



ORIGINAL ARTICLE

## Ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess: A randomized control trial.

Sidra Mehmood Dar<sup>1</sup>, Sehrish Siddique<sup>2</sup>, Usman Qureshi<sup>3</sup>, Sumaira Nawaz<sup>4</sup>

**Article Citation:** Dar SM, Siddique S, Qureshi U, Nawaz S. Ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess: A randomized control trial. Professional Med J 2022; 29(7):938-942. <https://doi.org/10.29309/TPMJ/2022.29.07.6723>

**ABSTRACT... Objective:** To compare the mean healing time in patients undergoing ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess. **Study Design:** Randomized Controlled Trail. **Setting:** Department of Surgery, Holy Family Hospital, Rawalpindi. **Period:** 1<sup>st</sup> March 2019 to 31<sup>st</sup> August 2019. **Material & Methods:** After endorsement from the ethical committee, an informed consent was taken from the patients in order to obtain their data for assessment with the affirmation of privacy of their record. After taking complete history from each patient, their breasts were palpated bilaterally for any lump. The diagnosis was established by the sonomammogram. Patients were randomized by lottery method prospectively to ultrasound guided aspiration group, and incision and drainage group for lactational breast abscess. Both groups were compared in terms of mean healing time. **Results:** In this study, total 70 patients having lactational breast abscess were included. There were 35 patients in Group-A i.e patients undergoing ultrasound guided needle aspirations and 35 in Group-B i.e patients undergoing incision and drainage. Mean healing time in patients undergoing ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess shows 21.0+1.97 days in Group-A and 44.23+3.15 days in Group-B, p value was 0.0001. **Conclusion:** We concluded that the mean healing time in patients undergoing ultrasound guided needle aspirations was significantly lower when compared to those with incision and drainage for lactational breast abscess.

**Key words:** Lactational Breast Abscess, Management, Ultrasound Guided Needle Aspirations, Incision and Drainage, Mean Healing Time.

### INTRODUCTION

Breast abscess is one the most common benign yet emergency condition of the breast which requires immediate intervention. It is a consequence of infectious mastitis that results in local accumulation of pus within the breast tissue.<sup>1</sup> Due to increased stimulation by maternal hormones, it is more common in lactating mothers.<sup>2</sup> Breast abscess is observed in 0.4 to 11 % of all the lactating females.<sup>3</sup> Risk factors include poor latch, cracked nipples, use of a breast pump and weaning.

Patients usually present with a painful swelling in breast and a positive history of breast feeding. Palpation reveals tenderness and erythema over the breast with or without a lump showing

a positive fluctuation test. The diagnosis is confirmed by ultrasound of the breast which shows a hypoechoic collection in breast with acoustic enhancement and an echogenic vascular rim.

Traditionally, breast abscesses are managed with incision and drainage. Patients have to come repeatedly to hospital for multiple dressings of the wound. Wound heals by secondary intention, so healing time is prolonged with an ugly scar over the breast. In the era of interventional radiology and minimal invasive surgery, ultrasound guided aspirations of breast abscess along with antibiotics has replaced the traditional methods of management as there is early wound healing and good cosmesis. Ultrasound guided aspirations of

1. MBBS, FCPS, Senior Registrar General Surgery, Holy Family Hospital, Rawalpindi.

2. MBBS, FCPS, Senior Registrar General Surgery, Holy Family Hospital, Rawalpindi.

3. MBBS, FCPS (Surgery), Associate Professor Surgery, Holy Family Hospital/Rawalpindi Medical University, Rawalpindi.

4. MBBS, Post graduate Resident Trainee Surgery, Holy Family Hospital/Rawalpindi Medical University, Rawalpindi.

**Correspondence Address:**

Dr. Sidra Mehmood Dar  
Department of General Surgery,  
Holy Family Hospital, Rawalpindi.  
sidramehmood@hotmail.com

**Article received on:** 30/07/2021

**Accepted for publication:** 08/01/2022

breast abscess along with antibiotics has become the first line treatment option in managing breast abscess.<sup>4</sup>

We define Healing as complete resolution of swelling due to breast abscess plus recovery of wound due to needle punctures in Ultrasound guided aspirations group and approximation and closure of wound in incision and drainage group. Similarly Mean Healing Time is the total time required for Healing (complete resolution of swelling due to breast abscess plus recovery of wound due to needle punctures in Ultrasound guided aspirations group and approximation and closure of wound in incision and drainage group).

The objective of the study is to compare the mean healing time in patients undergoing ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess. The rationale of this research proposal is to present the new advances of ultrasonography in the field of breast surgery for managing lactational breast abscess with better outcome so that morbidity can be reduced.

## MATERIAL & METHODS

The study was a randomized control trial done in the department of surgery, holy family hospital, Rawalpindi with six months duration from 1<sup>st</sup> March 2019 to 31<sup>st</sup> August 2019. The inclusion criteria was

- Age between 25 and 40 yrs
- Abscess size < 5 cm

The exclusion criteria was

- Chronic breast abscess
- Patients who underwent any previous breast surgery
- Patients who are non-compliant
- Patients having pus C/S is MRSA (methicillin resistant staphylococcus aureus) positive.

All patients satisfying the inclusion measures were enlisted from the outpatient Department of general surgery, Holy Family Hospital, Rawalpindi. After approval from the ethical committee approval number: [04/IREF\RMU\2016]), an informed consent in regards to the patients was gotten from the patients to grasp their data for the assessment

with the affirmation of privacy of their record. After taking complete history from each patient, their breasts were palpated bilaterally for any lump, tenderness and erythema; The diagnosis was confirmed by the sonomammogram. Patients were randomized by lottery method prospectively to ultrasound guided aspiration group and incision and drainage group for lactational breast abscess.

Patients undergoing ultrasound guided needle aspirations under antibiotic cover were included in Group A while the patients undergoing early incision and drainage were included in Group B; the variable to be estimated was mean healing time. All the data was collected and recorded on a pre-designed performa. For incision and drainage of the abscess, Intravenous injection of Flagyl 400mg and Augmentin 1.2g were given before the commencement of the procedure. Patients were anesthetized by using LMA, incision was made in the area of maximum fluctuation on breast abscess. Pus was drained and collected for culture and sensitivity (C/S). Wound was kept open. Pain killer used was Inj. TORADOL 30 mg I/V postoperatively immediately and then after 8 hours. USG (ultrasound) guided aspiration was done by placing the probe over the breast abscess, needle aspiration was done where a hypoechoic collection was seen; aspirates obtained and sent for culture. Empirical antibiotics were given for 7 days which include Tab Augmentin 1g and Tab Flagyl 400mg and replaced according to C/S report. Patient was followed up in OPD, wound healing was checked after the intervention (aspirations/incision and drainage) done and healing time calculated in days.

Data was entered and analyzed in SPSS software (version 22). For quantitative variables like age, size and healing time, mean and standard deviation was calculated. Mean healing time was compared between 2 groups by independent sample t-test. Frequency and percentage was calculated for education, BMI and DM. Effect modifiers like age, size of the abscess, DM, BMI and education were controlled by stratification. Post stratification independent sample t-test

was applied. A P-value < 0.05 was considered statistically significant.

## RESULTS

A total of 70 cases (35 in each group) fulfilling the inclusion/exclusion criteria were enlisted to compare the mean healing time between two groups.

Age distribution of the patients was done which showed that 40% in each group were between 25-30 years of age whereas 60% were between 31-40 years of age. Mean age was calculated as 33.03±4.87 years in Group-A and 32.4±4.58 years in Group-B.

Observation of educational status of the patients showed that 57.14% (n=20) in Group-A and 54.29% (n=19) in Group-B were educated, whereas, 42.86% (n=15) in Group-A and 45.71% (n=16) in Group-B were uneducated.

Frequency of diabetes mellitus was recorded as 31.43% (n=11) in Group-A and 48.57% (n=17) in Group-B.

Mean BMI of the patients was calculated as 31.26±3.69 in Group-A and 30.89±3.34 in Group-B. Breast abscess size on examination was seen to be 2.17±0.89cm (in Group-A) and 2.03±0.79cm in Group-B.

Mean healing time in patients in Group A was 21.0±1.97 days as compared to 44.23±3.15 days in Group-B, (p value was 0.0001.) (Table-I)

Effect modifiers like age, size of the abscess and DM, controlled by stratification are shown in following tables.

Mean Healing Time Days			
Healing Time (days)	Group-A (n=35)	Group-B (n=35)	P-Value
	Mean±SD	Mean±SD	
	21.0±1.97	44.23±3.15	

**Table-I. Comparison of mean healing time in patients undergoing ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess (N=70)**

## DISCUSSION

In our study, mean healing time in patients undergoing ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess shows 21.0±1.97 days in Group-A and 44.23±3.15 days in Group-B, p value was 0.0001. These findings are in agreement with the statistics used by Muhammad N et al<sup>1</sup> as mean healing time (days) in Group A patients undergone incision & drainage was 45.3 ± 24.04 days while in Group B patients undergone needle aspiration was 19.13 ±15.56 days, p-value 0.001.<sup>1</sup>

Another study by Anita Jagdish Kandi and colleagues<sup>2</sup> compared the outcomes in management of breast abscess by ultrasound guided needle aspiration against incision and drainage.

Parameters		Group-A (n=35)		Group-B (n=35)		P-Value
		n=35	Mean Healing Time (days)	n=35	Mean Healing Time (days)	
Age (years)	25 - 30	14	20.64± 1.69	14	44.71±3.05	0.0001
	31 - 40	21	21.24±2.14	21	43.90±3.25	0.0001
Diabetes mellitus (DM)	Yes	11	20.61±1.86	17	44.66±3.60	0.0001
	No	24	21.17±2.04	18	43.78±2.69	0.0001
Size of breast abscess	1 – 2 cm	24	20.58±1.74	26	44.29±3.37	0.0001
	3 – 4 cm	11	20.74±1.53	9	44.57±3.54	0.0001

**Table-II. Stratification for comparison of mean healing time in patients undergoing ultrasound guided needle aspirations versus incision and drainage for lactational breast abscess with regards to age, DM, Size of breast abscess (N=70)**

In their study the commonest presentation in both groups was painful breast swelling. Mean abscess diameter in USG aspiration group was 3.4 cm and incision-drainage group was 4.5 cm. They concluded that ultrasound guided aspiration was a simple, painless, day care procedure and an effective alternative treatment to incision and drainage in properly selected patient, with timely support by sonologist.

In our study breast abscess size in Group-A was 2.17+0.89cm and 2.03+0.79cm in Group-B. Large and chronic breast abscess were the main failure factors for guided aspirations in a similar study done by Eryilmaz R et al.<sup>5</sup>

With the advent of interventional radiology, ultrasound has played an essential role in diagnosing as well as treating breast abscess as localization of pus in loculations and guided aspirations can be easily done.<sup>6</sup> Sarhan HH and others<sup>6</sup> also showed in their study that 93% of the breast abscesses could be completely treated with percutaneous needle aspiration. Many similar studies suggest that ultrasound guided needle aspirations are more efficient in treating breast abscess.<sup>7,8,9</sup>

A meta-analysis performed by Fu Bing<sup>10</sup> in department of ultrasonography, China showed that the mean healing time and the length of scar was lesser in patients underwent ultrasound guided needle aspirations (p-value 0.000).

Ranjeesh V<sup>11</sup> in his study concluded that healing time in Group A was 19.20 days while in Group B was 30.17 days. Furthermore, there was no scar formation in Group A (usg guided needle aspiration group) while there was significant scarring in Group B (incision and drainage group). So cosmesis was compromised in Group B.

Hence the national and international studies prove that ultrasound guided needle aspiration is superior to incision and drainage in the management of lactational breast abscess.<sup>12,13,14,15</sup>

There are some limitations in our study. It has a small sample size and a single center study.

Furthermore, all the patients enlisted are those having lactational breast abscess. This limits the application of our recommendations to cover all types of breast abscesses.

## CONCLUSION

We concluded that the mean healing time in patients undergoing ultrasound guided needle aspirations was significantly lower when compared to those with incision and drainage for lactational breast abscess.




Copyright© 08 Jan, 2022.

## REFERENCES

1. Muhammad N, Muhammad KR, Nasir AR, Qazi JA, Pyar AF, Muhammad O. **Comparison of incision and drainage against needle aspiration for the treatment of breast abscess.** Am Surg 2012; 78: 1224-7.
2. Anita JK, Venkat AG, Anagha SV. **Management of breast abscess by ultrasound guided needle aspiration against incision and drainage.** International Medical Journal 2014; 1:655-59.
3. Kamal K, Anurag S, Anita D. **Management of Lactational Mastitis and breast abscesses, Review of current knowledge and practice.** Indian J Surg 2013; 75: 430-35.
4. Shahida PA, Shams NA, Saman A. **Aspiration of breast abscess through wide-bore cannula.** J Coll Physicians Surg Pak 2014; 24: 719-21.
5. Eryilmaz R, Sahin M, Hakan Tekelioglu M, Daldal E. **Management of lactational breast abscesses.** Breast 2005; 14: 375-79.
6. Sarhan HH, Ibraheem MO. **Percutaneous needle aspiration is a minimally invasive method for a breast abscess.** Arch Clin Exp Surg 2012; 1: 105-9.
7. Kandi AJ, Gite VA, Varudkar AS. **A comparative study of outcomes in management of breast abscess by ultrasound guided needle aspiration against incision and drainage.** MedPulse – International Medical Journal 2014; 1(10): 655-9.
8. Singh G, Singh G, Singh LR, Singh R and Singh S. **Management of breast abscess by repeated aspiration and antibiotics.** J Med Soc 2012; 26: 189-91.
9. Masroor Bhatti A, Iqbal Memon A, Naz T, Latif S, Usman S, Gul A. **Incision and drainage versus ultrasound guided needle aspiration in the management of lactational breast abscess.** Int. j. endorsing health sci. res 2021; 9(2):190-4.

10. Bing F, Jie L. **Ultrasound guided needle aspiration and cavity washing versus incision and drainage to treat breast abscesses: A meta-analysis.** Int J Clin Exp Med. 2017; 10(6):8656-65.
11. V R, Kotha S. **A Prospective Comparative Study of Needle Aspiration vs Incision and Drainage of Lactational Breast Abscess.** International Journal of Contemporary Medical Research. 2018; 5(5):13-7.
12. Hussain N, Khan I, Ahmed T, Parveen S, Malik M, Khan MI. **Comparison of the restoration of Breast Feeding after Percutaneous Aspiration vs Incision and Drainage for Management of Breast Abscess.** J Liaquat Uni Med Health Sci 2018; 17(01):47-51.
13. Egbe TO, Njamen TN, Essome H, Tendongfor N. **The estimated incidence of lactational breast abscess and description of its management by percutaneous aspiration at the Douala General Hospital, Cameroon.** Int Breastfeed J. 2020; 15: 1-7.
14. Colin C, Delov AG, Peyron-Faure N, Rabilloud M, Charlot M. **Breast abscesses in lactating women: Evidences for ultrasound-guided percutaneous drainage to avoid surgery.** Emerg Radiol. 2019; 26: 507-514.
15. Somani SK, Porwal R, Singh A, Soni A, Sagar P. **A comparative study of outcomes in management of breast abscess by ultrasound guided needle aspiration and incision and drainage.** Int J Comtemp Surg. 2020; 8(1): 40-46.

#### AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Sidra Mehmood Dar	Original idea, Manuscript writing.	
2	Sehrish Siddique	Data analysis & Editing.	
3	Usman Qureshi	Supervision of project.	
4	Sumaira Nawaz	Data collection.	