dept. of Surgery,
SWMCH, Sylhet, Bangladesh.
Email: suravipodder7@gmail.com

Abscess formation may occur in the breast tissue or in the skin overlying the breast or in the inframammary fold.[2]Breast abscesses are most common in young lactating women due to trauma or mastitis.[3] The incidence of abscess in young women during their lactational period ranges from 0.4-11% .[1]

The treatment of breast abscess is a clinical dilemma which ranges from medical treatment to formal surgical drainage. The different surgical modalities of breast abscess includes- invasive procedures (incision & drainage, incision & drainage followed by primary closure with suction drain) and minimal invasive procedures (needle aspiration with or without

USG guidance, percutaneous suction drainage). Minimal invasive procedures are usually recommended for small breast abscesses (<5cm) but for larger abscesses (>5cm) require catheter drainage or surgical incision and drainage.[4]

Though Surgical incision & drainage with a persistent open wound is the gold standard but till now it has several drawbacks in some aspects including length of hospitalization, duration and quality of healing, regular painful dressing required, postoperative pain, time required to resume of breast feeding, delayed back to daily activities etc. Incision and drainage followed by primary closure with suction drain may be comparable to the conventional method in terms of early recovery, better scar formation and less economic burden.

So, this study was designed to compare the outcome of drainage followed by primary closure with suction drain and the drainage only method in the treatment of lactational breast abscess. The result of this study may be helpful for the surgeons to choose the best surgical option for the treatment of breast abscess.

Objectives of the study:

General:

- To compare the outcome of drainage followed by primary closure with suction drain and drainage only method in the treatment of breast abscess.

Specific:

To record & compare-

- Severity of postoperative pain.
- The requirement of analgesia.
- The time required to resume of breast feeding.
- The length of hospital stay.
- The healing time.
- Scar quality.

Materials and Methods:

This prospective observational study was carried out in the department of surgery, Sylhet MAG Osmani Medical College Hospital, Sylhet from June2019 to June2020.Total 74 cases of puerperal breast abscess diagnosed by history and physical examination were enrolled in the study and the size of abscess was determined by ultrasonography of breast. 37 patients of group. A were underwent primary closure with suction drain and rest 37 patients were underwent drainage only method for the treatment of breast abscess. Some cases were excluded such as, breast abscesses which were already draining spontaneously, recurrent breast abscess, history of previous surgery on the same breast, abscess size <5cm, patient not fit for general anaesthesia and abscess in immune compromised patients, e.g., Diabetes mellitus, AIDS, patients on steroid. The specific objectives that were recorded and compared in this study were severity of postoperative pain by visual analogue scale, requirement of analgesia by days, the time required to resume of breast feeding by days, the length of hospital stay in days, the healing time in days and scar quality by stony brook scar evaluation scale.

Results:

Table 1: Distribution of the study patients by postoperative pain (n=74)

Postoperative pain	Group-A (n=37)		Group-B (n=37)		*p* value
	n	%	n	%	
1-2	37	100.0	0	0.0	
3-4	0	0.0	34	91.9	
5-6	0	0.0	3	8.1	
Mean ± SD	1.358	±0.4	3.76±0.6		0.001
Range(min-max)	(1-2)		(3-5)		

p value reached from Unpaired t-test

Table 2: Distribution of the study patients by requirement of analgesia (n=74)

Requirement of analgesia (days)	Group-A (n=37)		Group-B (n=37)		*p* value
	n	%	n	%	
<7	32	86.5	0	0.0	
7-14	5	13.5	21	56.8	
14-21	0	0.0	16	43.2	
Mean ± SD	5.248	±1.2	13.9	5±2.75	0.001
Range(min-max)	(3-9)		(9-20)		

p value reached from Unpaired t-test

ISSN: 2708-2857 (P), 2710-0405 (O)
2023 Jan; Volume 13; Issue 01

Table 3: Distribution of the study patients by organism involved in the abscess (n=74)

Organism involved in the abscess	Group-A (n=37)		Group-B (n=37)		*p* value
	n	%	n	%	
S.aureus	21	56.8	28	75.7	0.094
E.coli	3	8.1	0	0.0	
No growth	13	35.1	9	24.3	

p value reached from Chi square test

Table 4: Distribution of the study patients by time required to resume of breast feeding (n=74)

Time required to resume of breast feeding (days)	Group-A (n=37)		Group-B (n=37)		*p* value
	n	%	n	%	
<7	36	97.3	0	0.0	
7-14	1	2.7	0	0.0	
14-21	0	0.0	5	13.5	
21-28	0	0.0	23	62.3	
>28	0	0.0	9	24.2	
Mean ± SD	4.574 ±1.0		25.73±4.2		0.001
Range(min-max)	(3-7)		(18-35)		

p value reached from Unpaired t-test

Table 5: Distribution of the study patients by healing time (n=74)

Healing time (days)	Group-A (n=37)		Group-B (n=37)		*p* value
	n	%	n	%	
<7	1	2.7	0	0.0	
7-14	36	97.3	0	0.0	
14-21	0	0.0	5	13.5	
21-28	0	0.0	23	62.2	
>28	0	0.0	9	24.3	
Mean ± SD	8.95±1.51		25.76±4.23		0.001
Range(min-max)	(6-11)		(18-35)		

p value reached from Unpaired t-test

Bar diagram (Figure 1) shows the distribution of the study patients according to the length of hospital stay. It was observed that the majority (94.6%) of patients had a hospital stay of fewer than 7 days in group-A and 23(62.2%) patients had hospital stay belonged to 21-28 days in group-B. The mean length of hospital stay was 5.14±1.03 days in group-A and 26.05±4.03 days in group-B. The differences were statistically significant ($p<0.05$) between the two groups.

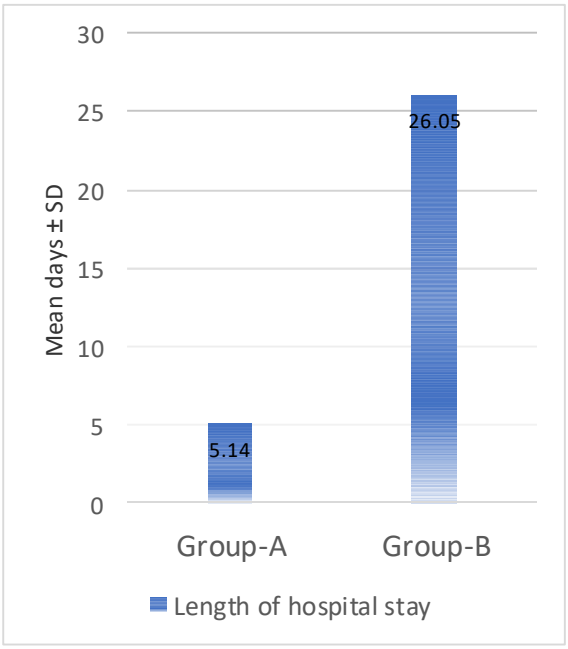

Figure 1: Distribution of the study patients by length of hospital stay (n=74)

Table 6: Distribution of study patients by scar quality (n=74)

Scar quality	Group-A (n=37)		Group-B (n=37)		*p* value
Poor (0-1)	0	0.0	10	27.0	
Good (2)	0	0.0	26	70.3	
Better (3-4)	19	51.4	0	0.0	
Best (5)	18	48.6	1	2.7	
Mean ± SD	4.49±0.51		2.78±0.58		0.001
Range(min-max)	(4-5)		(2-5)		

p value reached from Chi square test

Discussion:

The present study findings were discussed and compared with previously published relevant studies.

In this present study, it was observed that the most common organism involved in breast abscess was S.aureus in both groups, which were 56.8% and 75.7% in group-A and group-B respectively. E.coli found 8.1% in group-A and not found in group-B. The differences were statistically not significant ($p>0.05$) between the two groups. Various studies by different workers noted that the commonest organism in pus culture is Staphylococcus aureus which is similar to the present study.[5, 6] Surana et al. (2020) showed a total of 60.53% cases had Staphylococcus aureus grown on culture.[7] The rest 39.47% had no growth in culture. Parakh et al. (2018) found that the most common organism was coagulase-positive Staphylococci in 71.42%, no organism was grown in the culture 21.05% cases i.e. it was a sterile culture and 4.76% cases E. coli species were grown in culture.[8] O'Hara et al (1996) study also found that the most common organism was coagulase-positive staphylococcus.[9] This is because coagulase-positive Staphylococcus is the most common organism in the oropharynx of the feeding infant.

In this current study, the healing time was 7-14 days in 97.3% of patients in group-A and 21-28 days in 62.2% of patients in group-B. The mean healing time was 8.95±1.51days in group-A and 25.76±4.23 days in group-B. The mean duration of healing time was significantly ($p<0.05$) longer in group-B. Euvalingam and Prabakar, (2020) observed that the average time that had been taken for complete healing was 10.7 days in the experiment group as against 15.4 days in the control group.[10] Sam Vivek and Sankararaman, (2020) showed wound healing significantly ($p<0.051$) faster in primary closure with suction drain (9±1.2 days) compared to Drainage only group (11±2.4 days.[11] In another study found the mean wound healing time in the primary closure group was 8.16±2.13 days and 19.12±8.36 days in the open group.[4] This difference in healing time was statistically significant ($p<0.05$). Similarly, the healing by primary intention in primarily closed wounds is faster than healing by secondary intention in open wounds also observed by many other studies.[8, 12, 13]

In this present study, it was observed that 94.6% of patients had to stay in the hospital for less than 7 days in group-A and 62.2% of patients had to stay in the hospital for 21-28 days in group-B. The mean duration of hospital stay was 5.14±1.03 days in group-A and 26.05±4.03 days in group-B. The mean duration of hospital stay was significantly ($p<0.05$) prolonged in group-B. Sam Vivek and Sankararaman, (2020) study showed the mean duration of hospital stay in drainage only group was 13±2.1 days while in primary closure with suction drain group is 7±1.2 days which is ($p<0.05$) suggestive of the mean duration of hospital stay was significantly less in primary closure with suction drain group.[11] Dalvi et al. (2017) also observed shorter hospital stay in the primary closure group.[14] Similar results were found in the study conducted by Raj et al. (2016) that was shorter hospital stay, also decreasing the cost of treatment and use in better use of limited hospitalresources.[15] Dubey and Choudhary, (2013) showed that the reduction of the duration of hospital stay and subsequent hospital visits for dressing changes reduces the workload of hospital staff and is more economical for both patients and hospitals.[13]

Women should be encouraged to continue breastfeeding throughout treatment of puerperal breast abscess. Cessation of breast-feeding is necessary only when treatment with an antibiotic contraindicated for the newborn is prescribed (e.g., tetracycline, ciprofloxacin or chloramphenicol) or if surgical drainage is performed.[16] In this current study, it was observed that 97.3% of patients could resume breastfeeding within less than 7 days in group-A and 62.3% of patients could resume breastfeeding within 21-28 days in group-B. The mean time required to resume breastfeeding was 4.57±1.04 days in group-A and 25.73±4.2 days in group-B. The mean time required to resume breastfeeding was significantly ($p<0.05$) shorter in group-A.

In this present study, it was observed that the mean score of postoperative pain according to the visual analog scale was 1.35±0.48 in group-A and 3.76±0.6 in group-B. The mean postoperative pain was significantly ($p<0.05$)

lower in group-A patients. Sam Vivek and Sankararaman, (2020) showed that the mean duration of postoperative pain was 2.5 days in drainage only group and 1.2 days in primary closure with suction drain ($p<0.05$) suggestive of the significantly lower duration of postoperative pain in primary closure with suction drain group.[11] Similar findings were also observed by other studies.[12, 17]

In this current study, it was observed that most of the patient (86.5%) of group-A required analgesia for less than 7 days and most of the patient (56.8%) of group-B required analgesia for 7-
14 days. The mean duration of analgesia requirement was 5.24±1.28 days in group-A and 13.95±2.75 days in group-B. The mean duration of analgesia requirement was significantly ($p<0.05$) lower in group-A. Parakh et al. (2018) showed the difference of mean duration of analgesia given between the open and the closed group was 13.08 days and 7.8 days respectively.[8] Less analgesia is required by patients treated with primary closure with suction drain than patients treated with open drainage, which supports the present study.

In this present study the best mean scar quality was found 4.49±0.51 in group-A and 2.78±0.58 in group-B. The best mean scar quality was significantly ($p<0.05$) better in group-A. Scars were much better in primary closure compared to conventional incision and drainage with healing by secondary intention also observed by Surana et al. (2020).[7] Parakh et al. (2018) found in 89.5% of cases healing was with linear scar in the closed group and in 67.8% of cases healing was with irregular and ragged scar in the open group.[8]So, the quality of healing in a closed group was found to be good. Dubey and Choudhary (2013) found that 91.0% of the primary closure group had cosmetically acceptable scars compared with 9.3% in the open group; a difference that was significant statistically ($p<0.05$).[13]

Conclusion

Drainage followed by primary closure with a suction drain could be a better alternative method of treatment of breast abscess compared to only incision and drainage. Conventional incision and drainage of breast abscess led to more postoperative pain, delayed healing, and prolonged postponement of breast feeding. Less postoperative pain, less analgesic requirement, short healing time, early resume of breast feeding, short duration of hospital stay and good scar quality after primary closure with suction drain have made this procedure a better alternative to conventional incision and drainage in the treatment of acute breast abscess.

References

1. Aaditya M, Parakh, Mahendra K, Diwakar. Assesment of open versus closed modalities of breast abscess treatments: a cross sectional comparative study. International Surgery Journal. 2018; 5(6):2142-2147.
2. Cuschieri A, Hanna G.B, Arnold H.Essential Surgical practice (Higher Surgical training in general surgery). 5thed vol.1. CRC Press; 2015. p. 381.
3. RizzoM, Peng L, Frisch A, Jurado M, Umpierrez G. Breast abscesses in nonlactating women with diabetes: clinical features and outcome. Am J Med Sci. 2009; 338(2): 123-6.
4. Kousar N, Durrani T.A, Ghafoor TandQaziW. Large lactational breast abscess: primary closure with drain versus conventional incision and drainage. JSZMC. 2018; 9(3): pp.1439-1442.
5. Lawlor-Smith C. Treating mastitis. Australian family physician. 1994; 23(5): pp.978-979.
6. Matheson I, Aursnes I, Horgen M, Aabø Ø. and Melby K. 1988. Bacteriological findings and clinical symptoms. Acta obstetricia et gynecologica Scandinavica. 1988; 67(8): pp.723-726.
7. SuranaK, SagruleD and LanjewarS. Primary closure with suction drain of acute breast abscess after incision, drainage, and curettage. Indian Journal of Surgery. 2020; 82(2): pp.129-133.
8. Parakh, A.M. and DiwakarM.K. Assessment of open versus closed modalities of breast abscess treatments: a cross sectional comparative study. International Surgery Journal. 2018; 5(6): pp.2142-2147.
9. O'Hara R.J, Dexter S.P.L. and Fox J.N.Conservative management of infective mastitis and breast abscesses after ultrasonographic assessment. British journal of surgery.1996; 83(10): pp.1413-1414.

10. Euvalingam D and Prabakar G.Evaluation of postoperative outcomes following primary suction closure for breast abscess. International Journal of Surgery. 2020; 4(1): pp.138-141.
11. Sam Vivek G and Sankararaman B. A comparative study of open drainage versus suction drainage and primary closure in the management of breast abscess at a tertiary care center. International Journal of Surgery. 2020; 4(2): pp.280-282.
12. Odiya S, Mathur R and Arora S. 2016. Comparative study of conventional incision and drainage versus percutaneous placement of suction drain: changing trend of breast abscess management. International Surgery Journal. 2016; 3(3): pp.1580-1584.
13. Dubey V and Choudhary S.K. Incision and drainage versus incision and drainage with primary closure and use of closed suction drain in acute abscesses. Wounds: a compendium of clinical research and practice. 2013; 25(3): pp.58-60.
14. 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 Pulse- International Medical Journal. 2017; 4(2): 210-212.
15. Raj M.R, Karthik M and Aareb A. Acute Abscess Management-Comparative Study between Primary Closures versus Healing by Secondary Intention. INTERNATIONAL JOURNAL OF SCIENTIFIC STUDY.2016; 4(2): pp.260-262.
16. Trop I, Dugas A, David J, El Khoury M, Boileau J.F, Larouche N et al.Breast abscesses: evidence-based algorithms for diagnosis, management, and follow-up. Radiographics. 2011; 31(6): pp.1683-1699.
17. Edino S.T, Ihezue C.H. and Obekpa P.O. Outcome of primary closure of incised acute soft-tissue abscesses. The Nigerian postgraduate medical journal. 2001; 8(1): pp.32-36.