DOI: https://doi.org/10.54393/pjhs.v7i8.3587

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (E): 2790-9352, (P): 2790-9344
Volume 7, Issue 08 (August 2026)

Original Article

OPEN ACCESS

Comparison of Incision and Drainage with Needle Aspiration in the Treatment of Breast Abscess

Areej Mubashir[1], Ayesha Tahir[2*], Sadeeq Ahmad[3] and Shahzad Ahmed[4]

[1]Department of General Surgery, Abbottabad International Medical Institute, Abbottabad, Pakistan
[2]Department of Surgery, District Headquarter Hospital, Haripur, Pakistan
[3]Department of General Surgery, Medical Teaching Institution, Mardan Medical Complex, Mardan, Pakistan
[4]Department of General Surgery, Jinnah International Hospital, Abbottabad, Pakistan

ARTICLE INFO

Keywords:
Breast Abscess, Incision and Drainage, Needle Aspiration, Lactational Mastitis, Ultrasound-Guided Aspiration

How to Cite:
Mubashir, A., Tahir, A., Ahmad, S., & Ahmed, S. (2026). Comparison of Incision and Drainage with Needle Aspiration in the Treatment of Breast Abscess: Incision and Drainage with Needle Aspiration in the Treatment of Breast Abscess. Pakistan Journal of Health Sciences, 7(8), 133-138. https://doi.org/10.54393/pjhs.v7i8.3587

Corresponding Author:
Ayesha Tahir
Department of Surgery, District Headquarter Hospital, Haripur, Pakistan
at97832@gmail.com

Received Date: 4th November, 2025
1st Revision Received: 20th February, 2026
Acceptance Date: 14th April, 2026
Published Date: 31st August, 2026

ABSTRACT

Breast abscess is a common complication of mastitis in low- and middle-income countries and may impair cosmetic appearance and breastfeeding. Conventional incision and drainage (I/D) are effective but associated with scarring and delayed recovery. Ultrasound-guided needle aspiration is a minimally invasive alternative. **Objective:** To compare the efficacy of ultrasound-guided needle aspiration and I/D in the management of breast abscesses. **Methods:** This retrospective comparative study was conducted in the Department of Surgery, Hayatabad Medical Complex, Peshawar, from August to October 2025. A total of 110 female patients (18–60 years) with breast abscesses of ≥3 days duration was included using record-based sampling. Patients with BMI >29.9 kg/m^2, chronic diabetes, or recent breast intervention were excluded. Group A (n=55) underwent I/D, while Group B (n=55) received ultrasound-guided needle aspiration. All patients received antibiotics. The primary outcome was treatment success (complete resolution without recurrence). Data were analyzed using SPSS version 23.0, and a chi-square test was applied. A p-value <0.05 was considered significant. **Results:** Mean age was 29.17 ± 9.44 years in Group A and 30.11 ± 8.56 years in Group B. Overall, 63.6% were lactating women. Treatment success was achieved in 37/55 (67.3%) patients in Group A and 53/55 (96.4%) in Group B. The difference was statistically significant (p<0.01). **Conclusions:** Ultrasound-guided needle aspiration demonstrated significantly higher success rates than I/D and offers a less invasive approach with a better recovery profile. It should be considered the preferred first-line treatment in appropriately selected patients.

INTRODUCTION

The complication of the breast abscess is a rare event of mastitis, especially when the treatment is inadequate or delayed [1]. To women, this disease brings a lot of concern [2]. Regardless of being puerperal or not, the traditional treatment was the incision and drainage, but this method is expensive, leaves scars, and requires follow-ups, which are usually post-surgical, such as cessation of breastfeeding [3]. Non-puerperal breast abscess is a rare phenomenon whose recurrence and microbiological range are severe, whereas puerperal breast abscess is a common problem in nursing women [4, 5]. Infected and noninfectious mastitis occur in 9% 33% of nursing mothers, and the abscesses occasionally worsen the mastitis up to 11%. Staphylococcus aureus (SA) is the most common pathogen in up to 100 percent of cases that have culture-confirmed postpartum breast abscesses. Previously, most of the studies examined factors that put women at risk of developing breast abscesses and found that obesity, low parity, and early maternal age are predictors of postpartum development of breast abscesses [6, 7]. The gold standards of treating breast abscesses are surgical incision, drainage, and systemic administration of

DOI: https://doi.org/10.54393/pjhs.v7i8.3587

antibiotics. Knowledge of the kind of pathogens that cause the breast abscesses and their trends of resistance can help the surgeon in choosing the most effective empirical therapy to enhance the outcome of acute bacterial mastitis and the least invasive drainage methods combined with the use of antimicrobial drugs. Breast abscesses can be treated by repeated aspiration with or without ultrasound guidance [8]. This treatment has been successfully used and associated with early recovery, early restoration of breastfeeding, and excellent cosmetic results. The mean day 3 pain score of the incision and drainage group was 4.22 ± 2.82, and that of the needle aspiration group was 5.72 ± 1.82, according to one trial previously carried out. The mean pain score of the incision and drainage group was 1.73 ± 2.87 and 3.89 ± 2.12 for the needle aspiration group on day 14 [9, 10]. 94% of the needle aspiration group participants had no pain on day 14 [9, 10]. In one other study, incision, drainage, and needle aspiration success rates were 82.9, 97.1%, respectively [11]. I/D normally serves as the treatment of breast abscesses, although it leads to further discomfort and cosmetic damage, which is why it is not recommended by surgeons or patients. As the literature suggests, needle aspiration is an excellent choice of cosmetic treatment and, at the same time, this method is effective in reducing post-procedure pain and facilitating a rapid recovery. The results of the study assist us in identifying the local success rate of I/D and needle aspiration in patients with breast abscess, and the results also assist us in making recommendations as regards to needle aspiration in the future. This paper is a comparison of the effectiveness of needle aspiration and incision and drainage of the breast abscess. The presence of a breast abscess was confirmed by the presence of bacterial growth on the laboratory test of the hospital, where the woman had a history of breast ulcer and purulent material discharge. The effectiveness of the treatment is assessed by the degree of pain that will be reported on the 7th day after the therapy. Patients will be classified as having successfully been treated on a score that is lower than 3. Visual Analogue Scale will be adopted to assess the pain; 0 will represent the absence of pain and 10 the worst possible discomfort. Particularly, this assessment will be performed on the seventh day after the surgery.

Although increasing evidence supports needle aspiration as compared to incision and drainage in the management of breast abscesses, various gaps in the literature exist. Pakistan does not have any large-scale, prospective, multicenter comparative data on these two treatment modalities, and most of the existing data is based on small, single-center retrospective studies or global cohorts that may not be representative of local patients, healthcare facilities, and resistance patterns of pathogens. This study aimed to compare the efficacy of ultrasound-guided needle aspiration and incision and drainage in the treatment of breast abscesses in a tertiary care unit in Pakistan.

METHODS

This retrospective comparison study was conducted in the Department of Surgery, Hayatabad Medical Complex, Peshawar, within a three-month duration (August 2025 to October 2025), with the institutional ethical review commission (IRB Approval number 2687; dated 13th August 2025) concurring with it. An assessment of patient data was conducted retrospectively by reviewing medical records of the hospital and departmental surgical logs. The necessary number of cases per group was set to 55 to achieve a 95% confidence level and 80% test power since the former had been reported to be 97.1% successful with needle aspiration and 82.9% successful with incision and drainage. Patients were put in the right therapy groups based on the management they had before recorded in their medical records. The trial involved female subjects aged 18 to 60 years who had a breast abscess lasting at least three days that was treated using ultrasound-guided needle aspiration or incisions and drainage. The patients with a body mass index (BMI) above 29.9, a history of chronic diabetes mellitus, or other severe comorbidities that may interfere with wound healing or response to infections had been excluded. These exclusion criteria were employed to minimize the chances of confounding factors and ensure that the comparability of the two groups was achieved. Patient data, including demographic, clinical presentation, method of treatment, antibiotic regimen, and postoperative follow-up information, were obtained in the hospital using the electronic and manual medical records. Procedural details were checked by using operative notes and ultrasound reports. Group A comprised patients who had been treated by incision and drainage under general anesthesia, and Group B comprised patients treated by ultrasound-guided needle aspiration, which was done within up to three consecutive sessions by a surgeon with at least five years of experience. All patients took 1 gram of oral cotrimoxazole daily for 14 days as a part of their usual treatment regimen. Pain assessment levels and treatment outcomes were recorded in the outpatient follow-up charts during the follow-up visits, which were normally around the seventh day after the surgery. The primary outcome was treatment success (complete abscess closure without recurrence or further surgical intervention). Secondary outcomes were recovery time and levels of surgical pain. Pain scale measurement was an evaluation of the visual analogue scale (VAS), which was introduced into patient charts. The research was conducted in accordance with the permission granted by the Institutional Review Board. Going by ethical provisions

DOI: https://doi.org/10.54393/pjhs.v7i8.3587

of retrospective research, individual informed permission was not necessary since the research involved the use of already-existing hospital information and not direct interaction with the patients. All patient information was anonymized and kept confidential before the analysis.

Data were analyzed using SPSS version 23.0. Continuous variables such as age and BMI were expressed as mean ± standard deviation and compared between groups using the independent samples t-test. Categorical variables, including treatment success and lactational status, were presented as frequencies and percentages and compared using the Chi-square test. Chi-square (χ^2) values and corresponding p-values were reported for frequency comparisons. A 95% confidence interval was applied, and a p-value of less than 0.05 was considered statistically significant. Chi-square analysis was then done in a post-stratification manner. To make it clear, the results were provided in tables and graphs.

RESULTS

Demographic features of the two study groups were the same in terms of age and body mass index (BMI). In the first group, Group A, which included the patients with incision and drainage (I/D), the mean age was 29.17 years, and the standard deviation was 9.44 years. Group B consisted of patients whose average age was 30.11 years, and the standard deviation was 8.56 years; they had ultrasound-guided needle aspiration. The BMI scores were similar across the groups, with Group A having a mean BMI of 23.6 kg/m^2 and Group B having just a slightly higher mean BMI of 24.2 kg/m^2. The data reveal that there was no significant difference between the two groups in terms of demographics, and this minimized the chances of confounding factors in terms of age or BMI difference (Table 1).

Table 1: Baseline Demographic Characteristics of Patients Undergoing Incision & Drainage (I/D) and Ultrasound-Guided Needle Aspiration (n=110)

Variables	Group A (I/D) (n=55), Mean ± SD	Group B (Needle Aspiration) (n=55), Mean ± SD	p-value
Age (years)	29.17 ± 9.44	30.11 ± 8.56	0.58
BMI (kg/m^2)	23.6 ± 2.9	24.2 ± 3.1	0.41

Independent samples t-test applied. A p-value <0.05 was considered statistically significant

To answer the question of whether the status of breastfeeding may play a role in the outcome of the treatment, the proportion of lactating and non-lactating women in the two treatment groups was studied. Group A (incision and drainage) contained 55 patients, with 39 (70.9%) being nursing and 16 (20.1%) not. Group B (needle aspiration) consisted of 24 (43.6%) and 31 (56.4%) patients who were not and were lactating, respectively. Out of the total number of patients, 110, 70 (63.6%) were nursing and 40 (36.4%) were not. Despite having a larger number of lactating women in Group A, compared to Group B, both groups had a mix of patients who were and were not nursing, which made it possible to assess the effectiveness of the treatment between such groupings (Table 2).

Table 2: Distribution of Lactational Status Among Patients in Both Treatment Groups

Lactation Status	Group A, n (%)	Group B, n (%)	p-value
Yes	39 (70.9%)	31 (56.4%)	0.08
No	16 (29.1%)	24 (43.6%)	
Total	55 (100%)	55 (100%)	–

The acuity of the success of the treatment in the two groups showed a statistically significant difference. In Group A (incision and drainage), 37 of 55 (67.3%) of patients were successfully treated, and in Group B (needle aspiration), 53 of 55 patients (96.4%) were successfully treated. Group A had 18 patients (32.7% fail to respond to treatment) and Group B had 2 patients (3.6%), who had an overall success rate of 90 of 110 in both groups. The Chi-square test was used to determine the difference between the success rates of the two groups, and a p-value of less than 0.01 was obtained, which implied that the difference was highly significant. This observation indicates that ultrasound-directed needle aspiration is much more effective than incision and drainage in the management of breast abscesses (Table 3).

Table 3: Comparison of Treatment Success Between Incision & Drainage and Ultrasound-Guided Needle Aspiration

Outcomes	Group A (I/D), n (%)	Group B (Needle Aspiration), n (%)	χ^2	p-value
Success	37 (67.3%)	53 (96.4%)	17.82	<0.01*
Failure	18 (32.7%)	2 (3.6%)		
Total	55 (100%)	55 (100%)	–	–

*Chi-square test applied

DISCUSSION

The breast is one of the female secondary sex characteristics. To ensure that the breast is preserved in value and functionality throughout the course of treatment, one should make an effort to minimize any form of compromise against the shape and contour of the breast. In developed countries, breast abscesses are decreasing due to the improved maternal nutrition level, hygiene, standard of living, and early treatment with antibiotics. Nevertheless, breast abscess is still a major issue in women in developing countries [12]. In case of the occurrence of a breast abscess, draining and excising of the pus is the targeted intervention; it is offered as the first-line treatment. Incision drainage is an invasive procedure in breast abscesses, which can leave an unsightly scar, take more time to heal, leave the mother with an unpleasant wound on the breast (it is a very

DOI: https://doi.org/10.54393/pjhs.v7i8.3587

innervated organ, especially around the nipple areola complex), require general anesthesia and repeated dressings following the procedure, as well as leaving the mother with problems breastfeeding [12, 13]. Other possible effects include Keloid growth and hypertrophic scarring. A mammary fistula can be caused by opening up a milk duct in the process of surgery to deal with a subareolar breast abscess due to periductal mastitis. Breast deformity and adhesions of the glandular tissue can also result from surgical drainage [12]. The latest form of treatment for most abscesses is multiple needle aspirations with antibiotic cover. In most of the instances of breast abscess, it is a less invasive care method that may replace surgery. As it has been demonstrated, needle aspiration is the most desirable way of treating breast abscesses [14, 15]. The findings of this research indicate that ultrasound-assisted needle aspiration is evidently better than incision and drainage (I/D) in the treatment of breast abscesses, particularly in terms of patient outcome and success of its treatment. The baseline demographics of the two treatment groups(age and body mass index, BMI) did not differ significantly between the two treatment groups. This ensured that the nature of the intervention methods, rather than demographic variables, would be the ones to blame for the treatment outcomes. Traditionally, breast abscesses have been treated with the help of surgical incision and drainage, yet this approach has several drawbacks, including the prolonged period of recovery, scarring, inability to breastfeed, and additional discomfort in patients [16]. The present study is aligned with the newer data indicating that ultrasound-guided needle aspiration is a less invasive procedure that enhances patient adherence and accelerates the healing process [16-18]. In this research, 96.4 percent of patients in Group B (needle aspiration) were symptom-relieved, which is significantly higher than the 67.3 percent of patients in Group A (I/D). The practical value of this difference ($p<0.01$) indicates the effectiveness of needle aspiration. In a study, similar results showed that ultrasound-guided aspiration recorded a 95 percent success rate as opposed to 86 percent for incision and drainage [19]. This implies that needle aspiration is not only an effective means of first-line treatment of uncomplicated breast abscesses, but also an effective mode of treatment. The lactation status was also determined to determine its potential impact on the outcome of treatment. The fact that both groups were composed of a large proportion of a mix of lactating and non-lactating patients, even though Group A consisted of more lactating women than Group B, made an objective assessment across subgroups possible. The general preponderance of breastfeeding women represented in the sample indicates the prevalence of lactational breast abscesses due to earlier studies indicating lactation to be an important risk factor [20]. The proper localization of the abscess cavity, avoidance of considerable tissue trauma, reduction of pain, and maintenance of breastfeeding are just some of the advantages of needle aspiration, especially when performed under ultrasound guidance [21]. These benefits are critical in the case of nursing moms who often desire to continue breastfeeding during and after chemotherapy. Also, eliminating the need to admit patients to a hospital and general anesthesia, many aspirations can be performed as outpatient procedures, which lessens the economic and resource burden on health systems. Conversely, although considered to be the standard treatment in the past, incision and drainage are associated with long recovery periods and may cause disruptions with breastfeeding [22]. The increased failure rate that was demonstrated in I/D group in this study may be due to incomplete drainage, reinfection, or complications of surgical intervention. The current findings add to the growing body of information that there should be a shift in the clinical practice towards the less invasive methods of treatment of breast abscesses, particularly when it comes to patients who have been thoroughly selected. The most important thing to keep in mind is that larger or multiloculated abscesses or those that fail to respond to the early needle aspiration may still require surgical drainage. Thus, when developing individualized treatment recommendations, patient choices, abscess characteristics, and clinical manifestations must all be considered.

This study has several limitations. First, the retrospective design limits the ability to establish causal relationships and is subject to selection and information bias due to reliance on existing medical records. Second, the study was conducted at a single tertiary care center over a short duration, which may limit the generalizability of the findings to other settings. Third, cosmetic outcomes were not objectively measured using a standardized scoring system, and detailed quantitative comparison of postoperative pain scores was not separately tabulated, which restricts comprehensive assessment of patient-centered outcomes. Additionally, long-term recurrence rates were not evaluated beyond the routine follow-up period. Future prospective multicenter studies with standardized outcome measures and longer follow-up are recommended to validate these findings.

CONCLUSIONS

This study demonstrates that ultrasound-guided needle aspiration is more effective than incision and drainage in the management of breast abscesses. It offers several advantages, including a minimally invasive approach, improved clinical recovery, preservation of breastfeeding,

DOI: https://doi.org/10.54393/pjhs.v7i8.3587

and better cosmetic outcomes. Given its favorable patient-centered profile and reduced tissue trauma, ultrasound-guided needle aspiration should be considered the preferred first-line treatment in appropriately selected patients with uncomplicated breast abscesses, while surgical drainage may still be required in complex or refractory cases.

Authors' Contribution

Conceptualization: AT
Methodology: AM, AT
Formal analysis: AAT, SA[1]
Writing and Drafting: AM, AT, SA[1], SA[2]
Review and Editing: AM, AT, SA[1], SA[2]

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

REFERENCES

[1] Egbe TO, Njamen TN, Essome H, Tendongfor N. The Estimated Incidence of Lactational Breast Abscess and Description of Its Management by Percutaneous Aspiration at the Douala General Hospital, Cameroon. International Breastfeeding Journal. 2020 Apr; 15(1): 26. doi: 10.1186/s13006-020-00271-2.

[2] Srivastava V, Meena RK, Ansari MA, Kumar D, Kumar A. A Study of Anxiety and Depression in Benign Breast Disease. Journal of Mid-Life Health. 2020 Oct; 11(4): 200-9. doi: 10.4103/jmh.JMH_85_20.

[3] Luo J, Long T, Cai Y, Teng Y, Fan Z, Liang Z *et al.* Abscess Drainage with or Without Antibiotics in Lactational Breast Abscess: Study Protocol for a Randomized Controlled Trial. Infection and Drug Resistance. 2020 Jan: 183-90. doi: 10.2147/IDR.S221037.

[4] Lukassek J, Ignatov A, Faerber J, Costa SD, Eggemann H. Puerperal Mastitis in the Past Decade: Results of a Single Institution Analysis. Archives of Gynecology and Obstetrics. 2019 Dec; 300(6): 1637-44. doi: 10.1007/s00404-019-05333-3.

[5] Yao YD, Dong BB, Wu W, Li Q, Chen Y, Chen BJ *et al.* Clinical Diagnostic Management and Bacteriological Etiology of Non-Puerperal Mastitis in the Population of Southern China. Journal of Bio-X Research. 2018 Jun; 1(01): 25-31. doi: 10.1097/JBR.0000000000000004.

[6] Ullah K, Ahmad N, Jan Z, Shoaib A. Bacteriology and Antibiotic sensitivity of Breast Abscess. Journal of Saidu Medical College. 2019; 9(2).

[7] Chen C, Luo LB, Gao D, Qu R, Guo YM, Huo JL *et al.* Surgical Drainage of Lactational Breast Abscess with Ultrasound-Guided Encor Vacuum-Assisted Breast Biopsy System. The Breast Journal. 2019 Sep; 25(5): 889-97. doi: 10.1111/tbj.13350.

[8] Hussain N, Khan I, Ahmed T, Parveen S, Malik M, Khan MI. Comparison of the Restoration of Breastfeeding After Percutaneous Aspiration vs Incision and Drainage for Management of Breast Abscess. Journal of Liaquat University of Medical and Health Sciences. 2018; 17(01): 47-51. doi: 10.22442/jlumhs.181710548.

[9] Dayal P and Lal M. A Comparative Study of Outcomes in Management of Breast Abscess by Ultrasound Guided Needle Aspiration Against Incision and Drainage. International Journal of Medical and Biomedical Studies. 2019; 3(4). doi: 10.32553/ijmbs.v3i4.201.

[10] Randhawa SR, Akram M, Akram H, Sajid M. Comparison of Needle Aspirations and Incision and Drainage of Breast Abscess. Journal of University Medical and Dental College. 2019 Jun; 10(2): 40-4.

[11] Mwenda AS and Wasike R. Breast Abscess Management and the Role of Post-Incisional Antibiotics. Annals of African Surgery. 2016; 13(2). doi: 10.4314/aas.v13i2.7.

[12] Larson KE and Valente SA. Milk Fistula: Diagnosis, Prevention, and Treatment. The Breast Journal. 2016 Jan; 22(1): 111-2. doi: 10.1111/tbj.12528.

[13] Kang YD and Kim YM. Comparison of Needle Aspiration and Vacuum-Assisted Biopsy in the Ultrasound-Guided Drainage of Lactational Breast Abscesses. Ultrasonography. 2016 Apr; 35(2): 148-52. doi: 10.14366/usg.15041.

[14] Afzal S, Bashir A, Shahzad H, Masroor I, Sattar AK. Ultrasound-Guided Percutaneous Aspiration for the Treatment of Breast Abscess at a Tertiary Care Center in the Developing World. Cureus. 2022 Oct; 14(10): e30865. doi: 10.7759/cureus.30865.

[15] Ghunaim H. Percutaneous Ultrasound-Guided Needle Aspiration for Management of Breast Abscesses–A Review. Journal of Medical Radiation Sciences. 2023 Sep; 70(3): 327-37. doi: 10.1002/jmrs.682.

[16] Totadri VM, Vetri R, Sainath S. A Comparative Study of Drainage of Breast Abscesses by Conventional Incision and Drainage Vs Ultrasound-Guided Needle Aspiration/Re-Aspiration in a Tertiary Health Care Centre. European Journal of Breast Health. 2024 Jul 1;20(3):194. doi: 10.4274/ejbh.galenos.2024.2024-3-2.

DOI: https://doi.org/10.54393/pjhs.v7i8.3587

[17] Ali MN, Hannan MA, Shahid SM, Kubba T, Roy D. Ultrasound Guided Needle Aspiration of Breast Abscess as an Alternative to Surgical Incision and Drainage. Journal of the Teachers Association. 2020 Jun; 33(1): 1-4. doi: 10.3329/taj.v33i1.49817.

[18] Zhou F, Li Z, Liu L, Wang F, Yu L, Xiang Y *et al.* The Effectiveness of Needle Aspiration versus Traditional Incision and Drainage in the Treatment of Breast Abscess: A Meta-Analysis. Annals of Medicine. 2023 Dec; 55(1): 2224045. doi: 10.1080/07853890.2023.2224045.

[19] Fathy E, Nashed GA, Awadallah EG, Shokralla SY, Abd Elmonim AM. Comparative Study Between Surgical Drainage of Acute Lactational Breast Abscess and Ultrasound-Guided Needle Aspiration and/or Drainage. The Egyptian Journal of Surgery. 2022 Oct; 41(1).

[20] Voruganti MR, Sistu MK, Gadipudi HC. A Comparative Study on Ultrasound-Guided Percutaneous Aspiration Versus Incision and Drainage in the Management of Small Breast Abscesses. International Surgery Journal. 2022 Feb; 9(3): 620-6. doi: 10.18203/2349-2902.isj20220632.

[21] Rigourd V, Benoit L, Paugam C, Driessen M, Charlier C, Bille E *et al.* Management of Lactating Breast Abscesses by Ultrasound-Guided Needle Aspiration and Continuation of Breastfeeding: A Pilot Study. Journal of Gynecology, Obstetrics, and Human Reproduction. 2022 Jan; 51(1): 102214. doi: 10.1016/j.jogoh.2021.102214.

[22] Tran AT, Nguyen DM, Tran QH, Nguyen QH, Nguyen Thi TH, Tran Thi DQ *et al.* Assessment of the Effectiveness of Ultrasound-Guided Needle Aspiration of Lactating Breast Abscesses. International Journal of General Medicine. 2024 Dec: 553-7. doi: 10.2147/IJGM.S449432.