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Original Research Article

A prospective study of outcome of double pigtail catheter drainage in the management of breast abscess: analysis of outcome

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ABSTRACT

Background: Breast abscesses, localized collection of pus in the breast, are most common in young lactating women. Traditional treatment of breast abscesses is by surgical incision, digital disruption of septa, evacuation of contents with occasional placement of surgical drains, and administration of systemic antibiotics. Percutaneous large-bore needle aspiration with or without ultrasound guidance is generally employed as the first line treatment of breast abscesses. It is generally done for medium to large sized unilateral abscesses and requires repeated aspirations for complete resolution of the abscess cavity.
Methods: We have conducted this prospective study at SMIMER Hospital, Surat, Gujarat, India from January 2020 to January 2021. After ethical approval a group of 25 patients with unilateral breast abscesses irrespective of the lactational status were treated by percutaneous double catheter drains inserted under ultrasound guidance under the effect of local anaesthesia and evaluated for 3 months.
Results: The resultant cosmetic effect was good, with no reported recurrence on 3 month follow-up.
Conclusions: Double pigtail catheter drainage in appropriately selected cases of beast abscess has superior outcome in compare to published result of other technique for drainage of beast abscess specially in minimal scarring, early resolution of abscess cavity and decreases in the total duration of treatment.

Keywords: Breast abscess, Double pigtail, Catheter

INTRODUCTION

Mastitis is an inflammation of the breast tissue with or without infection, ranging from mastitis to abscess that occurs predominantly during the time of breastfeeding.[1] It can occur when bacteria, often from the baby's mouth, enter a milk duct through the crack in the nipple. A breast abscess is a localized collection of purulent material within the breast.[2] Breast abscesses most commonly affect women aged between 18 to 55 years. In women of reproductive age these are predominantly lactational but non-lactational abscesses are also seen in perimenopausal older women.[3] Other causes of infection include chronic mastitis and inflammatory carcinoma. Traditional treatment of breast abscesses is by surgical incision, digital disruption of septa, evacuation of contents with occasional placement of surgical drains, and administration of systemic antibiotics. This strategy often requires general anaesthesia, may leave unpleasant scars, is more expensive than aspiration, risks damaging the major ducts, requires regular postoperative changes of dressing and interferes with lactation.[3] Surgical incision and drainage is employed for very large, multiloculated, or long-standing abscesses, or if percutaneous drainage is unsuccessful.

Percutaneous large-bore needle aspiration with or without ultrasound guidance is generally employed as the first line treatment of breast abscesses. It is generally done for medium to large sized unilateral abscesses and requires

repeated aspirations for complete resolution of the abscess cavity.[3] Percutaneous single drain insertion under ultrasound guidance is rarely done by itself, more commonly after an unsuccessful incision and drainage procedure. The purpose of the present study is to review our experience in the treatment of breast abscesses with double catheter drainage as an improved, minimally invasive, effective, relatively pain-free, cosmetically superior technique as compared to the traditional ones.

Aim and objectives

Aim and objectives of current study were; assessment of duration of abscess cavity resolution, duration required for symptomatic relief (vas score≤2), total duration of hospital stay, total duration of treatment required, total duration of percutaneous catheter placement, cccurrence of residual abscess after catheter removal and complications of double catheter drainage.

METHODS

A prospective study was conducted at SMIMER hospital, Surat, Gujarat, India from January 2020 to January 2021, during which 25 cases who satisfied inclusion and exclusion criteria were included and evaluated for outcomes for 3 months. The patients were assessed at 48 hours, 4th day, 6th day, 8th day, 10th day, and till discharge, followed by at 4 weeks, 8 weeks, 12 weeks. Data was analysed by SAS/STAT software.

Inclusion criteria

All patients with unilateral breast abscesses irrespective of the lactational status were included in the study.

Exclusion criteria

All patients with bilateral breast abscesses and all patients diagnosed with chronic antibioma were excluded from the study.

Pre-procedural assessment

All the patients were admitted on an emergency basis following a visit to the outpatient department or emergency department of our hospital on the same day. The treatment protocol consisted of a single intravenous antibiotic augmentin (1.2 g 8 hourly) for the first three to five days of admission. Supportive drugs such as injectable analgesics for the first 2 days, followed by oral administration, depending on the inflammatory changes. The necessary preliminary investigations included a complete blood picture, coagulation profile, routine pre-procedural antiviral tests such as HIV, HBsAG and HCV. Radiological investigations included a chest X-ray and Ultrasound of bilateral breast tissue with axilla, followed by repeat/follow-up ultrasound every alternate day post procedure.

Anaesthesia

All procedures of ultrasonographically guided double pigtail insertion in the patients with unilateral breast abscesses were done under local anaesthesia (LA).

Procedure

After ethical approval a total of 25 patients who satisfied inclusion and exclusion criteria underwent double pigtail insertion, after explaining the procedure and its complications. Informed verbal and written consent were obtained prior to the procedure. Under ultrasound guidance, with a pre-procedural antibiotic, local anaesthesia and all aseptic precautions, two pigtail catheters of the same size- 14Fr/16 Fr were inserted at two different sites, in a side-to-side approach. Such a placement technique permits periodic flushes of 20 to 100 cc normal saline given alternately to each of these catheters, thus obtaining free flow drainage from both the catheters. The drainage volume was collected and measured through collection bags attached to the catheters. Lactating mothers were advised to stop feeding from affected breast and evacuation of the milk through a breast pump. The follow up ultrasounds were done every alternate day until a residual abscess of less than 10 cc was obtained, after which the pigtail catheters were removed simultaneously maintaining aseptic precautions.

RESULTS

25 patients with unilateral breast abscesses underwent double pigtail insertion under guidance of ultrasound, of varying ages and irrespective of the lactational status. There were no major complications during the procedure. Post-procedural pain and inflammation was minimal, lasting for not more than 48 hours. All the patients were successfully treated within 7 days of insertion, with removal of the drains done simultaneously following ultrasound report of residual abscess less than 10 cc.

The sites of catheter insertions healed with minimal scarring within 7 days of removal. Injectable antibiotics were given for the first 3 to 5 days of admission and oral antibiotics were started from day 4/5 of admission. During follow-up, there were no cases of recurrence and antibioma formation. The recurrence was recorded till a period of 3 months. Demographic data of the patients are as per (Table 1).

In current study it was observer that 48% patients were belongs to 20-24 age group and out of 25 patients all the patients have complaint of swelling and pain while 76% patients having complaint of fever. In our study 84% patients are lactating female while only 16% female are non-lactating. In current study, it is observed that only 20% patients had residual abscess cavity(>10cc) at the end of 4 weeks which further decreased to 12% after 8weeks and no residual abscess encountered in our patients after 12 weeks.

Table 1: Data of patients (n=25).

Parameters		N	%
Age group (years)	15-19	1	4
	20-24	12	48
	25-29	9	36
	30-34	2	8
	>35	1	4
Symptoms	Swelling	25	100
	Pain	25	100
	Fever	19	76
Lactational status	Lactating	21	84
	Non lactating	4	16
Side of breast abscess	Right	10	40
	Left	15	60

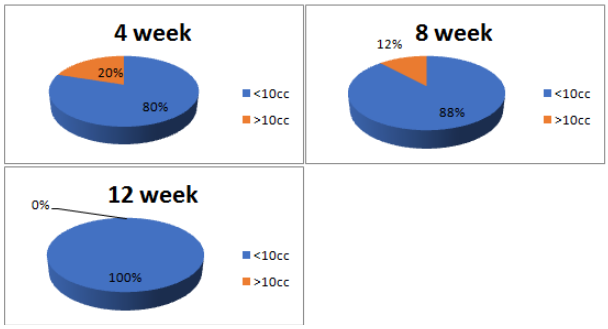

Figure 1: Residual abscess on follow up.

Table 2: Outcomes (mean).

Parameters	Outcome
Mean duration of healing (residual abscess of <10 cc)	6.55 days
Symptomatic relief with mean pain score post insertion	3 days; 2
Mean duration of percutaneous catheter placement	6 days
Mean duration of hospital stay	6 days
Mean duration of treatment (inpatient and outpatient)	10 days
Recurrences	None
Complications (other than recurrence)	None
Cosmetic aspect	Minimal scarring

DISCUSSION

This is a prospective cohort study supporting the validity of percutaneous double pigtail drain insertion in combination with antibiotic treatment as an effective management technique for lactational as well as non lactational acute breast abscesses. In current study, the average time required for healing is 6.55 days which is lower when compared to incision and drainage (21days) and needle aspiration (15days).[11] Symptomatic pain relief was obtained within 3 days of hospital admission, with slight discomfort being the only complain with respect to the double catheter insertion as well as their maintenance while pain score in needle aspiration is 4.25 on day 3as repeated aspiration is required and in incision and drainage pain score is 5.75 on day 3.[10]

The average hospital stay is 4.4 days, longer than the traditional incision and drainage (3.08 days) or percutaneous needle aspiration (2.48 days), to prevent accidental removal of pigtail.[10] The average duration of catheter placement was 6.5 days. There were no recurrences seen in patients with double pigtail insertion in our study as double pigtail allows to drain the abscess easily and flush with normal saline provide microdebridment of the cavity which results in minimal sepsis after pigtail removal, while 3.2% recurrence is seen in patients of incision and drainage and no recurrence seen in patients with needle aspiration.[11] Cosmetically needle aspiration in breast abscess is more acceptable because of minimal or no scarring when compared to double pigtail insertion or incision and drainage.

Limitations

Limitations of current study were; A small sample size-more multicentric trials involving a larger sample size are required to establish ultrasonographically inserted double pigtail catheter drainage as a better treatment modality. The cost of the procedure increases due to expensive pigtail catheters. The feasibility of daily routine is affected. Hospital stay is increased to prevent accidental removal of pigtail, which is more than traditional incision and drainage or percutaneous needle aspirations.

CONCLUSION

From our study, we conclude that double pigtail catheter drainage in appropriately selected cases of beast abscess has superior outcome in compare to published result of other technique for drainage of beast abscess specially in minimal scarring, early resolution of abscess cavity and decreases in the total duration of treatment.

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