

# A comparative study of outcomes in management of breast abscess by ultrasound guided needle aspiration against incision and drainage

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## Abstract

Acute inflammation of the breast usually occurs in lactating women and to a lesser extent in non-lactating women. The traditional treatment of breast abscess is by surgical incision and drainage. But now days minimally invasive surgery such as USG guided needle aspiration has been more accepted by patients. **Aims and objectives:** To compare the outcomes in management of breast abscess by ultrasound guided needle aspiration against incision and drainage. **Material and method:** In the present study 96 patients of breast abscess were divided in two groups. One group was managed by ultrasound guided needle aspiration and contains 35 patients. Second group was managed by incision and drainage and was cottoning 61 patients. A detailed history of all patients was taken and all relevant laboratory investigations were also done. All the patients were followed up regularly to find the cure rate, recurrence rate and healing time required was calculated. Patients satisfaction with the treatment was also recorded. **Results:** 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. Majority of the patients in both the groups has drained less than 60ml form the abscess. Among the USG guided aspiration patients, the cure rate was 88.57% whereas patients managed by incision and drainage procedure with cure rate of 93.44%. The mean healing time in USG guided aspiration group was 2.16 weeks while in incision-drainage group was 3.14 weeks. Satisfaction in patients treated by USG guided aspiration was 88.57% and in incision-drainage group was 54.1%. **Conclusion:** USG guided aspiration is simple, painless, day care procedure and effective alternative method of treatment to incision and drainage in properly selected patient and with timely support by sinologist.

**Key Word:** breast abscess, needle aspiration.

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## INTRODUCTION

Acute inflammation of the breast usually occurs in lactating women and to a lesser extent in non-lactating women that is attributed to the increased activity of the breast tissue in response to female hormones. It may range from mild superficial mastitis to deep abscess. The frequency of breast abscess is quite high in India

generally related to pregnancy. Non-lactation breast abscess is not as common in this country as in the western countries. Early diagnosis and treatment of mastitis is the key to avoiding complications.<sup>1,2</sup> The traditional treatment of breast abscess is by surgical incision and drainage i.e. evacuation of contents with occasional placement of surgical drains and administration of systemic this often require general anesthesia may leave unpleasant scars, is more expensive, requires regular post-operative change of dressing and interferes with lactation.<sup>3,4</sup> In the era of minimally invasive surgery, a more conservative approach for managing breast abscess using percutaneous needle aspiration and systemic antibiotics has also been facilitated with introduction of high resolution real time sonography.<sup>5,6</sup> Breast abscess is a common cause of morbidity in women while that are less common in developed countries but more common in developing countries like occurs as a result of poor maternal hygiene,

nutrition, standard of living and delay in antibiotics administration with poor feeding technique. Patients coming to our hospital are from low socio-economic status and less educated. Also due to large number of patients, it is feasible to treat patients effectively by ultrasound guided aspiration of OPD basis. The purpose of present study was to review our experience in treatment of breast abscess using sonography guided aspiration versus operative surgical method.

**AMIS AND OBJECTIVES**

To compare the outcomes in management of breast abscess by ultrasound guided needle aspiration against incision and drainage

**MATERIAL AND METHOD**

The present study was conducted among all the patients of breast abscess attending OPD, IPD and emergency department of Government Medical College & Hospital, Aurangabad Maharashtra within the study period. Thus total 96 patients were enrolled in the study. All the patients were divided in two groups on the basis of management. 35 patients in one group undergoing ultrasonography guided aspiration and 61 patients in another group undergoing incision and drainage. A detailed history of all patients was taken and multiple clinical variables were recorded prospectively to evaluate the diagnostic features of breast abscess. Further data was collected from the minor operation theatre and routine operation theatre. Characteristics of breast swelling were noted which included duration, site and nature. Other

associated symptoms such as fever and chills were also noted. Past history of breast abscess, current lactation history was also noted. **Along with detail clinical examination all the necessary investigations were done according to need.** The procedure of USG guided percutaneous aspiration was explained in detail to patients. Informed written consent was obtained in all case. With ultrasound, the initial size of these abscesses along with whether they were uni/multi loculated was noted. All breast abscesses smaller than 5cm in maximum diameter, without skin changes were managed by ultrasound guided percutaneous aspiration. Percutaneous drainage under aseptic condition with ultrasound guidance was carried out after the sonographic diagnosis of breast abscess was made by looking round, oval or irregular shaped hypo-echoic lesion with some acoustic enhancement. Ultrasound guided needle aspiration was performed by using an 18-G needle and a 20-ml syringe in each case. Amount of pus aspirated was recorded. Some oral aspirate was sent for culture and sensitivity. These patients were given oral Amoxycillin clavulanic acid 625mg BD daily for 7 days. Patients in the incision and drainage group were admitted in the surgical ward and prepared for surgery under general anaesthesia in emergency theatre. Post operatively the patient was put on analgesics and antibiotics, Diclofenac 50 mg orally for 3 days and Amoxycillin Clavulanic acid 625 mg 8hry for 7 days respectively. All the patients were followed up regularly and the healing time, recurrence rate and any complication was noted.

**RESULTS**

**Table 1:** Distribution of patients according to age and signs and symptoms

Variable	USG guided aspirated group (n=35)		Incised group (n=61)		
	No.	%	No.	%	
Age group	15-19	01	2.85	03	5
	20-24	21	60	30	49.18
	25-29	06	17.14	16	26.22
	30-34	01	2.85	02	3.27
	>35	06	17.14	10	16.39
Symptoms	Swelling	35	100%	61	100%
	Pain	35	100%	61	100%
	Fever	14	40.0%	17	27.87%
	Breast swelling	35	100%	61	100%
Sign	Erythema	2	5.71%	61	100%
	Increased local temp	34	97.14%	61	100%
	Tenderness	34	97.14%	61	100%
	Axillary Lymphadeopathy	05	14.28%	07	11.47%
	Cracked nipple	11	31.42%	08	13.11%

It was observed that the youngest patient was 18 years old eldest patient was 59 years old. The maximum patients in aspirated as well as incised group were in the age group of 20-24 years. The mean age was 25.37±6.70 in aspirated and 27.57±9.82 years in incised group. Fever was present in 40% patients of the USG guided aspirated group

and in 27.87% patients of the incised group. Pain and swelling was present in all patients of both the groups. All patients in incised group had swelling, erythema, increased local temperature and tenderness. Axillary Lymphadenopathy in USG aspirated group was present in 14.28% patients and in incision-drainage group in 11.47% patients. Cracked nipple in usg guided aspirated group were present in 31.42% and 13.11% patients in incised group.

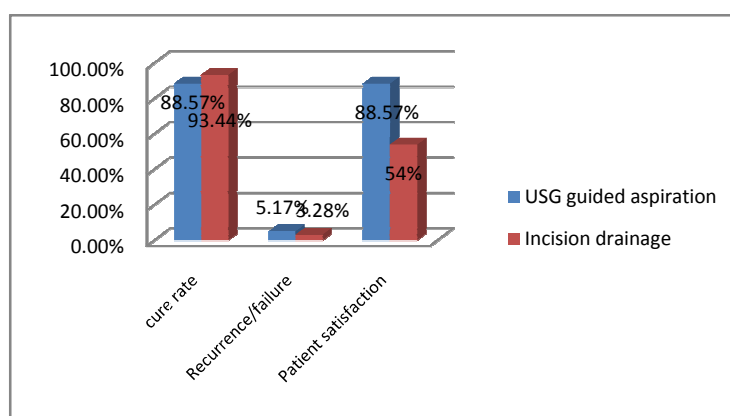
**Table 2:** Distribution of patients according to size of abscess and volume of pus

Variable	USG guided aspirated group (n=35)		Incised group (n=61)		
	No.	%	No.	%	
Size of abscess	<2	05	14.28	02	3.27
	2 to 3	11	31.42	17	27.86
	3 to 5	14	40	33	54.09
	>5	05	14.28	09	14.75
	<20	04	11.42	03	4.91
Volume of pus	20 to 40	18	51.42	23	37.70
	41 to 60	10	28.57	19	31.14
	61 to 80	01	2.85	09	14.75
	81 to 100	00	00	03	4.91
	>100	02	5.71	03	4.91

Majority of the patients in aspirated group and in incised group had breast abscess diameter 3 to 5cm (40% and 54.09% respectively). The mean diameter of the abscess as determined clinically was 3.4 cm in the aspirated group and 4.5 in the incised group. Majority of the patients in both the groups has drained less than 60ml form the abscess. The least volume was found in the 45 years old non lactating patient whose abscess was aspirated i.e. 8ml. The largest volume of pus was found in a 26 years old lactating mother whose abscess was incised and drained i.e. 450 ml. It was observed that the pus volume was 44.14 ml in the USG guided aspirated group (range 8-150ml) and 58.93ml (range 10-450mm) in the incised group.

**Table 3:** Distribution of patients according to treatment outcome in both groups

Treatment modality	Cured with respective treatment	Recurrence/failure	MRM	Lumpectomy	TB
USG guided aspiration	31 (88.57%)	02 (5.71%)	01 (2.86%)	00	01 (2.86%)
Incision drainage	57 (93.44%)	02 (3.28%)	00	02 (3.28%)	00



**Figure 1:** Distribution of patients according to treatment outcome

Out of total 35 patients treated in USG guided aspiration group, two patients during treatment developed skin over swelling and were treated by incision and drainage. One patient in this group had bilateral breast tuberculosis and for which put on anti-tuberculosis treatment. Another lactating patient did not respond to USG guided aspiration, hence excision biopsy was done,

found to have infiltrating duct carcinoma, this patient later underwent modified radical mastectomy. Out of total 61 patients treated in incision-drainage group, two patients developed recurrent breast abscess and were managed by repeat incision and drainage. In another two patients along with incision and drainage excision biopsy was done which on histopathological report confirmed as

carcinoma of breast. Two patients with fibro cystic disease underwent lumpectomy and patient with intraductal carcinoma of breast was advised modified radical mastectomy but was to lost follow-up.

**Table 4:** Distribution of patients according to Response to treatment

Outcome	USG Aspiration	Incision and Drainage	p-value
Healing time (weeks)	2.16±0.37	3.14±0.60	0.000*
OPD/IPD	31/4	0/61	0.006*
Recurrence abscess	00	02(3.27%)	0.279
Breast feeding cassation	02(2.71%)	40(65%)	0.001*
Milk fistula	00	02(3.27%)	0.279
Patient satisfaction	35(88.57%)	33(54.1%)	0.001*

\*Significant

Majority of the patients in USG guided aspiration group were treated in outdoor patient department whereas only four patients from this group required hospitalization due to failure and underlying causes. All patients in incision and drainage group required hospital admission. The mean healing time in the USG aspirated group was 2.16 weeks excluding those patients in this group whose aspiration had failed. In the incised group, the mean healing time was 3.14 weeks. Breast feeding was stopped on diseased breast only in two patients in USG aspiration group due to failure and in all patients treated by incision and drainage group. Four patients in incision and drainage group developed late complications like milk fistula in two patients and recurrence of breast abscess in two patients.

## DISCUSSION

The present study was carried out among the patients of breast abscess attending the department of surgery at tertiary care centre. There were total 96 patients with breast abscesses which were randomized into 35 for ultrasound guided aspiration and 61 for incision and drainage intervention. The mean age was 25.37±6.70 in aspirated and 27.57±9.82years in incised group. Francisco et al Dieter et al<sup>7</sup> also observed similar findings in their study. In our study swelling, pain over swelling, and raised local temperature was present in all patients of breast abscess in both groups i.e. in incised group and in USG aspirated group. While fever was present in 40% of aspirated group and 27.87% of the incised group this with study of Isabelle et al. All patients in incised group had swelling, erythema, increased local temperature and tenderness. Schwarz et al<sup>8</sup> and Faisal Elagili et al<sup>9</sup> also observed similar signs and symptoms in

their study. The mean diameter of the abscess as determined clinically was 3.4 cm in the aspirated group and 4.5 in the incised group. Similar findings were also observed by A F Christensen et al<sup>10</sup> (3.5 cm), Faisal et al<sup>9</sup> (4 cm) and Alphonse et al<sup>11</sup> (3.49 cm) in their study. In the present study it was seen that the pus volume in the USG guided aspirated group (range 8-150ml) was 44.14 ml whereas in the incised group was 58.93ml (range 10-450ml). Dixon et al<sup>12</sup> reported successful treatment of breast abscesses by aspiration with mean pus volume of 26ml (range 15-40ml). Francisco et al<sup>13</sup> in their study the mean volume of the aspirate at the initial aspiration was 28ml (range 1 to 225 ml). Faisal et al<sup>9</sup> observed the mean pus volume at the initial aspiration of 14 ml (range 1-200ml) in their study. Among the USG guided aspiration patients, the cure rate was 88.57% whereas patients managed by incision and drainage procedure with cure rate of 93.44%. O'Hara et al<sup>14</sup> reported an 85% cure rate, some of them aspirated without sonographic guidance. Garg et al<sup>15</sup> reported success rate of 84%. Faisal Elagili et al<sup>9</sup> reported success rate of 83.3% with USG guided aspiration of breast abscess. Alphonse et al<sup>11</sup> observed cure rate of 93.1% in ultrasound guided aspiration. In our study recurrence rate of USG guided aspiration was 8.57% which correlates with study conducted by Markus et al<sup>16</sup>. Out of 61 patients managed by incision and drainage two patients 3.27% developed recurrent breast abscess within four months of primary surgery. And this was consistent with the findings of Srauss et al<sup>17</sup>. The mean healing time in USG guided aspiration group was 2.16 weeks while in incision-drainage group was 3.14 weeks which correlates with the study of Markus et al<sup>17</sup>. Two patients (3.27%) in incision drainage group had developed milk fistulas which correlate with the study by Dr. Saira Saleem et al<sup>18</sup>. Milk fistula healed spontaneously after by interruption of breast feeding in these two patients. While there was no milk fistula noted in USG guided aspirated group. In the present study 88.58% patients continued breast feeding in USG guided aspiration while in all lactating females managed by incision-drainage group breast feeding was interrupted which correlate with the study of Dr. Saira Saleem et al<sup>18</sup>. Satisfaction in patients treated by USG guided aspiration was 88.57% and in incision-drainage group was 54.1% and the findings were in correlation with the study of Dieter et al<sup>7</sup> and Saira Saleem et al<sup>18</sup>. Cosmetic results in incision-drainage group were unsatisfactory while there were no cosmetic problems in USG guided aspiration.

## CONCLUSION

USG guided aspiration is simple, painless, day care procedure and effective alternative method of

treatment to incision and drainage in properly selected patient and with timely support by sinologist.

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