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Original research article

Comprehensive study comparing percutaneous suction drain implantation to conventional incision and drainage in cases of breast abscess

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Abstract

Aim and objectives: To evaluate the effects of percutaneous suction drainage on breast abscesses, postoperative discomfort, and residual abscess. duration of hospitalization, Complete recovery takes time, and a scar may develop. The conventional method of breast abscess incision and drainage has gradually evolved from invasive to minimally invasive, with the percutaneous installation of a suction drain as an alternative.

Methods: for a prospective trial 70 patients were admitted to the Department of Surgery, K.M.C/M.G.M Hospital, Warangal, Telangana, India between April 2021 to March 2022. There were enrolled a total of 70 patients with a primary diagnosis of puerperal breast abscess. In addition to receiving, I&D, another 35 patients had their percutaneous suction drains inserted.

Results: All of the percutaneous drain installation patients (VAS G1 and G2) reported minimal post-operative pain (G4 and G5) when compared to the I and D group. Remaining abscesses in three cases—two in the PDP group, one each in the I and D groups—were treated with incision and drainage. In the I and D groups, the typical hospital stay was 4-6 days, whereas the PDP group's average hospital stay was 4-6 days. Complete recovery took 4.2+1.2 weeks for patients with I and D and 1.7+0.5 weeks for patients with PDP. Patients who underwent PDP, as opposed to those who had the standard procedure, had a small, unsightly scar at the entry and exit sites.

Conclusion: In comparison to the standard approach, percutaneous implantation of a suction drain in a puerperal breast abscess is less invasive (painful), more likely to resolve quickly, heal with less scarring, and has a lower risk of complications.

Keywords: Puerperal, breast abscess, incision, drainage, percutaneous

Introduction

Acute bacterial mastitis can develop into a pyogenic abscess if antibiotic treatment is unsuccessful, and breast abscesses are a complication of mastitis. In non-puerperal mastitis rather than puerperal mastitis, breast abscesses are more frequently seen, and because of the severe discomfort and propensity for recurrence, they can be a particularly challenging condition. Ultrasonography (US) is the preferred method for diagnosis when an abscess is small and deeply embedded in the breast because it can be clinically challenging to identify and distinguish from mastitis [1, 2].

Elements of the stroma and parenchyma make up the human breast. The environment for the parenchyma's development is provided by the stroma, which is primarily made up of adipose tissue. The parenchyma develops a system of branching ducts that eventually leads to the development of secretory acini [3-5]. Lactational mastitis complications are the main cause of breast abscesses. The prevalence of breast abscess varies among lactating mothers and ranges from 0.4% to 11%. Patients who are obese and smokers are more likely than the general population to develop breast abscesses [6, 7].

The standard course of treatment for breast abscess entails incision, drainage of pus, and anti-staphylococcal drugs; however, this course of treatment is accompanied by constant dressings, a protracted healing period, difficulty breastfeeding, a potential for milk fistula, and an unfavorable cosmetic outcome. Recent reports suggest that breast abscesses can be treated with vacuum drainage and repeated needle aspirations [7, 8]. Cellulitis, which doesn't result in pus production or abscesses, can arise from clinical issues. An accurate evaluation of the situation is essential. Surgery during the early stages of the cellulitic process is harmful and unnecessary, and continuing antibiotic therapy while an abscess is present raises the possibility of tissue damage from the disease process.

Before having an ultrasonography exam, it is advised to aspirate the cellulitic region with a test needle. The needle can be inserted into the cavity if an abscess is visible on ultrasonography. It is wrong to put off drainage until fluctuation and pointing have emerged because doing so would endanger the breast tissue with additional harm. It should be done a bacteriological analysis on the material that was aspirated even

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if no pus is aspirated [9]. By using this technique, the rare occurrence of inflammatory carcinoma may be identified on the smear, preventing surgery in this difficult circumstance. Treatment Taylor and Way succinctly summarized the basic principles of therapy: stop the infection, empty the breast. Different methods are employed to achieve this in the cellulitic and abscess stages.

The purpose of this article is to review existing research and offer recommendations for the management of lactational mastitis and breast abscesses [9]. The standard surgical method of incision and drainage (I and D), breaking loculi, and insertion of a drain under general anesthesia or daily gauze packing has been replaced by the minimally invasive approach of percutaneous placement of a suction drain and aspiration/repeated aspiration of the abscess. Some morbidity and breast function loss result from the incision and drainage technique. A recent technique that has gained attention involves inserting a percutaneous drain while being protected from microbes. With this approach, there are no aftereffects or scars, and the patient can continue breastfeeding [9, 10].

Material and Methods

Methodology

At the Department of Surgery, K.M.C/M.G.M Hospital, Warangal, Telangana, India, 70 patients were admitted between April 2021 to March 2022. For this investigation, 70 patients who had breast abscesses as their primary diagnosis during admission were used. A comprehensive clinical examination and a thorough history were used to make the diagnosis of breast abscess. These patients went through the required preoperative testing.

Inclusion Criteria

- Patients with a positive fluctuation and a clinical diagnosis of breast abscess.
- Patients who had surgery, such as incision and drainage or percutaneous suction drain placement.

Exclusion Criteria

- Breast abscess from a different cause, such as tuberculosis.
- Those patients who were unwilling to have surgery.

Results

Table 1: Comparison of age wise distribution of cases

	Groups	
	I and D	**PDP**
No. of cases	35	35
Age (Yrs): Mean ± SD	30.3±3.3	30.5±3.2
Range	20 - 30 Yrs	19- 30 Yrs

The current study only included cases of puerperal breast abscess, and those between the ages of 24 and 30 were most frequently affected, with 35 cases (50%) followed by those between the ages of 19 and 24, with 35 cases (50%) each. In our study, 19 was the average age of both the youngest and oldest patients.

Table 2: Comparison of post-operative pain

Post OP Pain (VAS)	**Groups**				**Total**
	I and D		**PDP**		
	No.	**%**	**No.**	**%**	
G1	0	-	20	57	20
G2	0	-	15	43	15
G3	0	-	0	-	-
G4	16	46	0	-	16
G5	19	54	0	-	19
Total	35	100	35	100	70

In the current study, the median VAS grade for those with I and D was G5, with G4 coming in second place (46%). The PDP group's VAS median grade was G1, and G2 (43%), which was close behind.

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Table 3: Comparison of residual abscess cases

Residual Abscess	Groups			
	I and D		PDP	
	No.	%	No.	%
Yes	2	6	3	9
No	33	94	32	91
Total	35	100	35	100

In the present study, there were 2 (6% of patients) in the I and D group and 3 (9% of patients) in the PDP group who both had residual abscesses.

Table 4: Comparison of duration of hospital stay (Days)

Duration of HOSP stay (days)	Groups	
	I and D	PDP
Mean ± SD	7.9 ± 0.8	3.9 ± 1.5
Range	7 - 10 days	3 - 7 days

The average length of stay in the current study was 7.9 + 0.8 days for patients categorized as I and D and 3.9 + 1.5 days for PDP patients. Between the two groups, there were large discrepancies.

Table 5: Comparison of duration of complete healing (Weeks)

Duration of Complete Healing (WKS)	Groups	
	I and D	PDP
Mean ± SD	4.3±1.3	1.8±0.6
Range	3 - 6 Wks	1.4 - 3.3 Wks

In the present study, the mean healing time was 4.3 + 1.3 weeks for I and D patients and 1.8 + 0.6 weeks for PDP patients. Between the two groups, there were large discrepancies.

Table 6: Comparison of size of the scar

Size of the Scar (cm)	Groups			
	I and D		PDP	
	No.	%	No.	%
0.5x1, 0.5x1	0	-	31	88
4x2	16	46	4	12
5x2	11	31	0	-
6x2	5	14	0	-
7x2	3	9	0	-
Total	35	100	35	100

16 (46%) patients in the I and D groups had scars that were 4x2 cm in size, and 11 (31%) patients had scars that were 5x2 cm in size. 31 (88%) participants in the PDP group had two scars with an average size of 0.5 x 1 cm. The scar size in the other 2 PDP group patients was 4x2cms because these patients had residual abscesses and received traditional I and D treatment. Between the two groups, there were large discrepancies.

Drain dislodging didn't happen to any patients. No drain replacement was required prior to removal. Most of our patients had their drains taken out on the third day after surgery. A pus sample from each patient was sent for culture and sensitivity testing. According to the results, 45 people tested positive for Staphylococcus aureus, 5 for pseudomonas, and 10 for sterility. There was no culture of anaerobic pus. Cefixime, augumentin, and ampiclox were found to be effective treatments for the issue.

Discussion

The standard treatment for puerperal breast abscess is open surgical drainage, but percutaneous suction drain implantation has emerged as a viable alternative and has shown encouraging results. The median VAS grade in the current study for those with I and D was G5, with G4 (46%) coming in second [11, 12].

The PDP group's VAS median grade was G1 (43%), followed by G2 (43%). More discomfort was felt by patients in groups I and D compared to group PDP. Contrary to what we discovered, a number of comparative studies on the treatment of breast abscesses seem to have disregarded pain as a factor in clinical outcome. 3 (9% of patients) in the I and D groups and 2 (6% of patients) in the PDP group both developed residual abscesses in the current study. No patients in the PDP group in the Tewari *et al*. trial had a persistent abscess [12, 13]. Similar to the current study, group I and group D in Saleem *et al*. 2008's study saw 1 (4% of patients) develop a residual abscess.

In this study, the I and D groups' average post-operative hospital stay was 7.8(0.9) days, compared to

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3.8(1.1) days for the PDP group. We used a short period of general anesthesia during the procedure. To break up the loculi, the trochar of suction drain is rotated and moved across the length of the abscess chamber [13, 14].

Given that PDP was carried out under local anesthesia in the study by Tewari *et al*., it was done there. The average length of stay in the hospital following surgery for the I and D groups in the Saleem *et al*. trial was 4 days. The I and D groups had longer postoperative hospital stays, according to similar research by Kaushal *et al*. The average hospital stay in the current study was 7.9 + 0.8 days for patients I and D and 3.9 + 1.5 days for patients with PDP. There were significant differences between the two groups [14, 15]. The Tewari *et al* study does not specify the amount of time required for complete recovery.'s In the Saleem *et al* study, the I and D groups' average recovery time was 3 [4] weeks. The I and D groups took longer to fully heal, according to earlier research by Kaushal *et al*.

Scars that were 4x2 cm and 5x2 cm in size were present in 16 (46%) and 11 (31%) patients from the I and D groups, respectively, in the current study. The two scars in the PDP group had an average size of 0.5 x 1 cm and were present in 31 (88%) patients [16]. The two scars (entry and exit wounds) seen in the PDP group were on average 0.5 x 2 cm in size in 10 (33%) people. 16 (46%) of the patients that I and D treated who still had abscesses had scars that measured 4 by 2 cm. When PDP was administered to the patients, Tewari *et al*. noticed comparable tiny scars [3, 17].

There are many advantages to the current percutaneous suction drainage procedure for breast abscesses: Each loculus was punctured while the suction drain trochar was being moved back and forth along the entire length of the abscess cavity, which involved all 35 patients. The abscess cavity's early collapse was also helped by the suction drain's negative pressure. The available research suggests that breastfeeding should continue while receiving treatment for puerperal breast abscess. There was no deformation or scarring of the breast parenchyma. The suction drain attachment had minimal side effects, did not require USG localization of the abscess cavity, cost less than PBA therapy, and preserved the shape and function of the breast [17]. But only highly fluctuating PBA can be drained using this method. The point of entry and exit of the suction drain trochar must change according to the location of the PBA in the breast.

Conclusion

The standard treatment options (I and D) should not be used to treat a puerperal breast abscess. Instead, a suction drain should be implanted percutaneously. less invasive (painful), requires a shorter hospital stay, recovers faster, and leaves fewer scars. In terms of post-operative pain, hospital stay, time it takes for full healing, and scar size, PDP performs better than traditional methods.

Funding source

None

Conflict of interest

None

References

1. Hayes R, Michell M, Nunnerley HB. Acute inflammation of the breast – the role of breast ultrasound in diagnosis and management. Clin Radiol. 1991;44:253–256.
2. Jackson VP. The role of US in breast imaging. Radiology. 1990;177:305–311.
3. Saleem S, Farooq T, Khan N, Shafiq M, Azeem M, Dab RH. Puerperal breast abscesses; percutaneous ultrasound guided drainage compared with conventional incision and drainage. Professional Medical Journal. 2008 Dec;15(4):431-436.
4. Tewari M, Shukla HS. An effective method of drainage of puerperal breast abscess by percutaneous placement of suction drain. Indian Journal of Surgery. 2006 Dec;68(6):330-333.
5. Karstrup S, Nolsoe C, Brabrand K, Nielsen KR. Ultrasonically guided percutaneous drainage of breast abscesses. Acta Radiology. 1990;31(2):157-159.
6. Anaya DA. Surgical infections and choice of antibiotics. Sabiston textbook of surgery: the biological basis of modern surgical practice; c2004.
7. Lam E, Chan T, Wiseman SM. Breast abscess: evidence based management recommendations. Expert review of anti-infective therapy. 2014;12(7):753-762.
8. Thompson AM. Disorders of the breast. In Essential Surgical Practice. CRC Press. 2015, 389-423.
9. Kataria K, Srivastava A, Dhar A. Management of lactational mastitis and breast abscesses: review of current knowledge and practice. Indian Journal of Surgery. 2013;75(6):430-435.
10. Trop I, Dugas A, David J, El Khoury M, Boileau JF, Larouche N, *et al*. Breast abscesses: evidence-based algorithms for diagnosis, management, and follow-up. Radiographics. 2011;31(6):1683-1699.
11. Surana K, Sagrule D, Lanjewar S. Primary closure with suction drain of acute breast abscess after incision, drainage, and curettage. Indian Journal of Surgery. 2020;82(2):129-133.
12. Eryilmaz R, Sahin M, Tekelioglu MH, Daldal E. Management of lactational breast abscesses. The Breast. 2005;14(5):375-379.

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13. Mallika T, Shukla HS. Point of technique-An effective method of drainage of puerperal breast abscess by percutaneous placement of suction drain. Indian Journal of Surgery.2006;68(6):330-333.
14. Singh A, Singh G, Sidhu DS, Bhalla M. Conventional incision and drainage versus incision and drainage with primary closure in acute abscess: a prospective study. International Surgery Journal. 2017;5(1):281-285.
15. Sheikh WI. Comparison of multiple needle aspirations and open surgical drainage in management of breast abscess. Journal of Rawalpindi Medical College. 2009;13(1):30-33.
16. Hook GW, Ikeda D. Treatment of breast abscesses with US-guided percutaneous needle drainage without indwelling catheter placement. Radiology. 1999;213(2):579-582.
17. Suthar K, Mewada BN, Surati K, Shah J. Comparison of percutaneous ultrasound guided needed aspiration and open surgical drainage in management of puerperal breast abscess. Int J Med Sci Public Health. 2013;2(1):69-72.