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Original Research Article

Surgery without knife: an ideal treatment for lactational breast abscess

Amandeep Saharan, Satish Dalal, Mahavir Singh, Chisel Bhatia*, Tulit Chhabra

Department of Surgery, Pandit Bhagwat Dayal Sharma PGIMS, Rohtak, Haryana, India

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***Correspondence:**
Dr. Chisel Bhatia,
E-mail: chiselbhatia@gmail.com

ABSTRACT

Background: Incidence of breast abscess is 0.4 to 11% of all lactating mothers. Traditionally the treatment of breast abscess has been incision and drainage. Recently aspiration under ultrasound guidance is emerging as another treatment option and rapidly replace incision and drainage
Methods: Authors carried out a prospective, randomized study involving 50 lactating women with breast abscess. In group A - 25 patients were managed by ultrasound guided needle aspiration and in group B - 25 patients were managed by incision and drainage.
Results: In patients of group A, most breast abscesses resolved with one or two aspirations only, with early healing and lesser number of hospital visits as compared to patients in group B. There was no surgical scar and early resumption of breastfeeding was seen in group A.
Conclusions: Ultrasound guided percutaneous aspiration is an effective modality of treatment of lactational breast abscess and it should be the first line of treatment, especially for smaller and unilocular breast abscesses while incision and drainage should be reserved for larger and multilocular abscesses with imminent skin changes.

Keywords: Breast abscess, Incision and drainage, Lactation, Ultrasound

INTRODUCTION

Breast abscess is common in lactating females. The incidence of breast abscess ranges from 0.4 to 11% of all lactating mothers.[1] Risk factors for the development of breast abscess are milk stasis by duct blockage, stress, sore nipples or infrequent breastfeeding. Other risk factors for abscess formation include maternal age over 30 years, gestational age greater than 41 weeks and a history of mastitis. The pathogen most commonly *Staphylococcus aureus* enter into breast via cracked nipple specially in primipara due to inexperience, poor feeding technique and poor attachment by baby.[2] Breast abscess is common in developing countries due to poor maternal hygiene, decreased nutrition, poor standard of living, delay in antibiotics administration and poor breastfeeding techniques. Patient having breast abscess presents with symptoms of pain, swelling and redness of the involved breast. There may be associated fever, malaise and occasionally rigors.

Traditional treatment of breast abscesses is by surgical incision and drainage which is followed by digital disruption of septa, evacuation of contents with occasional placement of surgical drains.

Recently ultrasound guided aspiration has been tried for treatment of breast abscesses where a thick needle, preferably 16G, is inserted into the abscess cavity and contents are aspirated until the cavity is collapsed. Breast abscess being a common problem needs further evaluation for its definitive treatment.

To go for conventional yet definitive form that is incision and drainage or to go for ultrasound guided aspiration is the question which still needs answering.

METHODS

Authors have carried out a prospective, randomized study to compare these two methods for treatment of breast abscess. The study involved 50 lactating women with diagnosis of breast abscess, which were randomly assigned into two groups. These patients were grouped in two groups of 25 each by random number generation which was produced by using Microsoft excel spreadsheet. group A patients were managed by ultrasound guided needle aspiration using a 16G needle. group B patients were managed by incision and drainage of breast abscess. Both groups were compared in terms of resolution of abscess, improvement of symptoms, resumption of breastfeeding, complications (like milk fistula) and recurrence of abscess. An informed consent was taken from all patients for inclusion in the study.

Inclusion criteria

- All Lactating females with a diagnosis of breast abscess.

Exclusion criteria

- Immuno-compromised patients like diabetes, renal failure, tuberculosis, patients on steroid therapy, patients of suspected malignancy of breast.
- Recurrent breast abscess at presentation.
- Sub-areolar breast abscess.
- Patients with imminent necrosis of skin overlying breast abscess.

Group A patients underwent ultrasound guided needle aspiration in department of radiology as out-patient case. Under aseptic condition, a small area of skin adjacent to the abscess was swabbed with liquid povidone iodine and anesthetized by 2% lignocaine through a 23G needle. Aspiration was done using a 16G needle and a 20ml syringe. Initial aspirated pus was sent for pus culture and sensitivity. Aspiration was done until there was no residual pus as confirmed by ultrasonography with collapse of cavity.

Group B patients underwent incision and drainage in the emergency operation theatre under appropriate anesthesia. Patient was positioned in supine position; the affected breast was swabbed using liquid povidone iodine. A skin-deep incision was given in the area of maximum fluctuation along skin lines and an artery forceps was used to reach the abscess cavity. Initial pus was swabbed with a sterile pus swab and was sent for culture and sensitivity. The pus was then evacuated and loculi were broken down digitally, washed with hydrogen peroxide and the wound was packed with sterile gauze. On discharge, patient was given tablet amoxicillin and clavulanic acid 625mg TDS and tablet diclofenac 50mg BD in both groups and daily dressing was advised in incision and drainage group.

In both groups, lactating mothers were advised to resume breast feeding from both breasts as soon as possible which was noted on follow up. Breast support was advised in both the groups. Follow up was done twice a week in outpatient department for the first week then weekly up to four weeks. Patients underwent USG to assess the residual or recurrent abscess. Group A patients who underwent repeated needle aspirations if the residual cavity was found on USG to a maximum of three aspirations. If the abscess did not resolve by this time, it was considered as a treatment failure and the patient was subjected to incision and drainage. Complete resolution of breast abscess was defined as clinically no breast tenderness, swelling or wound at the site of the abscess and USG suggesting complete absence of fluid collection, normal breast glandular structure and fibro fatty tissue without edema. Breast abscess resolution was assessed at the last visit (day 30).

RESULTS

The mean age of occurrence of breast abscess in both study groups was 24.8 years. It was observed that out of 50 patients 32 (64%) were primipara and 18 (36%) were multipara. The upper lateral quadrant was the most commonly involved quadrant in 36% of the patients with breast abscess. Out of 50 patients, 22 (44%) patients presented with a breast abscess within 6 weeks and 34 (68%) out of 50 within 12 weeks.

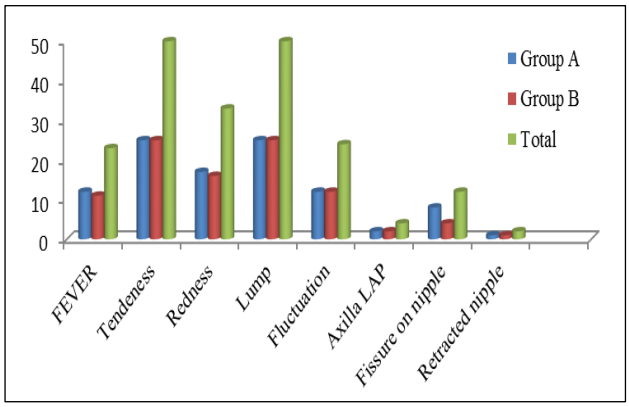

Figure 1: Clinical features of breast abscess in two groups.

All the patients of breast abscess presented with a painful lump in the involved breast; whereas associated redness of the skin was present in 33 (66%) patients. Twenty-three (46%) patients had complaints of fever. Breast abscess was fluctuant on palpation in 24 (48%) patients while two patients had enlarged ipsilateral lymph nodes. The fissure was observed on the nipple in 12 patients while two patients had retracted nipple. On USG, the abscesses were multilocular in ten patients (five in each group) whereas rest of 20 patients from each group had a unilocular abscess. In present study, on the basis of ultrasound maximum diameter of the abscess ranged from one cm to six cm (average size 2.97cm).

Table 1: Distributions of patients in group A with number of aspirations required.

Number of aspirations	Number of patients (n=25)	Percentage
One	11	44%
Two	11	44%
Three	2	8%
Failure	1	4%

In group A, 12 patients showed resolution of the abscess on single aspiration, while 11 patients required two aspirations. Only two patients needed three aspirations for resolution and one patient was not resolved even after three aspirations and hence was treated by incision and drainage. The average time taken for procedure in group A was 25.8min that is significantly less than average time taken in group B that is 43.6min.

Table 2: Distribution of Pathogens in breast abscess.

	Group A	Group B	Total	P-value
S. aureus	13	10	23(46%)	
Sterile	11	15	26(52%)	0.532
Others	1	-	1(2%)	

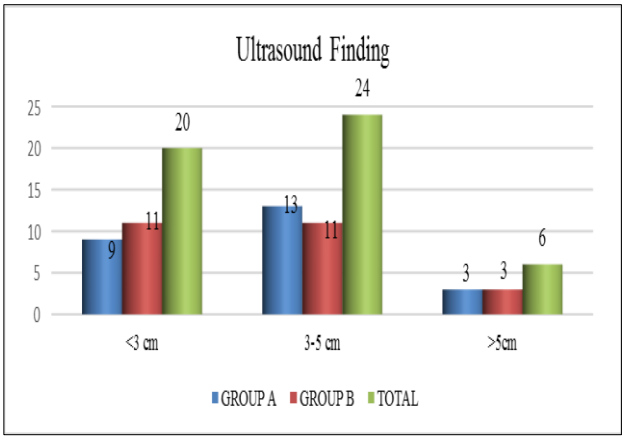

Figure 2: Size of breast abscess in two groups.

Figure 3: Breast abscess in right breast.

In both the groups a sample of pus was sent for culture and in 23 patients out of 50 patients, the culture was positive for *Staphylococcus aureus*. A total of 26 samples were sterile and in one patient of group A culture was positive for *Klebsiella*. The average duration of healing in group A was 11.48 days, which is considerably low as compared to group B that was 17.12 days with a significant p-value of 0.02.

Figure 4: Breast abscess on ultrasound.

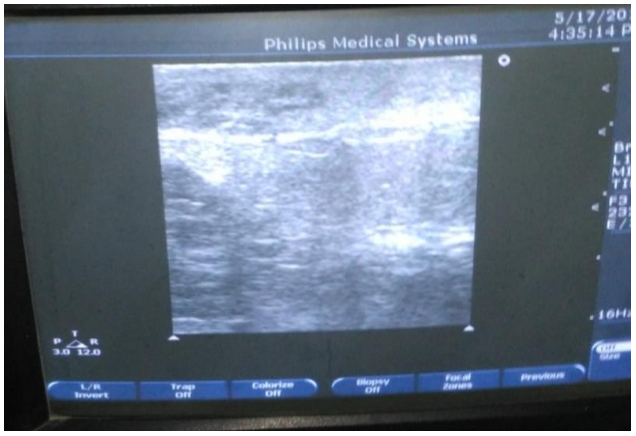

Figure 5: Collapse of abscess cavity after aspiration.

Figure 6: USG guided aspiration of abscess.

One patient had developed recurrent breast abscess in the same breast in group A, after three weeks of complete

resolution of breast abscess both sonographically as well as symptomatically while there was no recurrence in group B. One patient in group B developed milk fistula after incision and drainage, which was managed conservatively. All the patients in group A resumed breast feeding on the same day. In group B, 12 patients resumed breastfeeding on the same day, 12 patients out of 13 patients who were given general anesthesia started breastfeeding on next day while one patient didn't breastfeed her baby as the child was admitted in neonatal intensive care unit, so the patient was advised to empty breast with the help of breast pump.

Figure 7: Evacuation of pus in incision and drainage.

Figure 8: Milk fistula after incision and drainage.

DISCUSSION

Breast abscess is a common cause of morbidity in women that hurts the patient not only physically but also emotionally and economically. It frequently results in extensive destruction of tissue and disfigurement of the breast. Traditionally the treatment of breast abscess has been incision and drainage. Repeated aspiration with ultrasound guidance has been another treatment option for breast abscess. While there are many studies in the literature which evaluated the results of percutaneous drainage of breast abscesses there are only few studies available which compared the results of USG guided aspiration with conventional incision and drainage.

It was observed that out of 50 patients 32 (64%) were primipara while only 18 (36%) were multipara which suggests that increasing parity seems to be a relative safeguard against the development of a breast abscess. The finding is very similar to study where 28 patients out of 43 patients (65%) with abscesses were primipara and 15 were multipara.[3] Low incidence of breast abscess in multipara is related to the previous experience of lactation, early start of lactation and good attachment by child. This finding in present study is also in concurrence with a study conducted in India.[4]

The early presentation of breast abscess is attributed to poor attachment of the baby, injury to nipple and poor hygiene. The upper lateral quadrant was the most commonly involved quadrant in 36% of the patients with breast abscess, which supports the view of previous studies (30% of the patients had abscess in the upper outer quadrant).[5] This was attributed to the fact that most of the breast parenchyma is found in this quadrant.

All the patients of breast abscess presented with a painful lump in the involved breast; whereas associated redness of the skin was present in 33(66%) patients. The findings are consistent with the results reported by various studies on breast abscess.[6-8] Erythema of the skin was present in 33 (66%) patients and 23 (46%) patients had complained of fever in present study.

In present study, on the basis of ultrasound average size of breast abscess was 2.97cm which was little less as compared with the findings of previous studies.[5,9] The average size of abscess in our series was little less as compared to studies done in the past. This was probably because of early presentation of these cases due to increased awareness and availability of health facilities. Hook et al concluded that abscess greater than three cm size required incision and drainage as the definitive treatment, while percutaneous aspiration is only palliative in these patients.[8] Another study by Erylmiz concluded that puerperal abscesses smaller than five cm can be successfully treated with aspiration in most of the cases.[10]

In present study, patients in group A underwent ultrasound guided percutaneous aspiration of breast abscess. Out of 25 patients of breast abscess, 12 patients (48%) had shown resolution of the abscess on single aspiration, while 11 (44%) patients required two aspirations. The results were similar to another study where they mentioned cure rate with one aspiration in 53.4% patients, two aspirations in 21% patients and three aspirations in 18.6% patients while there was a failure in 7% patients.[11] In another study the results were also similar to present study with respect to cure by aspiration, where 13 patients (40.63%) out of 30 patients needed only single aspiration, six patients (18.75%) underwent aspiration twice; while 11 (34.37%) required multiple aspirations.[4]

While none of the patients in aspiration group developed a scar, the patients in incision and drainage group had scar marks ranging from one to four cm with average size of 2.4cm. Naeem et al reported that surgical scar anxiety was the main psychological stress factor postoperatively in the patient of incision and drainage group.[4]

Staphylococcus aureus was the commonest organism isolated on pus culture in most of the studies.[4,5,7,8] The reason being, that *Staphylococcus aureus* is the commonest commensal present on the skin as well as in the mouth of the infant. The culture was sterile in a significant number of patients in present study as well as in other studies. The reason for large number of sterile samples was probably that most of these patients were referred patients who had already taken some antibiotics as advised by private Practitioners. The pus culture in a study by Naeem et al showed 22 samples (34.37%) with no bacterial yield.[4] Our finding was corroborative with finding in study where 33 (45%) of 73 abscesses yielded a sterile bacteriologic culture.[12]

The average duration of healing in group A was 11.48 days, which was considerably low as compared to Group B which was 17.12 days. Studies including, Naeem et al reported mean healing time of 10 days in incision and drainage group and 8.6 days in needle aspiration group.[4] So the time duration required for healing in present study was comparable with the other studies of literature.[10]

The overall cure rate of breast abscess in group A was 92% (one failure and one recurrence) and was 100% in case of Group B. The overall cure rate was also comparable with the other studies available in literature as shown below.

In present study, the recurrence rate of breast abscess in group A was four percent which was comparatively low, when compared with other studies where aspiration was used for treatment of breast abscess.[7,9] The reason for lower incidence of recurrence in present study was probably due to fact that we encountered abscesses of less average sizes than other studies. In present study there was no recurrence in group B, which was similar to studies conducted by Naeem et al and Suthar et al.[4,7] One patient in group B developed milk fistula after incision and drainage due to disruption of the lactiferous duct. The patient was managed conservatively. There were three milk fistulas, that were observed in incision and drainage group by Suther and Kandi in their respective studies.[6,7] So the complication rates after ultrasound guided aspiration or Incision and drainage were similar to other studies available in literature.

CONCLUSION

It is concluded that, ultrasound guided percutaneous aspiration is an effective modality for treatment of lactational breast abscess because it is simple, painless, cosmetically better, cost effective and a day care procedure. This method should be the first line of treatment especially for smaller and unilocular breast abscesses and incision and drainage should be reserved for larger abscesses with imminent skin changes and multilocular abscess seen on ultrasound.

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