

# Comparative analysis of Percutaneous Needle Aspiration of Breast abscess with antibiotic cover versus Traditional Surgical Incision and Drainage

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DOI: 10.29322/IJSRP.10.01.2020.p9710

<http://dx.doi.org/10.29322/IJSRP.10.01.2020.p9710>

**Abstract-** INTRODUCTION – Observing the poor satisfaction and morbidity following incision & drainage of breast abscess, the need for alternate treatment modalities is frequently being questioned. Repeated needle aspiration with antiobiotic cover is an effective and satisfactory treatment modality.

**METHODS** - In study group, percutaneous needle aspiration of abscess under local anesthesia was done with 18/16G needle. Empirical antibiotic therapy with amoxicillin clavulanic acid was started which was changed in accordance to pus culture & sensitivity report if needed. In the control group, breast abscess was treated by conventional Incision & drainage under general anesthesia in operation theatre. Breast abscess treatment acceptance was assessed at the last visit.

**RESULTS** – The patients treated by repeated needle aspiration had lower complication rate and scar formation compared to incision & drainage group ( $P < 0.001$ ). The patient satisfaction was excellent, as there were no scar and cosmesis result was good ( $P < 0.001$ ).

**CONCLUSION** - Percutaneous aspiration of breast abscess is simple, painless, day care procedure and effective alternative method of treatment to incision and drainage in properly selected patient with better outcomes in terms of better cosmetics and shorter duration hospital stay.

**Index Terms-** Breast abscess, Incision & drainage, Aspiration, Patient Satisfaction

## I. INTRODUCTION

Breast abscess is one of the most common form of abscess in surgical emergencies, usually seen in lactating woman [1,2]. The frequency of occurrence is highly related to pregnancy and mainly caused due to minor trauma to nipple by a child during feeding and bacterial colonization due to improper nursing technique and incomplete emptying of the breast [3,4]. Immediate diagnosis and treatment are necessary if breast feeding is to be continued and for the prevention of further complications [5]. At an early stage, acute mastitis may be treated by the use of appropriate antibiotics [6]. Once an abscess is established, management involves incision and drainage by providing general anesthesia however this is associated with regular dressing, prolonged healing time, and difficulty in breast feeding, possible

unsatisfactory cosmetic outcome, rupture and recurrent breast abscess [7]. Hence now-a-days treatment of breast abscess by repeated needle aspiration with or without ultrasound guidance gained importance [8]. This procedure has been used successfully and is associated with less recurrence, excellent cosmetic results and has lesser cost [9]. The purpose of this study was to compare the outcome and effectiveness of traditional incision and drainage against needle aspiration in the treatment of breast abscess in postoperative pain, duration of hospital stay, healing time, cosmetic outcome and patient satisfaction.

## II. MATERIAL AND METHODS

### SOURCE OF DATA

- Cases coming to the OPD and emergency department at Dr. Sugila Tiwari Government Hospital, Haldwani with breast abscess were clinically evaluated.

### METHOD OF COLLECTION OF DATA

- Data was collected from patient diagnosed between January 2018 to September 2019 with breast abscess in each group of study. Randomization was done with the alternate patient being placed in case and control group. Total 60 patients were studied.

### INCLUSION CRITERIA

- Patient who will be coming in the OPD and emergency with a breast abscess.
- Patient giving consent to be part of this study

### EXCLUSION CRITERIA

- Patient not giving consent to be part of study

## III. METHODOLOGY

- Percutaneous needle aspiration of pus under local anesthesia was done with 18/16G needle. Empirical antibiotic therapy with amoxicillin clavulanic acid was started. Aspirated pus was sent for bacteriological study. The antibiotics were changed in accordance to sensitivity report if needed.

- Lactating patients were advised to resume breast-feeding on both breasts as soon as possible. The patient's follow up was done at the OPD on day 3, day 7, day 14 and on day 30.
- At every follow up, clinical assessment of symptoms and signs was done to assess resolution of the abscess. Ultrasound scan was done to assess radiological resolution of the abscess which was defined as complete absence of fluid collection, normal breast glandular and fibro fatty tissues without edema. In situation where the abscess persisted in case of ultrasound guided needle aspiration, re-aspiration was done on day 3, 7, if it still persisted on day 14 it was considered as treatment failure and hence converted to the traditional incision and drainage.
- In the control group, breast abscess was treated by conventional Incision & drainage under general anesthesia in operation theatre. Breast abscess treatment acceptance was assessed at the last visit (day 30).

IV. OBSERVATIONS & RESULTS

**Table 1: Mean Age between Group A (Needle aspiration) and Group B (Incision and Drainage)**

	Group A (Needle aspiration)	Group B (Incision and Drainage)	P Value
	Mean ± SD	Mean ± SD	
Age	29.37 ± 5.64	30.73 ± 8.70	0.473

**Table 2: Age group distribution between two groups**

Age Groups	Group A (Needle aspiration)		Group B (Incision and Drainage)		P Value
	Frequency	%	Frequency	%	
Upto 20 yrs	0	0.0%	2	6.7%	0.476
21 - 30 yrs	20	66.7%	18	60.0%	
31 - 40 yrs	9	30.0%	8	26.7%	
>40 yrs	1	3.3%	2	6.7%	
Total	30	100%	30	100%	

**Table 3: No. of Aspirations**

No. of Aspirations	Group A (Needle aspiration)	
	Frequency	%
0	0	0.0%
1	5	16.7%
2	21	70.0%
3	4	13.3%
Total	30	100%

**Table 4: Amount of Aspirate**

	Group A (Needle aspiration)			
	Mean ± SD	Median	Min - Max	Median (IQR)
Amount of Aspirate	28.17 ± 31.80	13.00	2 - 100	13.00 (6.00 - 30.00)

**Table 5: Correlation between Causative Organism and two groups**

Causative Organism	Group A (Needle aspiration)		Group B (Incision and Drainage)		P Value
	No. of Patients	%	No. of Patients	%	
E. coli	3	10.0%	6	20.0%	0.307
MRSA	23	76.7%	18	60.0%	
No growth	3	10.0%	2	6.7%	
Staph	0	0.0%	3	10.0%	
Streptococcus	1	3.3%	1	3.3%	
Total	30	100%	30	100%	

**Table 6: Antibiotic susceptibility profile between two groups**

	Group A (n=30) (Needle aspiration)		Group B (n=30) (Incision and Drainage)		P Value
	No. of Patients	%	No. of Patients	%	
Meropenem	2	6.7 %	0	0.0 %	0.492
Ampicilin+sulbactam	2	6.7 %	0	0.0 %	0.492
Linezolid	14	46.7 %	6	20.0 %	0.054
Levofloxacin	1	3.3 %	0	0.0 %	1.000
Cotrimoxazole	2	6.7 %	0	0.0 %	0.492
Clindamycin	1	3.3 %	0	0.0 %	1.000
Azithromycin	1	3.3 %	0	0.0 %	1.000
Teicoplanin	1	3.3 %	0	0.0 %	1.000
Ciprofloxacin	2	6.7 %	6	20.0 %	0.254
Ampicillin-Sulbactam	10	33.3 %	2	6.7 %	0.021
Tetracycline	2	6.7 %	1	3.3 %	1.000
Polymixin B	0	0.0 %	2	6.7 %	0.492
Amoxicilin +clavunic acid	5	16.7 %	9	30.0 %	0.222
Amoxycillin-Clavulanate	1	3.3 %	2	6.7 %	1.000
Amikacin	2	6.7 %	5	16.7 %	0.228
Vancomycin	15	50.0 %	7	23.3 %	0.032
Gentamycin	1	3.3 %	13	43.3 %	<0.001

**Table 7: Correlation between Lactation continued after & two groups**

Lactation continued after	Group A (Needle aspiration)		Group B (Incision and Drainage)		P Value
	No. of Patients	%	No. of Patients	%	
Allowed	22	73.3 %	14	46.7 %	0.035
Not allowed	8	26.7 %	16	53.3 %	
Total	30	100 %	30	100 %	

**Table 8: Appearance of Antibiooma in patients undergoing needle aspiration**

Antibiooma	Group A (Needle aspiration)		P Value
	No. of Patients	%	
NP	28	93.3%	0.492
P	2	6.7%	
Total	30	100%	

**Table 9: Correlation between Patient Satisfaction & Two groups**

Patient Satisfaction	Group A (Needle aspiration)		Group B (Incision and Drainage)		P Value
	No. of Patients	%	No. of Patients	%	
3	0	0.0 %	6	20.0 %	<0.001
4	0	0.0 %	9	30.0 %	
5	1	3.3 %	14	46.7 %	
6	16	53.3 %	1	3.3 %	
7	13	43.3 %	0	0.0 %	
Total	30	100 %	30	100 %	

**Table 11: Correlation between Cosmetic outcome & two groups**

Cosmetic outcome	Group A (Needle aspiration)		Group B (Incision and Drainage)		P Value
	No. of Patients	%	No. of Patients	%	
No Scar	29	96.7 %	0	0.0 %	<0.001
Scar	1	3.3 %	30	100.0 %	
Total	30	100 %	30	100 %	

**Table 12: Correlation between Hospital stay & two groups**

Hospital Stay	Group A (Needle aspiration)	Group B (Incision and Drainage)	P Value
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	No. of Patients	%	No. of Patients	%	
IPD	1	3.3 %	24	80.0 %	<0.001
OPD	29	96.7 %	6	20.0 %	
Total	30	100 %	30	100%	

## V. DISCUSSION

Breast abscess is defined as an acute soft tissue infection which is characterized by localized pain, swelling and redness associated with a mass that may or may not be fluctuant. Most breast abscesses develop as a complication of lactational mastitis. The standard clinical treatment of breast abscess has been incision and drainage of pus and antibiotics. This procedure has its own limitations like pain, fear of incision, prolonged healing time, difficulty in breastfeeding and the possibility of milk fistula and unsatisfactory cosmetic outcome. This procedure needs hospital stay and have various drawbacks. In need of a less invasive method and good cosmetic outcome, various methods have been suggested. One of these methods is repeated needle aspirations under antibiotic cover which is done on OPD basis.

A study conducted by **Richard J Schwarz et al** to see whether or not needle aspiration of breast abscesses without ultrasound guidance was an efficient treatment modality, showed that needle aspiration without ultrasound guidance is an efficient treatment for breast abscesses.

In our study in 60 patients, the mean age was 29.36 years in aspirated and 30.73 years in incised group. Most patients had lactational breast abscess in 20 (66.66%). Of the 20 patients in I & D group, 6 patients (30%) were unable to resume lactation whereas only 1 patient (5%) in the aspiration group was unable to do so. The mean number of aspirations needed was 1.96.

A prospective study conducted by **Ranjeesh V et al** in 60 patients with clinical features suggestive of puerperal breast abscess. The patients were divided into two treatment groups A and B with 30 patients in each group. Patients in group A underwent percutaneous needle aspiration and in group B underwent open surgical drainage. In group A 25 patients were treated successfully with needle aspiration and antibiotics. 7 abscesses showed growth of *S. aureus*, 17 showed MRSA, 4 showed no growth, 2 abscesses showed other rarer organisms. Success rate of aspiration was found to be 83%.

In our study, the most common isolated pathogen was MRSA in both needle aspiration group (76.7%) and incision & drainage group (60.0%). The patients treated by repeated needle aspiration had lower complication rate and scar formation compared to incision & drainage group ( $P < 0.001$ ). Antibiotic formation was seen in 2 patients in the needle aspiration group, which was eventually treated with incision and drainage. The antibiotics were changed as soon the culture and sensitivity reports were available.

A study conducted by **Anita Jagdish Kandi et al** compared the outcomes in management of breast abscess by ultrasound guided needle aspiration against incision and drainage. They found that satisfaction rate in patients treated by USG guided

aspiration was 88.57% and in incision & drainage was 54.1%. They concluded that USG guided aspiration is simple, painless, day care procedure and effective alternative treatment to incision and drainage in properly selected patient and with timely support by sonologist.

In our study, the patient satisfaction was excellent, as there were no scar and cosmesis result was good ( $P < 0.001$ ). The apprehensive patients were especially happier towards needle aspirations and avoiding ugly scar marks left after incision and drainage.

## VI. CONCLUSION

Breast abscess is a common problem, especially in lactating female. The traditional treatment by incision and drainage causes a considerable distress in patients. This also require hospital stay and leaves an ugly scar mark. With the present treatment option by repeated needle aspirations and antibiotics, the needs of general anesthesia, hospital stay and scar marks could be avoided. The other complication like pain, regular dressings, problems in breast feeding and mammary duct fistula are also avoided. With appreciable cure rate by repeated needle aspiration, this method can be preferred as treatment of breast abscess in selected patients. Thus, percutaneous aspiration of breast abscess is simple, painless, day care procedure and effective alternative method of treatment to incision and drainage in properly selected patient with better outcomes in terms of better cosmetics and shorter duration hospital stay.

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