

Original research article**Needle aspiration vs. incision and drainage in breast abscess management: Comparative cross-sectional study****¹Dr. Rajkumar PN, ²Dr. Sumedha PS, ³Dr. Dinakara AL, ⁴Dr. Siddesh Kumar M Hiremath**¹Associate Professor, Department of General Surgery, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India^{2,3}Post Graduate, Department of General Surgery, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India⁴Assistant Professor, Department of General Surgery, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India**Corresponding Author:
Dr. Siddesh Kumar M Hiremath****Abstract**

Percutaneous drainage of breast abscesses, using needle aspiration or the insertion of a small caliber drain under local anesthesia, has been studied as an alternative to surgical incision and drainage. Prospective studies have shown that treatment of breast abscess with aspiration with or without ultrasound guidance had better outcomes with respect to healing time which was shorter, better cosmetic outcome. This is a comparative study carried out in department of general surgery in a tertiary health care center, Victoria hospital and Bowring and Lady Curzon hospital for a period of 1 year (May 2021-May 2022) after taking approval from institutional ethics committee. 44 female patients of age between 18-65 years and diagnosed breast abscess with abscess size of less than 10 cm in diameter on ultrasonography were included in the study after taking written consent form. Of these 22 had undergone aspiration of the breast abscess (group A) and 22 had undergone incision and drainage of the breast abscess (group B). The mean healing time and cosmetic outcome was significantly ($p = 0.001$) very good in patients treated with needle aspiration compared to incision and drainage. There was failure of needle aspiration in 4 patients (18.1%) in group A during the study which were treated with incision and drainage and cured. There was 3.3% recurrence rate observed in the incision and drainage group. Breast abscess in patients with diameter of less than 10 cm can be treated with needle aspiration successfully and with a good cosmetic outcome.

Keywords: Needle aspiration, incision and drainage, breast abscess**Introduction**

A breast abscess is defined as a localized collection of purulent material within the breast. Breast infections are the most common benign breast problem during pregnancy and puerperium. The most common type of infection is mastitis which when un or under-treated converts into an abscess ^[1]. Puerperal mastitis affects 2-3% of lactating women and 5% to 11% of these patients may develop an abscess. Traditional management of breast abscess involves incision and drainage of pus along with culture sensitive antibiotics. The most common technique involves incision over the point of maximal swelling or fluctuance, digitally breaking down any loculi and draining the purulent material from within the cavity. But this method of treatment leads to prolong hospital stay, prolonged healing time, need for regular dressing, difficulty with breast feeding, possibility of milk fistula, scarring and unsatisfactory cosmetic outcome ^[2]. Hence a minimally invasive method for the treatment of breast abscess have been tried. Percutaneous drainage of breast abscesses, using needle aspiration or the insertion of a small caliber drain under local anesthesia, has been studied as an alternative to surgical incision and drainage. Prospective studies have shown that treatment of breast abscess with aspiration with or without ultrasound guidance had better outcomes with respect to healing time which was shorter, better cosmetic outcome. The drawback of the same was found to be repeated aspirations as well as failure. Due to the lower hospital stay, better cosmesis and lesser healing time the current preferred treatment is minimally invasive methods ^[3, 4].

Methodology**Study type:** Comparative cross-sectional study.**Place of study:** Department of general surgery in a tertiary health care center, Victoria hospital and Bowring and Lady Curzon hospital.**Study period:** 1 year (May 2021-May 2022).

Sample size: 44 female patients of age between 18-65 years and diagnosed breast abscess with abscess size of less than 10 cm in diameter on ultrasonography were included in the study after taking written consent form. Of these 22 had undergone aspiration of the breast abscess (group A) and 22 had undergone incision and drainage of the breast abscess (group B).

Inclusion criteria

- Patient showing clinical signs and symptoms of mastitis and breast abscess aged between 18 to 40 years.
- Abscesses less than 10 cm in diameter on ultrasonography were included in the study after taking a written consent form.

Exclusion criteria

- Patients not willing to give informed consent.
- Patients with other co-morbidities diabetes mellitus.
- Patients with history of nicotine use, previous radiotherapy, ipsilateral breast interventions, immunosuppression.
- Patients with suspicious lesions/malignancy esp. inflammatory carcinoma of breast, immunocompromised, recurrent breast abscess, ruptured abscess, tuberculosis and complicated breast abscess presenting with skin changes, ulceration, necrosis and gangrenous abscess.

Results

The mean age of the female patients in the study were 18-42 years. 90% of the cases were lactating. *S. aureus* was the common organism isolated in both lactating and non-lactating cases, encountered in 27 patients (60%). Out of that 17 were in the aspirated group (62.9%). 10 patients were in the incised group (37.1%). The mean healing time and cosmetic outcome was significantly ($p = 0.001$) very good in patients treated with needle aspiration compared to incision and drainage. There was failure of needle aspiration in 4 patients (18.1%) in group A during the study which were treated with incision and drainage and cured. There was 3.3% recurrence rate observed in the incision and drainage group.

Table 1: Age Distribution

Group Name		Age
A	Mean	30.68
	N	22
	Std. Deviation	8.978
B	Mean	28.91
	N	22
	Std. Deviation	7.733
Total	Mean	29.80
	N	44
	Std. Deviation	8.329

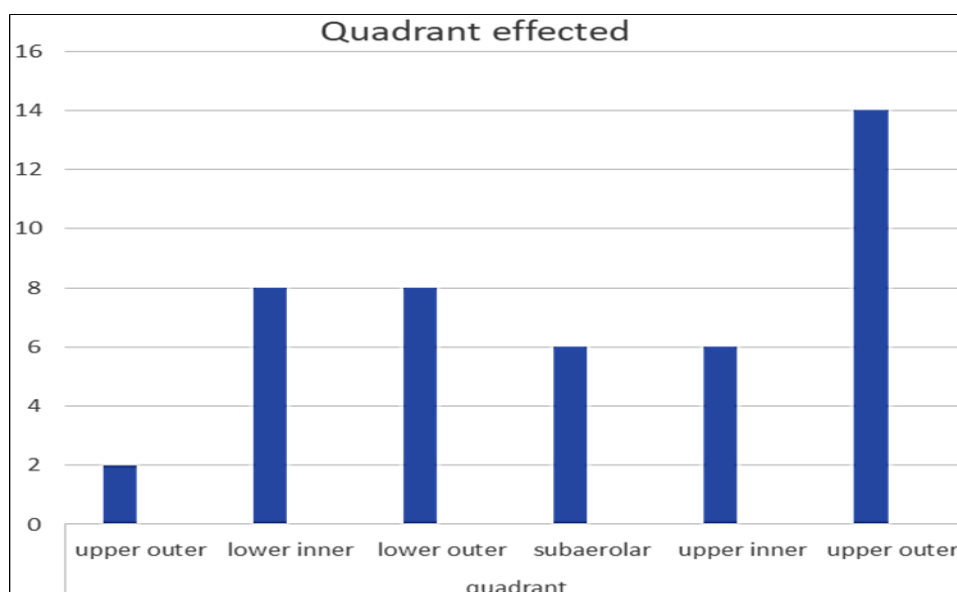


Fig 1: Quadrant Affected

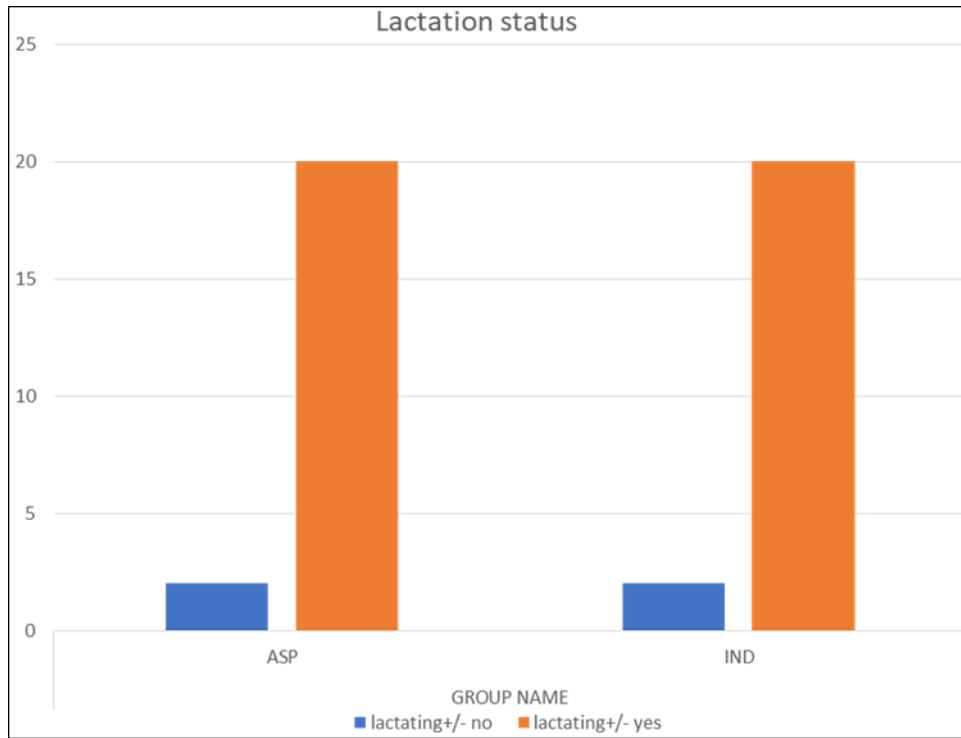


Fig 2: Lactation status

Table 2: Pus and USG

Group Name	Volume of pus in cc	USG size diameter in cm
A	Mean	77.32
	N	22
	Std. Deviation	35.766
B	Mean	90.59
	N	22
	Std. Deviation	36.905
Total	Mean	83.95
	N	44
	Std. Deviation	36.537

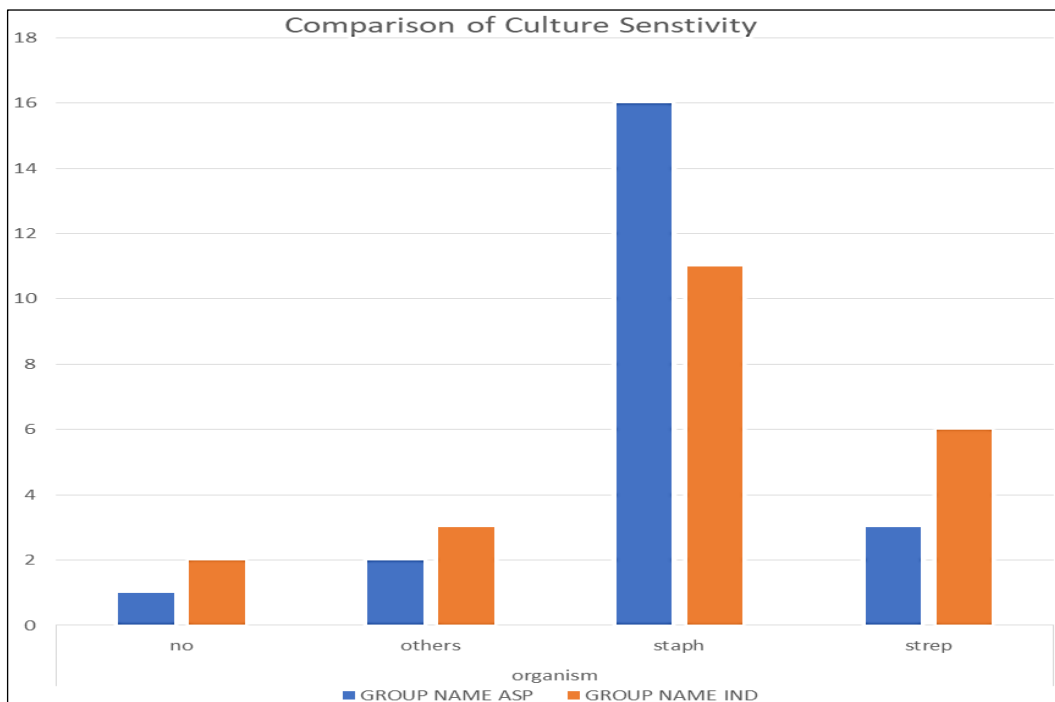


Fig 3: Culture Sensitivity

Table 3: Duration of procedure and Hospital stay

Group		Duration of Time Taken for Procedure in Mins	Stay in Hospital in Days
A	Mean	12.636	4.36
	N	22	22
	Std. Deviation	3.1175	2.381
B	Mean	24.545	5.68
	N	22	22
	Std. Deviation	6.5663	1.673
Total	Mean	18.591	5.02
	N	44	44
	Std. Deviation	7.8794	2.140

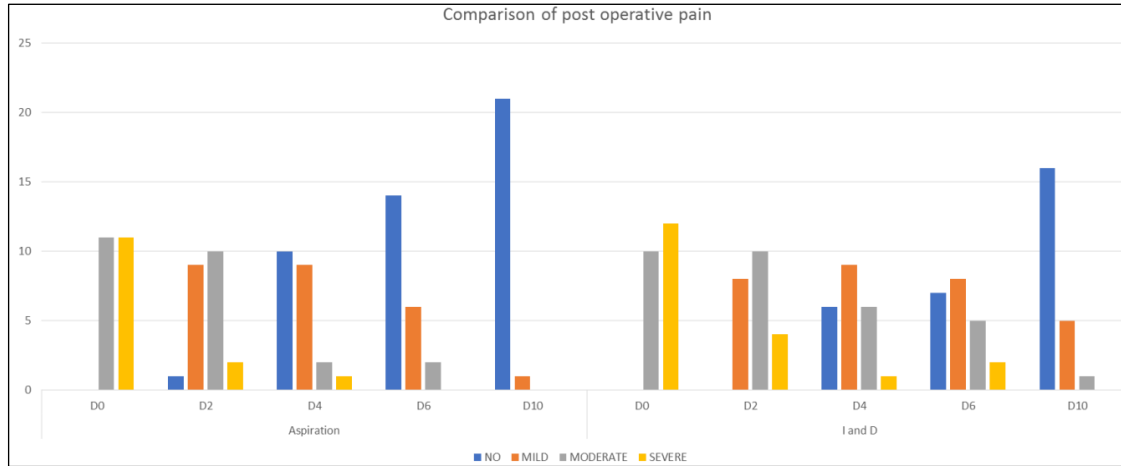


Fig 4: Post-Operative pain

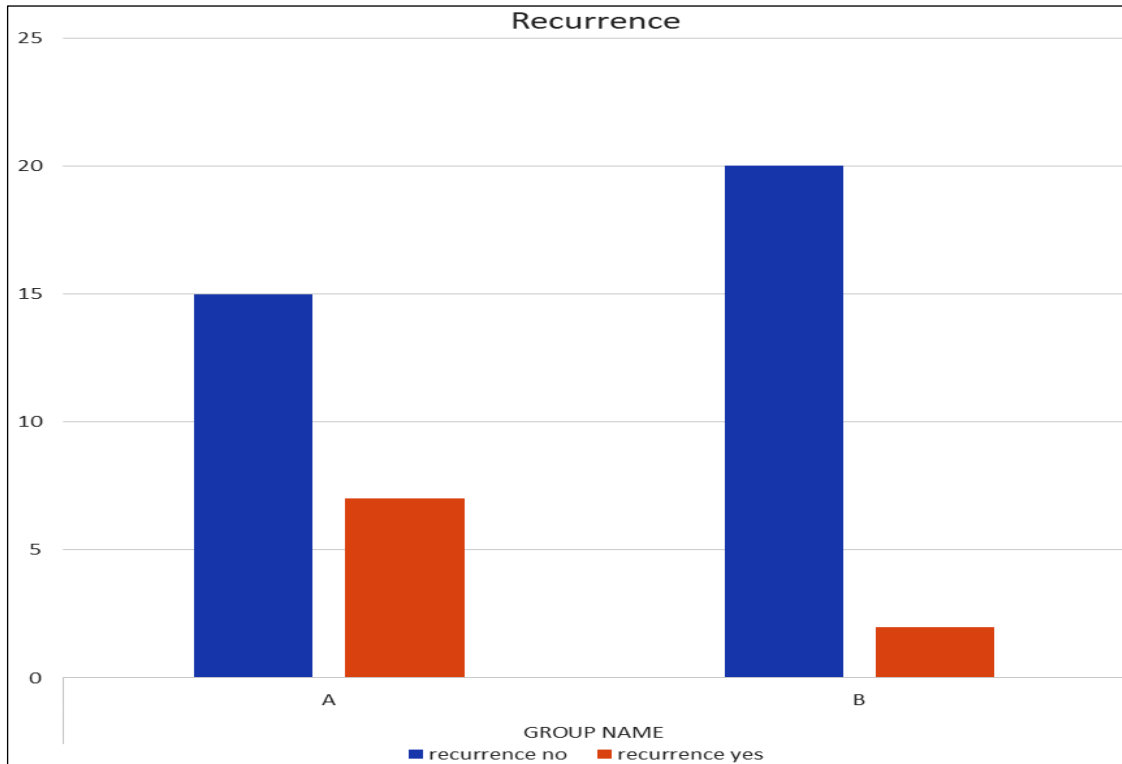


Fig 5: Recurrence

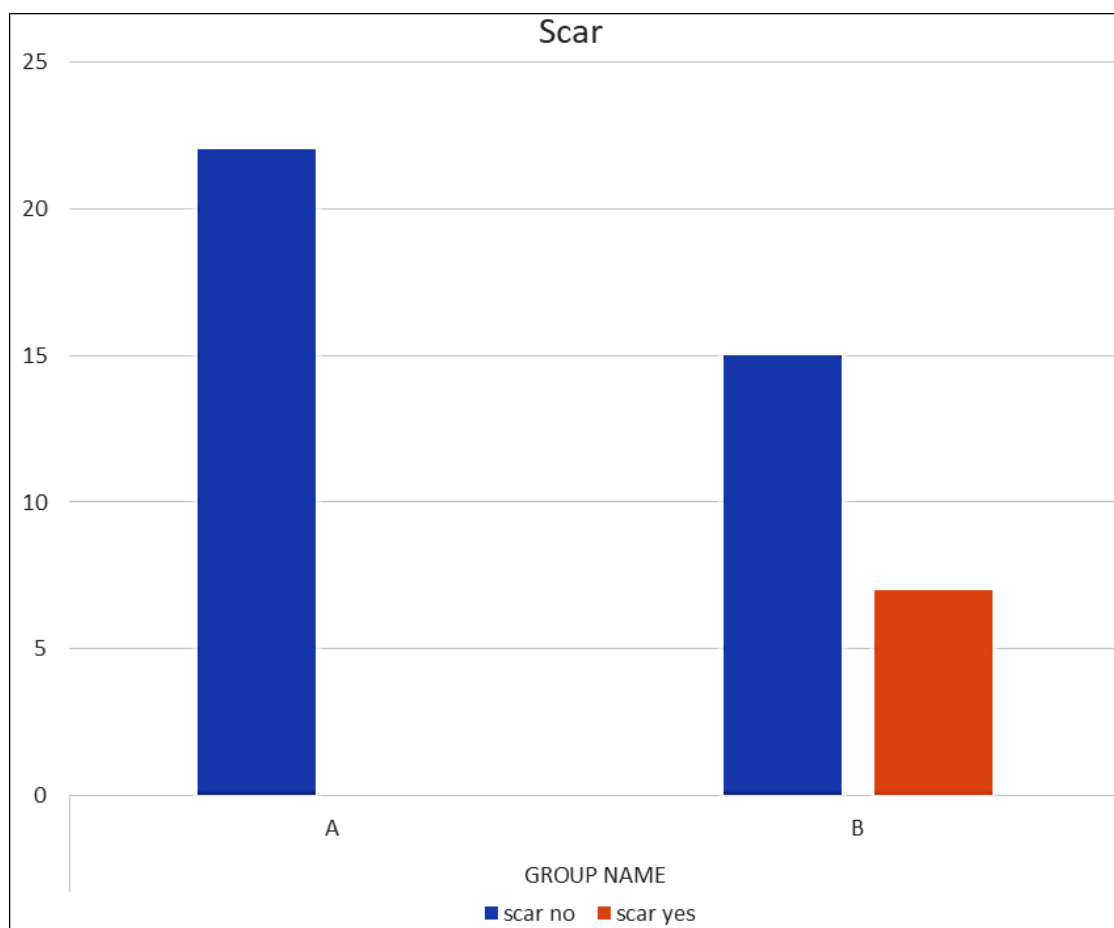


Fig 6: Scar

Discussion

In our comparative study we compared two groups' aspiration and incision and drainage of breast abscess in the management of it. In the current report patient age range who presented with breast abscess was 18-50 years. Although breast abscess has been associated with mastitis and breastfeeding, the results of our study show that it was found even in non-lactating women. Breast abscess is frequently located in the upper and outer quadrant which fits the fact that most of the breast parenchyma is located in this quadrant^[4]. In our study, 62% of the breast abscess was found in the upper and outer quadrant and 60% of the abscess in the left breast. In this study all the patients in both groups presented with pain as the general feature. The mean duration of pain in our study was 6.5 days.

In our study the culture-sensitivity reveals the presence of *S. aureus* and *S. pyogenes*. *S. aureus* was the common organism isolated in both lactating and non-lactating cases, encountered in 27 patients (60%). The mean time required for both procedures was assessed. From the results, it was observed that patients undergoing aspiration required 12.6 minutes which was significantly less as compared to the mean time required for the procedure for patients undergoing incision and drainage, which was 24.5 minutes confirming that needle aspiration is very feasible, simple procedure and can be performed without any imaging guidance^[5]. In the present study, the mean diameter of the abscess was 6.6cm in total patients. In our study of the 22 patients who underwent aspiration, 18 were treated successfully without any complications on follow up. The success rate achieved was 81.8%. In this study aspiration failure was found in 18.1%. In the incised group only one patient failed. Post operatively clinical symptoms like pain and fever were assessed in the patients of breast abscess treated with aspiration and with incision and drainage. At the end of day 10, we observed 95.4% of the patients in the aspirated group got relief from pain whereas in the incised group 72.7% of the cases had no pain and the difference was found to be significant. Wound healing was significantly faster in the aspirated group than in the incised group (4.3 days versus 7.7 days). In the present study the cosmetic outcome was evaluated according to the patient's satisfaction and scar mark. Patients, who underwent aspiration, were satisfied with the cosmetic outcome, as there were no scars present after the treatment.

Conclusion

- Our study shows that needle aspiration of the abscess with ultrasonographic guidance combined with antibiotics has great value in the treatment of breast abscess even in abscess with large volume; although repeated aspirations are needed to obtain complete resolution, this therapy is a well-

accepted alternative to surgical treatment.

- Aspiration of the breast abscess does not require any mode of anesthesia and can be done on out-patient department basis.
- Breast abscess in selected group of patients with diameter of less than 7 cm can be treated by aspiration successfully and with a good cosmetic outcome.
- Aspiration of the breast abscess can be successfully done as initial mode of management in the treatment, but incision and drainage remains the final resort for cure.

References

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