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RESEARCH ARTICLE

MANAGEMENT OF BREAST ABSCESSES: MINIMALLY INVASIVE OR SURGICAL

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ABSTRACT

The traditional management of breast abscesses involves incision and drainage of pus along with anti staphylococcal antibiotics, but this is associated with prolonged healing time, difficulty with breast feeding, regular dressings and possibility of milk fistula and sometimes scarring with unsatisfactory outcome. Aim of our study was to analyze diagnostic methods, different treatment modalities and outcome of patients with breast abscess treated at our institution, as to determine whether minimally invasive treatment (needle aspiration) is successful.

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INTRODUCTION

Infections of breast fall into two general categories lactational infections and chronic subareolar infections associated with duct ectasia (Kelly K.Hunt *et al.,* 2012). Most breast abscesses develop as a complication of lactational mastitis. Incidence of breast infections ranges from 0.4 to 11% of all lactating women (Diner *et al.,* 2003). Breast abscesses are more common in obese and smokers (Bharat *et al.,* 2009). Traditional management of breast abscesses involves incision and drainage of pus along with anti staphylococcal antibiotics. But this is associated with prolonged healing time, regular dressings, difficulty with breast feeding, possibility of milk fistula, scarring and unsatisfactory cosmetic outcome (Derens PD. Prenatal, 2001). It has been reported that breast abscesses can be treated by repeated needle aspirations. In this study, the aim was to retrospectively analyze diagnostic results, different treatment modalities and outcome of patients with breast abscess treated at our institution to determine whether minimally invasive treatment (needle aspiration) is successful.

MATERIALS AND METHODS

The 50 patients with mastitis and suspected breast abscesses treated at our institution from June 2013 to June 2015 were prospectively analyzed. Patient information relevant to the study was retrieved from records. Patient data were analyzed statistically.

Inclusion criteria: Patient showing clinical signs and symptoms of mastitis and breast abscess aged between 18 to 40 years.

Exclusion Criteria: Diabetes mellitus, nicotine use, previous radiotherapy, ipsilateral breast interventions, immunosupression.

Data Analysis: Following data was analyzed

- Age distribution of patient.
- Patient clinical history, diagnostic evaluation, needle aspiration, microbiology.
- Type of initial therapy.
- Outcome of initial therapy (failure of one type of therapy and need to switch over to another).
- Treatment outcome.

Techniques: Minimally invasive treatment of breast abscess was carried out using fine needle aspiration, ultrasound guided if needed. Superficial disinfection and local anesthesia was administered and 18 gauge needle was used for aspiration. If aspiration was difficult abscess cavity was flushed with sterile saline. Antibiotic coverage was given.

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Primary surgery: Incision and drainage was carried out under local anesthesia. An incision was put at the point of maximum tenderness. Circumareolar and radial incisions were preferred. Typically abscesses larger than 4 cms were treated by incision and drainage. Antibiotic coverage was given.

Conservative: Cases clinically diagnosed as only mastitis without abscess formation were treated with antibiotics only; Amoxyclav IV was started empirically before results of culture were available. Later antibiotics were used according to culture sensitivity pattern. Duration of antibiotic therapy was 10 days.

General measures included in all groups:

- **Analgesics:** Ibuprofen is regarded as most efficient, and it also helps to reduce inflammation and edema so it was used 400mg tid. Paracetamol was used as an alternative and if the fever was not controlled. Tramadol and other opioids were avoided as they have central nervous system depressant effect on newborn.
- **Breast support:** Breast support garment helps in relaxing the stretched cooper's ligament, reducing the movement of painful organ and reducing edema. Breast support was given using tight comfortably fitting undergarment
- **Breast emptying and continuation of breastfeeding:** The breast was emptied either by suckling wherever possible or by expression either manually or by using a breast pump.

RESULTS

The 50 cases studied were between 18-37 years of age and as shown in the table. There were no significant age differences between different modalities of treatment. Out of 50 cases, 10(20%) were suspected to be of mastitis alone and were treated by antibiotics alone as primary treatment. 20 cases (40%) were given needle aspiration as initial treatment. 20 cases (40%) were given incision and drainage as initial treatment. Out of 50 cases 45 (90%) were lactational and 5(10%) were non lactational as shown in below chart. Out of 50 cases, 10 were diagnosed as mastitis alone without abscess formation and 40 were with clear abscess formation. Out of 10 cases of mastitis for which conservative treatment was started two cases failed for which needle aspiration was done and patients got cured. 20 cases were treated by needle aspiration as initial treatment of which 4 cases failed for which incision and drainage was done which cured patients. For 20 cases incision and drainage was done as initial therapy which cured them.

Out of 22 cases of needle aspiration (20 initial treatment and two failed cases of conservative therapy). 11 cases required 4 settings of aspiration 6 cases required 3 settings of aspirations and 5 cases required 5 settings. Out of 10 cases diagnosed as mastitis alone and treated conservatively only 2 cases (20%) failed which were cured after needle aspiration. 20 cases were treated by needle aspiration out of which 4(20%) cases failed which were treated by incision and drainage and got cured. Remaining 20 cases were treated by incision and drainage.

Age Distribution of patients with treatment modalities

Age in years	Conservative	Needle Aspiration	Incision and drainage	Total
18-22	4 (40%)	7 (35%)	8 (40%)	19 (35%)
23-27	4 (40%)	8 (40%)	7 (35%)	19 (35%)
28-32	2 (20%)	4 (20%)	3 (15%)	9 (18%)
33-37	-	1 (5%)	2 (10%)	3 (6%)
	10 (20%)	**20 (40%)**	**20 (40%)**	**50 (100%)**

Types of Breast abscesses and mastitis

Lactational	Non lactational
45(90%)	5(10%)

Distribution of mastitis and breast abscess

No of cases initially diagnosed as mastitis	No of cases initially diagnosed as abscess
10(20%)	40(80%)

Outcome

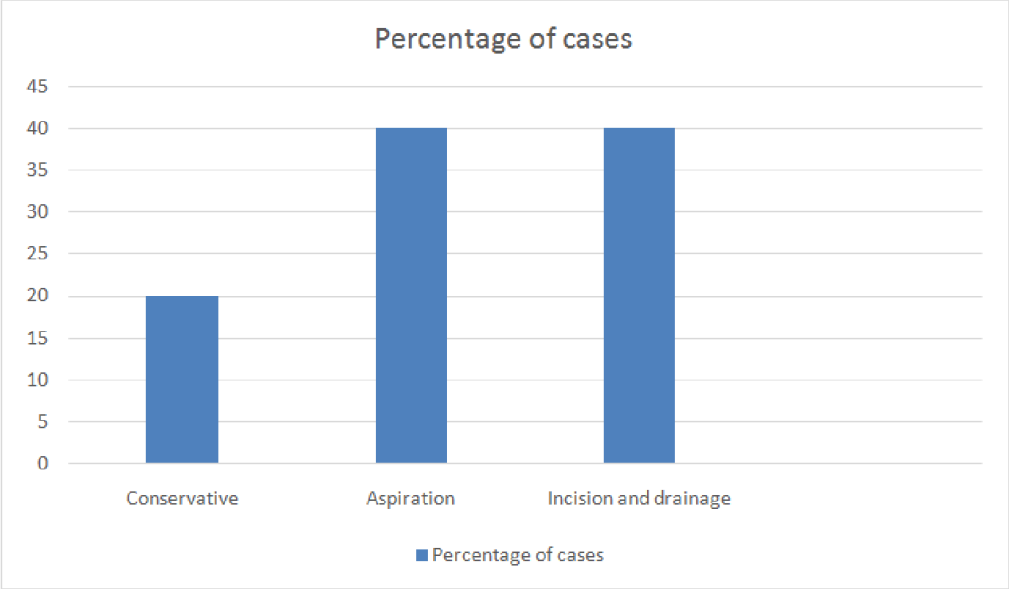
Initial therapy	Total cases	Failed initial therapy	Next line of treatment given	Outcome
Antibiotics alone	10(20%)	2(20%)	Needle aspiration	Cured
Needle Aspiration	20(40%)	4(20%)	Incision and drainage	Cured
Incision and drainage	20(40%)	-	-	Cured

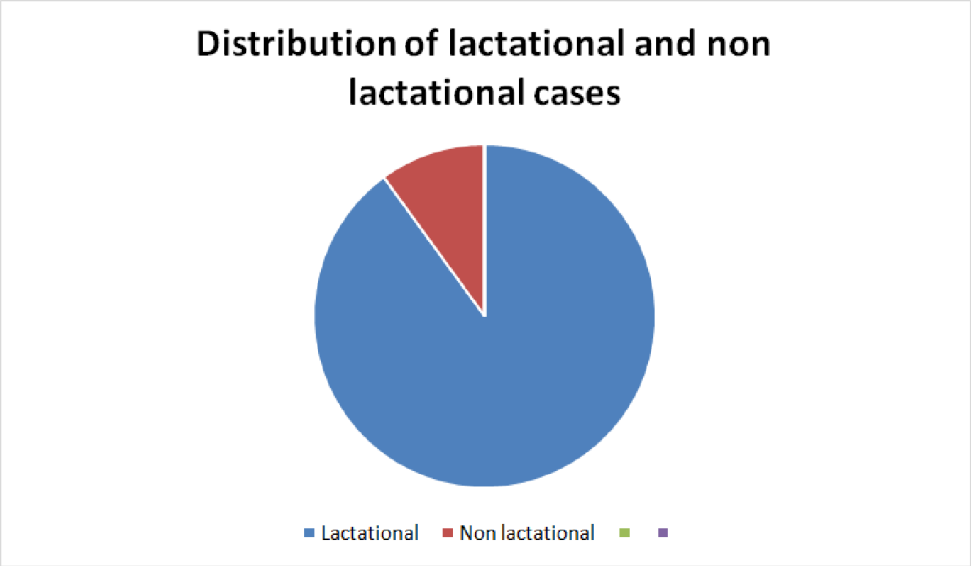
Number of Needle Aspiration

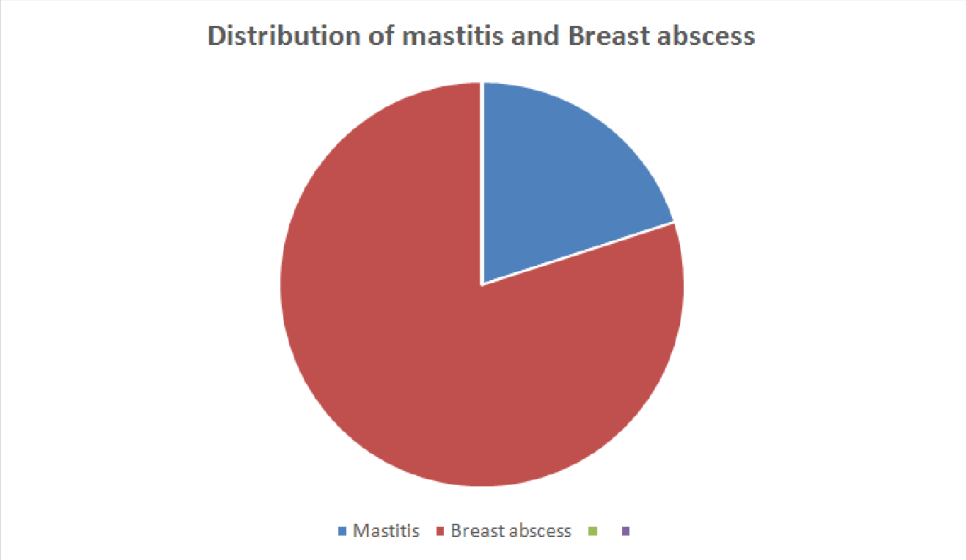
No of cases	No of aspiration settings
11	**4**
6	**3**
5	**5**

Microbiological and culture results

Sl no	Pathogens isolated	No of cases
1	Staphylococcus aureus	30(60%)
2	Coagulase negative staphylococcus	2(4%)
3	Streptococcus species	2(4%)
4	Others	2(4%)
5	No growth	14(28%)


Percentage of cases
45
40
35
30
25
20
15
10
5
0
Conservative
Aspiration
Incision and drainage
Percentage of cases


Distribution of lactational and non lactational cases
Lactational
Non lactational


Distribution of mastitis and Breast abscess
Mastitis
Breast abscess

DISCUSSION

The breast is one of the sex organ of a female. In case of breast disease care should be taken to insure that its beauty is minimally compromised in order to preserve its value and function. Despite breast abscess becoming less in developed countries due to improved maternal hygiene, nutrition, standard of living and early use of antibiotics, it remains a problem among women in developing countries (Ioannis, 2012). Treatment of breast abscess has traditionally been incision and drainage. However, this has been found to be associated with the possible unsatisfactory cosmetic outcome, difficulty in breastfeeding, may need general anesthesia, prolong healing time and regular dessings (Benson, 1989). Of late repeated aspiration with or without ultrasound guidance has emerged as another treatment option for breast abscess and this has been reported to be associated with similar recurrence rate, excellent cosmetic result and has less costs (Dener, 2003; O'Hara *et al.,* 1996; Srauss *et al.,* 2003). Previously almost all breast abscesses were treated by operative incision and drainage but now the initial approach is antibiotics and repeated aspiration of the abscess usually ultrasound guided aspiration. Operative drainage is now reserved for those cases which don't resolve with repeated aspirations and antibiotic therapy or if there is some other indication for incision and drainage (e.g. thinning or necrosis of overlying skin) (Kelly *et al*., 2015). It used to be recommended that breast should be incised and drained if the infection did not resolve within 48 hours or if after being emptied of milk there remains an area of tissue induration or other evidence of an underlying abscess. This advice has been replaced with the recommendation that repeated aspiration under antibiotic cover if necessary using ultrasound for localization be performed. This allows resolution without the need for an incision scar and will allow the patient to carry on breastfeeding (Richard Sainsbury, 2013).

This study was conducted to establish whether needle aspiration with or without ultrasound guidance is a feasible alternative option for breast abscesses. The results of this study show that needle aspiration therapy can replace surgery for successful treatment of most cases of breast abscesses and is consistent with results of other studies (Elagili *et al*., 2007; Rageth *et al*., 2004; Schwarz *et al*., 2001; Christensen *et al*., 2005). For lactating women with puerperal mastitis, needle aspiration allows them to resume nursing earlier, reduces the possibility of the galactostasis and is associated with the positive psychological effect (Harish *et al*., 1997). In past 15 years ultrasound guided intervention has become the preferred approach, it can be performed repeatedly with local anesthesia in ambulatory patients with minimal or no scarring without need to interrupt breast feeding and with a complication rate similar to that of incision and drainage. Treatment failure using ultrasound-guided aspiration has been reported in cases where either the abscess has been larger than 3 cm in diameter or if it was placed centrally in a subareolar position (Hook and Ikeda, 1999).

Conclusion

During the cellulitis (mastitis) phase, treatment with antibiotics alone is sufficient and is expected to give rapid resolution. The predominance of *S. aureus* allows a rational choice of antibiotic without having to wait for the results of bacteriological culture. Antibiotics should be continued for 10 days to reduce systemic infection and local cellulitis. Where an abscess has formed, needle aspiration of the pus, preferably under ultrasound guidance can be started as the first line of treatment. Regular natural milk emptying of the breast is an essential part of treatment. Incision and drainage should be reserved for large and multiloculated abscesses.

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