

# Frequency of Mammary Fistula after Incision and Drainage of Breast Abscess and its Management

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## ABSTRACT

**Background:** Breast abscesses may be drained with incision and drainage which is sometimes followed by milk fistula, a dreadful complication. Milk fistula is a non-healing persistent abnormal communication between the mammary duct and skin which only responds to surgical fistulectomy in most cases. Non-surgical management of milk fistula is a new modality. **Aim:** The aim of the present study was to review the management of mammary duct fistula and propose a classification that could be useful in planning the management of mammary duct fistulae. **Study design:** This was a prospective study, conducted in the surgical department of Mouwasat Hospital Riyadh Saudi Arabia, for a period of 3 years, From January 2017 to December 2020. **Methods:** Sixty women presented with a mammary duct fistula. The data analyzed included age, previous abscesses, nipple abnormalities, imaging, culture, operative technique and histopathological findings. **Results:** Mean age was 26.50 years with all patients between the age ranges of 18-50 years. Majority of the patients i.e. 45% were between ages of 21-30 years, while 30% were less than 20 years of age. Most of the patients 55% had developed a breast abscess on the right side while rest 45% had left breast abscess. 60% of the patients were Primigravida. In our study a total 4 out of 80 patient's i.e. 5 % developed a mammary fistula. All patients who developed milk fistula were younger than 30 years. **Conclusion:** Milk fistula is relatively more common in our setup especially in young patients. Bromocriptine and stopping lactation is a safe and effective method of treatment in this condition.

**Keywords:** Breast Abscess, Milk Fistula, Incision and Drainage, Bromocriptine

## INTRODUCTION

A breast abscess is a painful collection of pus that forms in the breast parenchyma. Most abscesses develop just under the skin and are caused by a bacterial infection commonly *Staphylococcus Aureus*. They result from untreated, delayed, inadequate or incorrect treatment of mastitis. Risk factors include previous episodes of mastitis, avoiding breastfeeding on the affected side, maternal age over 30 years of age, first pregnancies, gestational age  $\geq 41$  weeks gestation and acute weaning. Abscesses are located sub areolar (23%), intra mammary unilocular (12%), or intra mammary multilocular (65%). Ultrasound can be used for diagnosis, although needle aspiration of pus also confirms an abscess.<sup>[1]</sup> Global prevalence of mastitis in lactating women is approximately 1% to 10% but may be higher. 3% to 11% of women with mastitis are reported to develop breast abscess with a reported incidence of 0.1% to 3% in breastfeeding women.<sup>[2]</sup> In 1953 Sir Hedley John Barnard Atkins in the United Kingdom coined a new term "mammary fistula" for a chronic infection comprising subcutaneous abscess in the region of the

areola which discharged spontaneously, resolved but recurred frequently again.<sup>[3]</sup> Mammary fistula which is also known as milk fistula is an abnormal communication between the breast skin surface and underlying lactiferous duct. Milk fistula usually form during lactation, often as a result of surgical intervention, but has also been seen after large-core needle biopsy. Peripheral lesions have a much lower risk of developing milk fistulas after open biopsy compared to deep, central lesions. Although their etiology is unknown, several hypotheses have been proposed to explain the process. Atkins hypothesized that milk fistula develops due to the obstruction of the duct secondary to nipple inversion.<sup>[4]</sup> It is a relatively rare condition with a reported incidence of 1% to 3% in literature.<sup>[5]</sup> Milk fistula may sometimes undergo unrecognized and under reported but it is a highly distressful condition causing long term morbidity for the patients and may require multiple surgeries due to high tendency of recurrence.<sup>[5]</sup> Milk fistula should not be confused with Lactiferous fistula, or Zuska's disease, which is a rare recurrent condition characterized by draining abscesses about the nipple on one or both breasts. Because little is known about the disease, it is often misdiagnosed and inappropriately treated.<sup>[6]</sup> There is a lack of data on incidence of breast abscess and milk fistulas in local literature, one study in Karachi by Khan ZM et al. has quoted a breast abscess incidence on 10.2% (n=127).<sup>[7]</sup> Bundred NJ and Dixon JM studied 40 women with mammary fistulas over a period of 6 years and found that the events preceding the fistula were incision of a per areolar breast abscess (n = 24),

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breast biopsy (n = 13) and spontaneous discharge of an inflammatory mass (n = 3).<sup>[8]</sup> Various guidelines regarding management of mastitis and breast abscess are available including conservative management with antibiotics, ultrasound guided aspiration or incision and drainage. There is a clear cut advantage of ultrasound guided aspiration which reduces healing times, number of dressings, scar formation and difficulty with breast feeding. Abscess smaller than 3 cm can be treated with aspiration alone. Multiple aspirations may be required, with follow-up ultrasounds to ensure resolution of the abscess. Failure of needle aspiration is noted in abscesses >5 cm in diameter, unusually large volume of aspirated pus and delay in treatment.<sup>[9]</sup> Failed aspiration or large abscesses require surgical incision and drainage. This successfully treats the abscess but many women are not pleased with the cosmetic outcome. The best management of mammary fistula remains a problem. Simple fistulas should be treated by fistulectomy and primary closure. Total duct excision should be reserved for complex fistulas. Postoperative wound infection is also a major factor in fistula recurrence. All patients should receive antibiotics. Excision of the fistula combined with total duct excision performed with antibiotic cover, is probably the treatment of choice for mammary duct fistula.<sup>[10]</sup> This study aims to determine the incidence of a rare condition; milk fistula in relation to incision and drainage of breast abscess and its associated factors. Also to propose a new non-surgical modality of treatment in the form of cessation of breast feeding and oral Bromocriptine. Most breast abscesses develop as a complication of lactational mastitis. The incidence of breast abscess ranges from 0.4 to 11 % of all lactating mothers.<sup>[11]</sup> Breast abscesses are more common in obese patients and smokers than in the general population.<sup>[12]</sup> The traditional management of breast abscess involves incision and drainage of pus along with anti-staphylococcal antibiotics, but this is associated with prolonged healing time, regular dressings, difficulty in breastfeeding, and the possibility of milk fistula, and unsatisfactory cosmetic outcome.<sup>[13]</sup>

## MATERIALS AND METHODS

This was a prospective study, conducted in the surgical department of Mouwasat Hospital Riyadh Saudi Arabia, for a period of 3 years, From January 2017 to December 2020. A total of 80 patients presenting with signs and symptoms of lactational mastitis confirmed subsequently as a breast abscess by clinical examination and ultrasonographically detected collections. The 1st follow up was after 10 days for all post incision drainage patients, followed by a further 2 weeks follow up in patients who developed fistula and were on treatment. All female patients who were lactating and presented with signs and symptoms of a puerperal breast abscess were

included in our study after taking informed consent and approval of the ethical committee. All 80 patients underwent incision and drainage as a primary mode of treatment. Patients who presented with non-puerperal breast abscess, burst breast abscess and those who underwent ultrasound guided aspiration were excluded from the study. Any patient who developed clear milk discharge from the wound on their 1st follow up visit after 10 days were declared to have a mammary fistula. Any patients who developed mammary fistula was further followed for 2 weeks during which breast feeding was stopped and they were treated conservatively with tab Bromocriptine 2.5mg half BD for 3 days followed by 1 BD for a month on full stomach; meanwhile starting baby on formula feed. All 4 patients responded to this treatment within 2 weeks. None of the patients in our study underwent a surgical procedure for fistula repair.

## RESULTS

In this study, sample size was 80 patients and sampling was done using Simple Random Sampling technique. Clinical characteristics of included patients were analyzed. Mean age of the patients was 26.50 years with all patients between the age ranges of 18-50 years. Majority of the patients i.e 45% were between age of 21-30 years (n=36) while 30% (n=24) were less than 20 years of age. Out of 80 patients 55% (n=44) had developed a breast abscess on the right side while rest 45% (n= 36) had left breast abscess. 60% (n= 48) of the patients were Primigravida. In our study a total 4 out of 80 patients i.e 5 % developed a mammary fistula. All patients who developed milk fistula were younger than 30 years.

Table 1: Frequency distribution of age

Age	Frequency (N)	Percentage (%)
Under 20 years	24	30.0
21-30 years	36	45.0
31-40 years	16	20.0
41-50 years	04	5.0
Total	80	100.0

Table 2: Frequency distribution of side of breast abscess

Side	Frequency (N)	Percentage (%)
Right	44	55
Left	36	45
Total	80	100.0

## DISCUSSION

Although it is understood that the traditional approach of surgical incision and drainage is no longer the recommended treatment, there are no clear guidelines for management of Breast Abscess itself. A breast abscess that develops in the puerperal period generally has a better course than non-

puerperal abscesses, which tend to be associated with longer treatment times and a higher rate of recurrence. The available literature on treatment of breast abscesses is imperfect, with no clear consensus on drainage, antibiotic therapy, and follow-up.<sup>[14]</sup> It has been noticed that minimally invasive and medical management of milk fistulas is a novel modality of treatment which can be considered appropriate in selected cases. A new study has also suggested the use of sono-graphically guided percutaneous Triamcinolone injection for fistula treatment. This treatment is based on the fact that milk fistula is an inflammatory process and steroids have anti-inflammatory properties. Complete response was observed after the injection in 4 patients in that study.<sup>[15]</sup> D2 receptor agonists are Anti Prolactin drugs which have been used in various breast diseases. Cabergoline is a potent dopamine receptor agonist on D2 receptors. Ali Cihat Yildirim et al. reported a case of a 23-year-old breastfeeding mother who had mastalgia. Breast ultrasonography confirmed the presence of a breast abscess for which incision and drainage was done. A milk fistula developed on the 3rd postoperative day. Intensive wound care and administration of broad-spectrum antibiotics were then performed. Medical management of the fistula involved treatment with oral Cabergoline, which was begun at 0.5 mg twice per week. Two weeks after the operation, the wound was totally clear of any drainage and subsequently healed spontaneously.<sup>[16]</sup> In another study by Peters F and Hilgarth M nineteen patients with unspecific non-puerperal mastitis were treated exclusively by Bromocriptine without administration of antibiotics. One of the patients in this study had a milk duct fistula. During Bromocriptine prophylaxis no recurrence was observed; except in the patient with a milk duct fistula. This patient only recovered completely after surgical excision of the fistula.<sup>[17]</sup> Our study is the first of its kind in which a two weeks low dose Bromocriptine alone has been used as a lactational suppressant and concomitant treatment of mammary fistula with a 100% response rate. No patient reported any significant side effects during the course of treatment and all responded with stopping of lactation and starting baby on formula feed. The incidence of milk fistula in our study was higher as compared to international studies (6.6% VS 1-3%). This finding is significant and needs to be further investigated in future researches. It is also noticed that all 4 milk fistula occurred in younger women aged less than 30 years. Also there is some association of antibiotic resistance and presence of MRSA in cases of breast abscess which again need further research. Since milk fistula is a distressing condition for the patient that not only adds to her morbidity but also adversely affects her ability to take care of her infant; we need to introduce newer less invasive modalities of management of breast abscess with

proper guidelines. Ultrasound guided aspiration, wash and antibiotics following culture and sensitivity will not only help to avoid incision/drainage, scar formation, general anesthesia and repeated dressings but will also help reduce the incidence of milk fistula; an established complication. The suction drain insertion is recommended only in large abscesses or which refill rapidly after aspiration.<sup>[18,19]</sup> Sharma described that the ultrasound facilities are available in most of areas in India, and the use of ultrasound would minimize the chances of recurrent and residual abscess if its use is promoted in the primary health centers in the remote areas.<sup>[20]</sup>

## CONCLUSION

Deep mammary duct fistulas are directly related to a diseased ductal system and should be differentiated from superficial fistulae, which result from the infection of the sub epidermal mammary glands. Deep fistula that result from per ductal mastitis should be treated by total excision of the ductal system in conjunction with the fistulous tract under antibiotics to ensure the lowest rate of recurrence. The technique used in the present study resulted in negligible morbidity and good cosmetic appearance. A trial of conservative treatment should be recommended for fistula resulting from idiopathic granulomatous mastitis; however, further studies are required to establish the best treatment.

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