International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

Comparative Study of Incision and Drainage vs Repeated Needle Aspiration under Antibiotic Coverage for Breast Abscess Management

Dr Anand Kumar Yadav[1], Dr A. K. Maurya[2]

[1]PG Junior Resident-2, Department of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar (UP), India
Email Id: anandydv.12[at]gmail.com
[2]Associate Professor, Dept of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar (U. P), India

Corresponding Author
Dr A. K. Maurya

1. Introduction

An abscess is a cavity in the breast filled with pus and necrotic material. A breast abscess can develop in the presence of severe mastitis. Breast abscess is the rare complication of mastitis especially when the treatment is either inadequate or delayed. Traditional treatment has been incision and drainage, but this results in scars leading to asymmetry and deformity, I & D is expensive, require regular post operative follow up with cessation of breast feeding. Puerperal breast abscess is common problems in lactating women, while non puerperal abscess is rare entity with significant problem as far as recurrence and microbiological spectrum is concerned. Previous studies have advocated the usage of I&D as primary treatment modality but recent studies have suggested that repeated needle aspiration with antibiotic coverage under USG guidance have been both successful with improved 7-10 cosmetic and curative outcome.

2. Objective

This study was aimed to compare the traditional treatment of incision and drainage against percutaneous needle aspiration under ultrasound guidance in the treatment of breast abscess and preservation of shape and symmetry in breast abscess cases.

Study Design

Comparative study

Materials

A total of 60 patients were Studied who attended in General Surgery OPD between October 2020 and November 2021 in Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh for the treatment of breast Abscess. All females underwent initial Ultrasound examination. The presumptive diagnosis of abscess was made when homogenous or non homogenous hypo echoic shadow was present with some acoustic enhancement.

Inclusion criteria

All those females were included with single abscess smaller than 50 mm, in reproductive age group who were not pregnant at the study time and were not being treated for any other breast pathology.

Exclusion criteria

1) Women with sinus/fistula/ulcer of breast
2) After cbc count cases without polymorhonuclearleucocytosis
3) Cases with trauma
4) Cases with duct ectasia
5) Patient with antibioma

3. Material & Method

60 patients were randomly divided into 30 patients each in group A and B. Group A underwent incision and drainage and group B ultrasound guided Percutaneous Needle aspiration and aspirate sent for culture and sensitivity. Group B cases were given tight breast support along with analgesic anti inflammatory drugs and antibiotics. The first aspirate was sent for culture and sensitivity and accordingly sensitive antibiotic was given to these patients. Group A cases incision and drainage was done under general anesthesia. On drainage the pus samples were collected by syringe & sent for culture and sensitivity.

The abscess cavities were irrigated with 10% Betadine and 2% hydrogen peroxide and follow up ultrasound was done on third day. If still the pus collection were seen the corrugated drain was put in gravitationally dependent site. Initially all females were given the injectable form of analgesics available in the ward.

Time taken for the resolution of symptoms (point tenderness, erythema, and fever), recurrence of breast abscesses and healing time were recorded and were followed till eight weeks. All relevant information was collected on a proforma and was analyzed into statistical package for social sciences ver.16.0. Frequency and percentages were computed for categorical variable like clinical features, location of abscess, clinical sign, single and multiple abscesses, ultrasound finding, outcome and

recurrence rate for group A and B. Mean and Standard Deviation were computed for quantitative variables like age, duration of symptoms, parity and healing time for both groups. Student t-test was applied to compare mean significant difference between groups for age, duration of symptoms, parity and healing time. Chi-square test was also applied to compare proportion difference between group A and B for clinical sign, single and multiple abscesses, ultrasound finding, outcome and recurrence rate. $p \leq 0.05$ was taken as level of significance.

4. Results

The average age of the patients was 28; ranging from 16 to 40 years. The mean±S. D. duration of symptom 12 ± 9 and parity were 2 ± 1.

There was no significant difference between Group A (incision and drainage) and Group B (needle aspiration with antibiotic coverage) regarding age and parity.

	Nullipara	Primipara	Multipara	Total
Group A	6	18	6	30
Group B	4	18	8	30

Nearly all patients had palpable breast abscess (58 patients). The abscess was localized to the left lower outer quadrant in 20% (12 patients); while whole breast involvement was present in 18.75% (11 patients). Right (48.4%; 29 patients) and left (51.56%; 31 patients) breasts were almost equally affected. The mean difference was statistically significant (student t-test, p=0.03)

Post procedural	Group A (Incision & Drainage) N=30	Group B (Needle aspiration) N=30
Pain	26	10
Fever	14	4
Induration	28	2
Mean duration of symptoms	3.9±1.3 days	6.5±1.12 days
Mean healing time	45.3±24.04 days	19.13±15.56 days
Recurrence of breast abscess	Nil	Nil
Completely healed	23	28
Complication	5 patient-breast feeding cessation	1 patient – milk fistula
Non healed	2	1
Residual scarring over breast	30	2

* Statistically significant

The mean healing time was 45.3±24.04 days in incision and drainage group and 19.13±15.56 days in needle aspiration groups. The mean difference was statistically significant (student t-test, p=0.001).

Regarding outcome, 93.3% patients were healed in group B and 76.67% in group A (chi-square test, p=0.033). Healing rate in group B was higher than group A.

Number of healed patient in each group were

Group A-23 (76.67%)
Group B-28 (93.3%)
P-value is 0.033

Surgical scar anxiety was the main psychologic stress postoperatively in incision and drainage group.15 patients (50%) needed only single aspiration and 1 week of antibiotics.6 patients (20%) underwent aspiration twice; while 7 (23.33%) required multiple aspiration and more than 1 week of antibiotic.1 patients failed to heal even after multiple aspirations and were then managed with incision and drainage and both had non puerperal breast abscess. One patient in needle aspiration group developed milk fistula and had to stop breast feeding.

Patients from group A needed hospital admission (1-3 days), procedure was done under general anesthesia. Daily dressings were required for 1-3 weeks on regular basis and most of the patients were unable to feed from the affected breast so milk was discarded by pumping. In group B, patients continued to feed their child, needed no admission and the procedure did not require any form of general anesthesia or sedation and was carried out on outpatient basis.

20 samples (33.33%) had no bacterial yield and the remaining 40 samples (66.66%) yielded 10 anaerobic cultures and 30 aerobic cultures. The isolates in decreasing order of frequency were MRSA (32.8%), mixed anaerobes (14.06%), non-MRSA (10.9%), pseudomonas (4.68%) and Bacteroides (3.125%).

5. Discussion

Despite the advancement in the treatment of mastitis, breast abscess complicates 5-11% 11, 12, 13 14 mastitis and in one Australian cohort 3%. Mastitis is the potential complication of breast feeding that occurs more commonly in primiparous women1 and in our study 18 patients in group A and 18 patients in group B were primiparous. None of patient in our study was diabetic in non puerperal abscesses. The management of abscesses by needle aspiration has been previously advocated and is considered advantageous in many studies over conventional incision and drainage. Our study shows how needle aspiration is superior over incision and drainage as far as cosmetic and curative outcomes are concerned. Incision and drainage still has role in those abscesses which remain unresponsive after multiple aspirations.

Elagili F et al6 found palpable mass in 93.3 % of patients almost comparable to our findings in 96.7% patients. In

the same study, 83.3% had breast pain; while breast pain was present in 90.6% of our patients. Left breast was slightly more involved similar to 6 Elagilli F findings findings, then right with outer lower quadrant. Elagilli found predilection for upper outer quadrant in 30%.

Mean healing time was 10 days in incision and drainage group and 8.6 days in needle aspiration group and was statistically insignificant in Cenap Dener's study4; while it was statistically significant in our study. We did not observe recurrence of abscess in any patients during the follow-up similar to Bharat A etal19 findings but Cenap Dener 3 observed in 2 patients and Berna-serna14 in 4 patients.

Our study showed 52 (86.67%) of patients from both group to be lactating and only 8 were non lactating while Uzma, Elagilli and Berna had predominantly non lactating women.

As far as number of aspirations were concerned 15 patients (50%) needed only single aspiration, 6 patients (20%) underwent aspiration twice; while 7 (23.33%) required multiple aspiration. Berna-serna JD18 did single aspiration in 19 out of 39 patients and three underwent second aspiration; while in Elagilli study 15 out of 30 required single aspiration and 10 required multiple aspirations. The cytologic analysis didn't show any atypia negating the presence of inflammatory carcinoma in all of our patients; the similar findings were presented by Christensen and 20 colleagues. Spectrum of microbiological culture and sensitivity clearly defines the nature of puerperal abscesses with predilection for Staphylococcus aureus. Both mixed anaerobes and Bacteroides were exclusively found in non puerperal breast abscesses. Al Benwan in his retrospective analysis found 73% positive blood cultures; while we encountered 65.6% positive cultures.43.7% of the isolates were found to be Staphylococcus aureus 21 species both MRSA and Non MRSA in our study, Al Benwan found them in 42%, Dabbas in 51.3% 22, and Moazzez in 32% 23. Previously MRSA was implicated only in nosocomial infections; while nowadays it has shadowed various infections which are 21 community acquired including breast abscesses. All of the MRSA were susceptible to 17, 19 cultures in previous study. Pseudomonas has not been identified in two of the previous 17 18 19 linezolid, vancomycin, trimethoprim-sulfamethoxazole; similar to previous studies. All the 11 anaerobic cultures (17.18%) including mixed anaerobes as well as Bacteroides were found in non-puerperal breast abscesses. Moazzez19 found the anaerobes in only two specimens (5.12%), Al Benwan17 in 28% and Dabbas18 in 20%. Pseudomonades were found 4.68% of the isolates which were isolated in 8% of the studies and they are implicated in more aggressive infections and chronicity. Our study confirms the findings of almost many previous studies that showed the predominance of MRSA on the microbiologic horizon of breast abscesses, keeping in mind the local antibiogram and common culprit bacterias we can treat breast abscesses empirically with sophisticated outcomes. Trimethoprim-sulfamethoxazole being the cheapest of all antibiotics can be used empirically especially in our region with poor resources as well as sensitivity against the most common culprit i.e.; MRSA. We have given the antibiotic sensitivity where appropriate. Our study also confirms the findings of various previous studies that Ultrasound guided aspiration has given the favourable outcome and was not associated with any adverse events. This method should be the first line treatment as it does not require expertise and can be done on 24 hour basis; while incision and drainage has to be performed mostly electively and is associated with all the dangers just like any other surgical procedure. We too recommend that keeping in mind the common bacterial pathogens implicated in causation a trial of needle aspiration should be given under appropriate antibiotic cover before thinking about incision and drainage.

6. Conclusion

We conclude that repeated percutaneous needle aspiration under USG with antibiotic coverage is an effective method of treatment for breast abscesses size less than 50mm. Incision and drainage should be considered when aspiration fails or when the size of the abscess is large.

References

[1] Ulitzsch D, Nyman MKG, Carlson RA. Breast Abscess in Lactating Women: US guided treatment. Radiology 2004; 232: 904-909.
[2] Leborgne F, Leborgne F. treatment of breast abscesses with sonographically guided aspiration, irrigation and instillation of antibiotics. AJR 2003; 181: 1089-1091.
[3] Dener C, Inan A. Breast abscess in lactating women. WJS 2003; 27: 130-133.
[4] Monica R, Sheryl G, Charles S, Limin P, Anna F, Maria J et al. Management of Breast Abscesses in Nonlactating Women. The American Surgeon 2010; 76 (3): 292-295.
[5] Moazzez A, Kelso RL, Towfigh S, Sohn H, Berne TV, Mason RJ. Breast abscess bacteriologic features in the era of community acquired methicillin resistant staphylococcus (MRSA) Epidemics. Arch Surgery 2007; 142: 881-884.
[6] Elagili F, Abdullah N, Fong L, Pei T. Aspiration of breast abscess under ultrasound guidance: Outcome obtained and Factors affecting success. Asian J Surg 2007; 30 (1): 40-44.
[7] Karstrup S, Nolsoe C, Brabrand K, Nielsen KR. Ultrasonically guided percutaneous drainage of breast abscess. Acta Radiol 1990; 31: 157-159.
[8] O'Hara RJ, Dexter SPL, Fox JN. Conservative management of infective mastitis and breast abscesses after ultrasonographic assessment. Br J Surg 1996; 83: 1413-1414.
[9] Marchant DJ. Inflammation of the breast. Obstet Gynecol Clin North Am 2002; 29: 89-102.
[10] Mass S. breast pain: engorgement, nipple pain and mastitis. Clin Obstet Gynecol 2004; 47: 676-682.
[11] Son EJ, Oh KK, Kim EK. Pregnancy associated breast diseases: Radiologic features and diagnostic dilemmas. Yonsei Med J 2006; 47: 34-42.
[12] Amir LH, Forster D, McLachlan H, Lumley J. Incidence of breast abscess in lactating women: report

from an Australian cohort. BJOG 2004; 111 (12): 1378-1381.
[13] Jalali U. Treatment of breast abscess with ultrasound guided percutaneous needle drainage. J Surg Pak 2004; 9 (4): 771-774.
[14] Berna-Serna JD, Madrigal M. Percutaneous management of breast abscesses-an experience of 39 cases. Ultrasound in med and biol 2004; 30 (1): 1-6.
[15] Bharat A, Gao F, Aft RL, Gillander WE, Eberlein JJ, Margenthaler JA. Predictors of Primary Breast Abscesses and recurrence. WJS 2009; 33 (12): 2582-2586.
[16] Christensen AF, Al-Suliman N, Nielsen KR, Vejborg I, Severinsen N, Christensen H, Nielsen MB. Ultrasound-guided drainage of breast abscesses: Results in 151 patients. Br. J Radiol 2005; 78: 186-188.
[17] Al Benwan K, Al Mulla A, Rotimi VO. A Study of the microbiology of Breast Abscess in a Teaching hospital in Kuwait. Med Principles and Practice 2011; 20 (5): 422-426.
[18] Dabbas N, Chand M, Pallett A, Royle GT, Sainsbury R. Have the Organisms that cause Breast abscess changed with Time? –Implications for appropriate Antibiotic Usage in Primary and Secondary Care. The Breast Journal 2010; 16 (4): 412-415.
[19] Moazzez A, Kelso RL, Towfigh S, Sohn H, Berne TV, Mason RJ. Breast Abscess Bacteriologic Features in the Era of Community-Acquired Methicillin-Resistant Staphylococcus aureus Epidemics. Arch Surg 2007; 142 (9): 881-884