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Original Research Article

COMPARISON OF OUTCOME (IN TERMS OF RECURRENCE) OF INCISION & DRAINAGE VERSUS ASPIRATION OF BREAST ABSCESS

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Abstract: *Breast abscesses can lead to significant morbidity and have a negative impact on quality of life. This study aimed to compare recurrence rates after incision and drainage versus aspiration techniques in managing breast abscesses.* ***Objective:*** *To compare the outcome of incision and drainage versus aspiration techniques in managing breast abscesses, specifically recurrence rates.* ***Methods:*** *This study employed a Randomized Controlled Trial design and was conducted at the Department of General Surgery, Nishtar Hospital, Multan, over a period of six months from July 1, 2019, to January 1, 2020. A total of 60 patients meeting the inclusion criteria were randomized into two groups: Group A underwent needle aspiration, while Group B underwent incision and drainage. Both groups received a 10-day course of tab. Ciprofloxacin 500mg BD and tab danzen DS BD. The researcher performed all the procedures. Patients were followed for two weeks, and recurrence of the abscess was recorded as either "yes" or "no".* ***Results:*** *The study included 60 patients with a mean age of 25.58 ± 3.64 years. Of these, 35 (58.3%) were from rural areas and 25 (41.7%) from urban areas. Seventeen (28.3%) patients were unmarried, and 43 (71.7%) were married. The mean body mass index was 25.12 ± 1.97 kg/m^2, with obesity present in 7 (11.7%) patients. Thirty-five (58.3%) patients were lactating, with a mean abscess duration of 3.25 ± 0.57 months. The mean abscess size was 1.20 ± 0.18 centimeters, with 55 (91.7%) abscesses ≤ 2 centimeters in size. Diabetes was not present in any patients. Recurrence occurred in 15 (25.0%) patients, with a recurrence rate of 13.3% in Group A and 36.7% in Group B ($p = 0.072$).* ***Conclusion:*** *The recurrence of breast abscesses was lower in the aspiration group compared to the incision and drainage group. These findings support the use of needle aspiration techniques for the management of breast abscesses. Surgeons treating such patients should consider employing aspiration techniques to achieve better outcomes, thereby reducing the burden of related morbidities and mortalities.*

Keywords: Aspiration, Breast Abscess, Incision & Drainage, Recurrence

Introduction

Breast abscess, a common surgical emergency primarily seen in lactating women, can manifest as a localized issue or as part of a systemic illness (1). Its occurrence is closely linked to pregnancy, with main causes including nipple piercing by infants during feeding and bacterial colonization due to improper nursing techniques (2, 3). Timely diagnosis and management are crucial for continued breastfeeding and prevention of complications.

The management of breast abscess poses a clinical challenge, with treatment options ranging from conservative measures to surgical intervention (4, 5). Traditionally, surgical incision and drainage (I&D) have been the standard approach. However, there has been a shift towards minimally invasive techniques, such as percutaneous suction drain placement and aspiration of the abscess, reflecting evolving surgical philosophies (6).

Previous studies have reported varying recurrence rates following different treatment modalities for breast abscess. One study found recurrence rates of 23.33% with incision and drainage and 70.0% with needle aspiration, indicating a statistically significant difference (7). In contrast, another study reported no recurrence with needle aspiration and a 3.3% recurrence rate with incision and drainage (8).

Given the importance of post-operative recurrence in affecting both the physical and psychological well-being of patients, this study aims to compare the recurrence rates following incision and drainage versus aspiration of breast abscess. While previous studies have suggested needle aspiration as the preferred option, conflicting results warrant a reevaluation.

By reexamining these outcomes, practical recommendations can be formulated for incorporating more effective techniques into routine clinical practice. This will help reduce the morbidity associated with breast abscess and improve patient care.

Methodology

The present study was designed as a Randomized Controlled Trial (RCT) conducted within the Department of General Surgery at Nishtar Hospital, Multan. It spanned a period of six months, commencing from July 1, 2019, to January 1, 2020.

A total sample size of 60 patients was determined, with 30 patients allocated to each of the two study groups. The sample size calculation was based on a 95% confidence level and 90% power of study, taking into account an anticipated recurrence rate of 23.33% in the incision and drainage group and 70.0% in the needle aspiration group. Consecutive sampling, a non-probability sampling technique, was utilized for patient recruitment.

Inclusion criteria encompassed patients diagnosed with breast abscess, characterized by an abscess duration

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exceeding three months, abscess size greater than one centimeter, and aged between 20 and 60 years. Exclusion criteria were defined to exclude patients with suspected malignancy, recurrent abscess, active pulmonary tuberculosis or tuberculous cervical lymphadenitis, imminent skin necrosis overlying the breast, bleeding disorders, immunocompromised status, and chronic renal failure.

Following ethical approval, 60 eligible patients presenting to the Outpatient Department of Surgery at Nishtar Hospital were enrolled in the study. Informed consent was obtained from each participant, after which they were randomly assigned to either Group A (needle aspiration) or Group B (incision and drainage) using labeled slips ('A' or 'B'). Both groups received a 10-day course of tab. Ciprofloxacin 500mg BD and tab danzen DS BD. The procedures were performed by the researcher, and patients were followed up for a duration of two weeks, during which recurrence (yes/no) was noted.

Data analysis was conducted using SPSS version 16.0. Descriptive statistics were employed to summarize continuous variables such as age, abscess duration, abscess size, height, weight, and BMI, which were presented as mean and standard deviation. Categorical variables including marital status, lactation status, diabetes mellitus, and outcome were expressed as frequency and percentage. The chi-square test was utilized to compare outcomes between groups, with statistical significance set at a p-value ≤ 0.05. Effect modifiers were controlled through stratification, and post-stratification chi-square tests were performed to evaluate their influence on outcomes.

Results

Our study comprised a total of 60 patients meeting the inclusion criteria of our study. The table presents the demographic characteristics of the study population, consisting of 60 patients, divided into two groups: Group A (undergoing needle aspiration) and Group B (undergoing incision and drainage). The age distribution revealed that the majority of patients in both groups were aged up to 30 years, with 90.0% in Group A and 86.7% in Group B falling within this age range. A smaller proportion of patients were older than 30 years, accounting for 10.0% in Group A and 13.3% in Group B.

Residential status analysis indicated that most patients hailed from rural areas, constituting 60.0% in Group A and 56.7% in Group B. Conversely, urban residents comprised 40.0% and 43.3% in Groups A and B, respectively. Regarding marital status, a higher percentage of patients were married compared to unmarried in both groups, with 70.0% and 73.3% married patients in Groups A and B, respectively.

The assessment of obesity prevalence showed similar proportions in both groups, with 10.0% obese patients in Group A and 13.3% in Group B. Lactation status analysis revealed that around 60.0% of patients in both groups were lactating. Analysis based on disease duration highlighted that the vast majority of patients had abscess duration up to 4 months, comprising 93.3% in Group A and 96.7% in Group B.

Abscess size assessment revealed that the majority of patients had abscesses up to 2 cm in size, accounting for 93.3% in Group A and 90.0% in Group B. Recurrence of abscesses was noted in a higher proportion of patients in Group B compared to Group A, with 13.3% and 36.7%, respectively. None of the patients in either group had diabetes, resulting in a frequency of 0% and 100% for Groups A and B, respectively. (Table 1).

Table 1 Demographics of Study Population (n = 60)

Variables	Sub-groups	Group A		Group B	
		Frequency	**Percentage**	**Frequency**	**Percentage**
Age groups **(Years)**	*Up to 30*	27	90.0	26	86.7
	More than 30	03	10.0	04	13.3
Residential status	*Rural*	18	60.0	17	56.7
	Urban	12	40.0	13	43.3
Marital Status	*Unmarried*	09	30.0	08	26.7
	Married	21	70.0	22	73.3
Obesity	*Yes*	03	10.0	04	13.3
	No	27	90.0	26	86.7
Lactation	*Yes*	18	60.0	17	56.7
	No	12	40.0	13	43.3
Disease duration	*Up to 4 months*	28	93.3	29	96.7
	More than 4 months	02	6.7	01	3.3
Size	*Up to 2 Cm*	28	93.3	27	90.0
	More than 2 Cm	02	6.7	03	10.0
Recurrence	*Yes*	04	13.3	11	36.7
	No	26	86.7	19	63.3
Diabetes	*Yes*	00	NA	00	NA
	No	30	100	30	100

Table 2 presents the stratification of demographic and clinical variables concerning the recurrence of breast abscesses in two groups: Group A (needle aspiration) and Group B (incision and drainage). Among patients aged up to 30 years, recurrence rates were 23.1% in Group A and 38.5% in Group B, showing significance ($p = 0.028$). There was no significant difference in recurrence rates between the groups for patients older than 30 ($p = 1.000$). For rural residents, recurrence rates were similar in both groups ($p = 0.471$), while urban residents showed significantly lower

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recurrence in Group A (p = 0.039). Marital status did not significantly influence recurrence rates in either group. Obesity did not affect recurrence rates significantly. Lactation status did not significantly differ in recurrence rates between the groups. Patients with abscess duration up to 4 months showed significantly lower recurrence in Group A (p = 0.021). Abscess size up to 2 cm had significantly lower recurrence in Group A (p = 0.040). In certain subgroups, needle aspiration (Group A) showed lower recurrence rates than incision and drainage (Group B).

Table 2 Stratification of age, residential, marital status and other variables with regards to recurrence in both groups. (n = 60)

Variables	Total	Recurrence	Groups		*P – value*
			Group A	**Group B**	
Age	**Up to 30 Years** (n=53)	**Yes** (n=13)	03	10	**0.028**
		No (n=40)	24	16	
	More than 30 Years (n=07)	**Yes** (n=02)	01	01	**1.000**
		No (n=05)	02	03	
Residential status	**Rural** (n=35)	**Yes** (n=10)	04	06	**0.471**
		No (n=25)	14	11	
	Urban (n=25)	**Yes** (n=05)	00	05	**0.039**
		No (n=20)	12	08	
Marital status	**Un-married** (n=17)	**Yes** (n=04)	01	03	**0.294**
		No (n=13)	08	05	
	Married (n=43)	**Yes** (n=11)	03	08	**0.162**
		No (n=32)	18	14	
Obesity	**Yes** (n=07)	**Yes** (n=02)	00	02	**0.429**
		No (n=05)	03	02	
	No (n=53)	**Yes** (n=13)	04	09	**0.119**
		No (n=40)	23	17	
Lactation	**Yes** (n=35)	**Yes** (n=08)	02	06	**0.121**
		No (n=27)	16	11	
	No (n=25)	**Yes** (n= 07)	02	05	**0.378**
		No (n=18)	10	08	
Disease duration	**Up to 4 months** (n=57)	**Yes** (n=12)	02	10	**0.021**
		No (n=45)	26	19	
	More than 4 months (n= 03)	**Yes** (n=03)	02	01	**NA**
		No (n=NIL)	NIL	NIL	
Size	**Up to 2 Cm** (n=55)	**Yes** (n=10)	02	08	**0.040**
		No (n=45)	26	19	
	More than 2 Cm (n= 05)	**Yes** (n=05)	02	03	**NA**
		No (n=00)	NIL	NIL	

Discussion

Breast abscesses represent a complication of mastitis, frequently evolving from acute bacterial mastitis that fails to respond to antibiotic treatment (9, 10). They are more commonly seen in non-puerperal mastitis and pose a challenge due to discomfort and high recurrence rates (11). Ultrasonography (US) is the preferred diagnostic modality, especially when abscesses are small and deep-seated within the breast (11, 12).

Traditionally, surgical incision followed by drainage and antibiotic therapy has been the standard treatment for breast abscesses (13). However, this approach can interfere with lactation and result in poor cosmetic outcomes. Recent advancements advocate for US-guided needle aspiration or catheter drainage as effective alternatives (14).

Our study included 60 eligible patients meeting the study's inclusion criteria. The mean age of the participants was 25.58 ± 3.64 years, with the majority (88.3%) aged up to 30 years. A significant proportion (58.3%) of patients resided in rural areas, and the majority (71.7%) were married (15). Obesity was present in 11.7% of cases, and the mean body mass index was 25.12 ± 1.97 kg/m2. Most patients (58.3%) were lactating, with the mean duration of abscess noted at 3.25 ± 0.57 months, and 95.0% had an illness duration of up to 4 months.

The mean size of breast abscesses was 1.20 ± 0.18 centimeters, with 91.7% having a size of up to 2 centimeters. Diabetes was not observed in any of the study cases. Recurrence was noted in 15 (25.0%) cases, with a recurrence rate of 13.3% in the needle aspiration group and 36.7% in the incision and drainage group (p = 0.072).

Our findings align with previous studies reporting varying recurrence rates between needle aspiration and incision and drainage groups. Further research is warranted to refine treatment strategies and minimize recurrence rates in breast abscess management.

Conclusion

The recurrence of breast abscess was lower in the aspiration group compared with incision and drainage. Therefore, our study results support the use of the needle aspiration technique for managing breast abscesses. All surgeons treating such patients should employ the aspiration technique to achieve the desired outcomes, which will decrease the burden of related morbidities and mortalities.

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Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned.(NHMP-2019/02-217)
Consent for publication
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SYED SHAMS UL HASSAN (Assistant Professor)
Study Design, Review of Literature.
Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.
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Conception of Study, Final approval of manuscript.
Manuscript revisions, critical input.
Coordination of collaborative efforts.
Manuscript drafting.
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Data entry and data analysis, as well as drafting the article.
Data acquisition and analysis.
Coordination of collaborative efforts.

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