

A Randomized Controlled Trial of Needle Aspiration under Ultrasonographic guidance versus Incision and Drainage of Breast Abscess

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Abstract

Introduction: Breast abscess is a common cause of morbidity in women. Patients commonly present with a painful swelling of the breast and fever. Lactational breast abscess occurring during breast feeding is the result of Staphylococcus infection. Non-lactational breast abscesses are entirely different from those occurring during nursing. They occur in the peri-areolar tissues, frequently recur, and infecting organisms are a mixture of Bacteroides, Anaerobic streptococci, and Enterococci. **Methods:** This was a hospital based prospective randomized controlled trial. 60 patients were included in the study. 30 of them were randomized in the needle aspiration group and other 30 were treated by incision and drainage. The patients were followed up on days 3,7,14,21 post intervention and thereafter for three months on a monthly basis. **Results:** Our study showed mean age in incision and drainage group was 26 years, and in needle aspiration group, it was 29 years. The difference in age group between the 2 groups was not statistically significant. Requirement of analgesic was high in incision & drainage group as compare to needle aspiration group. Comparison of presence of fever between two groups was statistically significant with a p-value of 0.048. At the end of follow up patient satisfaction rate was high in needle aspiration as compare to incision & drainage. **Conclusion:** In conclusion it can be said that whenever and wherever the facility of ultrasound is available, serial percutaneous needle aspiration may be tried as a first line of therapy up to a maximum of three attempts, in patients whose abscess diameter <5cm and in those where the abscess diameter is >5cm, incision and drainage maybe used as first line therapy.

Keywords: Breastfeeding, Incision & drainage, Needle aspiration

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Introduction

Breast abscess is a common cause of morbidity in women. Patients commonly present with a painful swelling of the breast and fever. The most common organism is Staphylococcus aureus[1]. Lactational breast abscess occurring during breast feeding is the result of Staphylococcus infection. Such abscesses tend to occur at the commencement of breast feeding when an inexperienced mother develop cracked nipples. Non-lactational breast abscesses are entirely different from those occurring during breast feeding. Such non-lactational breast abscess is a manifestation of duct ectasia/periductal mastitis and is usually seen in the age group 30-60 years. Treating breast abscesses in lactating women by aspiration is a known alternative to standard treatment which has become more popular as it is less invasive, cosmetically better and can be managed entirely on outpatient basis as compared to incision and drainage[1]. The present study triesto compare the two treatment modalities, ultrasound guided needle aspiration and incision and drainage and to access their outcome in patients with breast abscess.

Material and Method

Study centre

The present study was conducted on the patients presenting with breast abscess in surgical outdoor in various surgical units in Department of General Surgery, Govt. Medical college and Associated Group of Hospitals, Kota, Rajasthan.

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Study design

This was a hospital based prospective randomized controlled trial.

Sample size

60 patients were included in the study. 30 of them were randomized in the aspiration group and other 30 were treated by incision and drainage.

Inclusion criteria

All women above 18 years of age and below 65 years of age.

Exclusion criteria

1. Patients with recurrent abscesses.
2. Breast abscess with signs of impending rupture.

Methodology

Clinical diagnosis was made based on the presence of a fluctuant tender breast swelling. Patients were then subjected to USG scan (high frequency linear transducer of 7.5MHZ) in radiology department. The diagnosis was confirmed sonographically by the presence of a thick-walled echo complex mass, predominantly cystic with internal echoes and septations.

Patients were then randomly divided into each group by computer generated randomization table. A written informed consent was taken from all patients included in the study.

All patients were randomly divided into two groups

Group A: ultrasound guided needle aspiration Group B: incision and drainage of breast abscess

Treatment procedure and Follow up

Group A

Ultrasound guided needle aspiration

Patients under the needle aspiration arm were managed in the

Department of Radiology, Ultrasound room as outpatient cases. All needle aspirations were done under local anesthesia for which a small area of the skin adjacent to the abscess was anaesthetized using 0.5% lignocaine and a 23G needle. Aspiration was done under ultrasound guidance maintaining all aseptic precautions and using a 16G needle and a 20-ml syringe. Initial pus that was aspirated was sent for culture and sensitivity[2-6]

Group B

Incision and Drainage

The procedure was done under GA. A skin-deep incision was made over the abscess along the Langer's lines and sinus forceps used to reach the abscess cavity. Initial pus that was aspirated was sent for culture and sensitivity. The pus was then evacuated and the loculi broken down digitally. The cavity was lavaged with saline and the

woundpacked with sterile gauze followed by aseptic dressing.

Follow Up

The patients were followed up on days 3,7,14,21 post intervention and thereafter for three months on a monthly basis.

Results

Figure 1 shows maximum patients were in age group of 21-30. Figure 2 shows majority of patients were within the age group of 21-30 years in both groups, 46% in the needle aspiration group and 54% in the incision and drainage group. The mean age of patients in our study was 27.90 years. The mean age in incision and drainage group was 26 years, and in needle aspiration group, it was 29 years. The difference in age group between the 2 groups was not statistically significant with a p value of 0.847, obtained using chi-square test

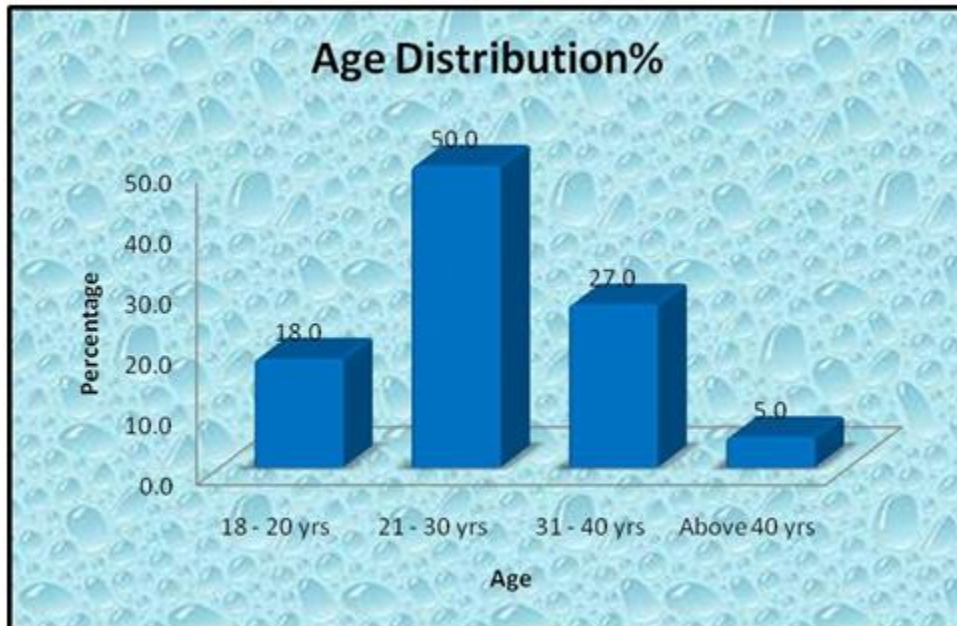


Fig 1: age distribution

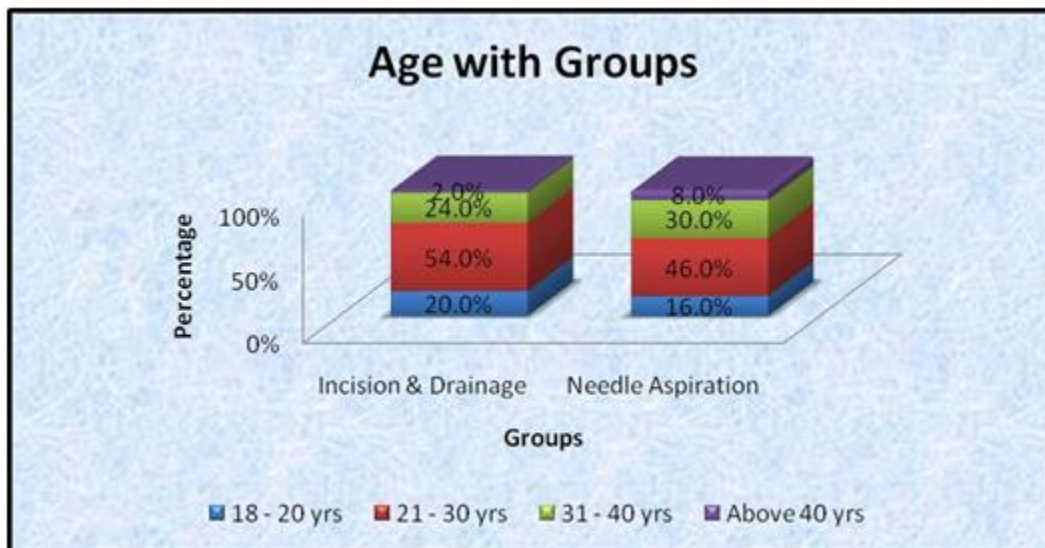


Fig 2: Comparison of distribution of age in both groups

Chi-Square Tests	
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	Value	df	Asymp.Sig. (2- sided)	Statistical significance
Pearson Chi- Square	0.808	3	0.847	No

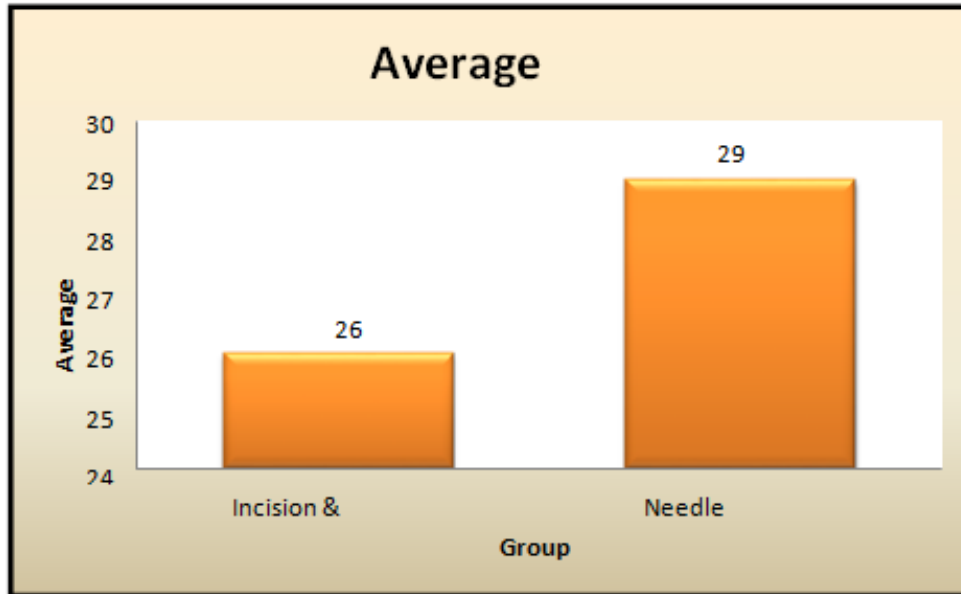


Fig 3: comparison of average age in both groups

Figure 4 shows: Out of 60 patients, 40(66%) were lactating and 20(34%) were non-lactating. In I&D group 22 patients (74%) were lactating a. In needle aspiration group 18 patients (58%) werelactating. The difference in lactational status between 2 groups was not statistically significant with a p-value of 0.273, obtained using chi-square test.

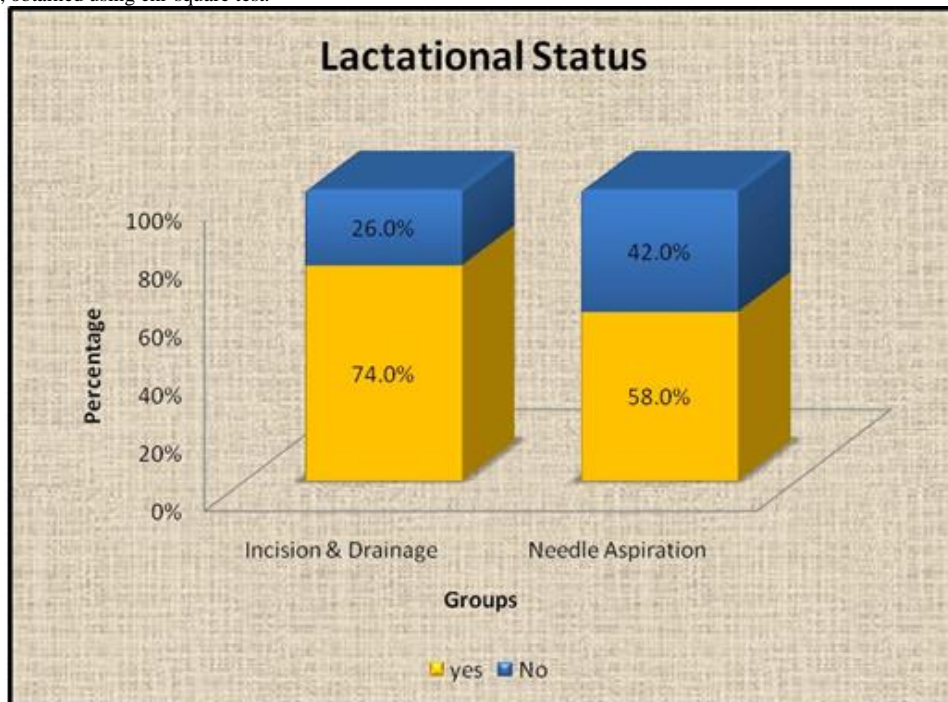


Fig 4: Lactational status

Chi-Square Tests				
	Value	Df	Asymp.Sig. (2- sided)	Statistical significance
Pearson Chi- Square	1.2	1	0.273	No

Figure 5 shows: In I&D group,12 patients (38%) had staphylococcus aureus in their culture,10 patients (34%) had sterile culture, and 8 patients

(28%) had MRSA in their cultures. In needle aspiration group, 19 patients (64%) had sterile cultures, 7 patients (22%) had staphylococcus aureus in their cultures and 4 patients (14%) had MRSA in their cultures.

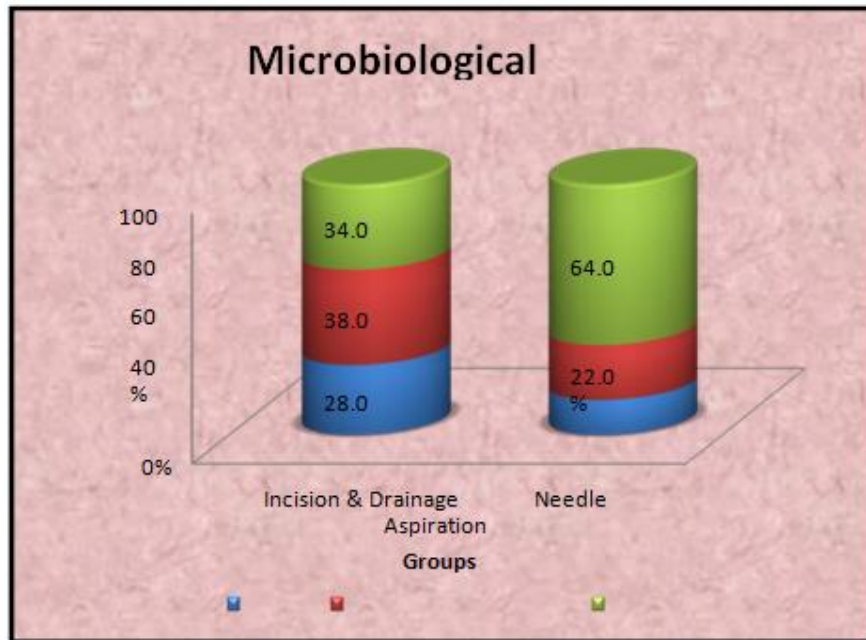


Figure 5: Comparison of microbiological profile in both groups

Figure 6 shows: Requirement of analgesic was compared on POD-7, requirement of analgesic was more in incision & drainage group as compare to needle aspiration group. The difference in analgesic requirement between 2 groups was statistically significant with a p-value of 0.000006, obtained using chi-square test.

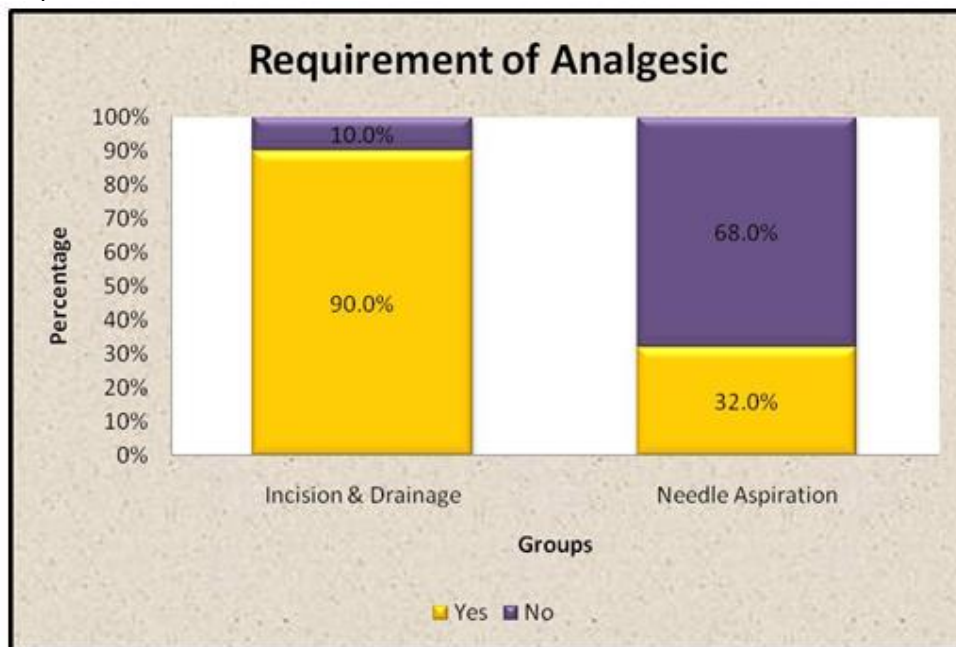


Fig 6: Comparison of requirement of analgesic (POD-7) in incision and drainage v/s Needle Aspiration group

Chi-Square Tests				
	Value	Df	Asymp.Sig. (2- sided)	Statistical significance
Pearson Chi- Square	20.376	1	.000006	yes

Table 1: Questionnaire regarding patient satisfaction

	Needle Aspiration	Incision and Drainage
I can do the thing I thought I will be able to do after surgery	30/30	25/30
I was helped as much as I thought I would be after surgery	30/30	27/30
My problems were reduced as much as I expected them of after surgery	24/30	23/30
The benefits of my care outweigh the setbacks it caused me	27/30	19/30
Overall, I am happy with the care I am receiving for my breasts	27/30	24/30
All things considered, I would have the surgery again for the same reason	30/30	27/30

Discussion

In our study it was seen that in both the needle aspiration as well as incision and drainage groups, majority of patients were within the age group of 21-30 years. The mean age of patients in our study was 27.90 years. This is in agreement with a study conducted by Chandika et al [3] which shows a mean age of patients of breast abscess to be 23.12 years and mentioned the disease to be affecting women mainly in the child bearing age group [2]. In our study it was noted that 58% of the females in the needle aspiration group and 74% of patients in the incision and drainage group were lactational suggested that stasis of milk and carrier state of the infant plays a key role in the development of breast abscess. This is comparable with the finding of Singh et al [4] where out of fifty patients 62% were lactational and 38% were non lactational. However, in a study done by Elagili et al [5] 53.3% of patient were seen to be non lactational and 46.7% were lactational. This fact may be explained by better maintenance of maternal hygiene.

Patient satisfaction was assessed using questionnaire method where at the end of treatment patients were asked six questions. In this questionnaire it was noted that needle aspiration as a treatment modality had a better satisfaction rate overall as compared with incision and drainage. A study by Ulitzsch et al [6] shows a 94% satisfaction rate among patients treated with percutaneous aspiration. Another study conducted by Singh et al [4] mentions better psychological satisfaction in patient on whom needle aspiration was done because of better cosmesis and non-separation of baby from mother during treatment one [3].

Conclusion

Thus, we concluded that ultrasound guided needle aspiration is a more

effective way of treating breast abscess as compared with incision and drainage. It is less painful, allows breastfeeding, and in most cases serial aspiration can allow complete resolution of abscess. There is no need for daily dressings, no scar following the procedure and is therefore more acceptable to the patients.

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