



Optimal Management of Subareolar Breast Abscess

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Abstract

Introduction: *Subareolar breast abscess has the tendency to recur and result in mammary fistula. The ideal management of subareolar abscess needs a clear understanding of the underlying pathological changes in the ducts and the clinicopathological progress of events that ultimately result in mammary fistula. We present our experience with 35 cases of subareolar abscess with respect to recurrence pattern and management outcomes.*

Materials and Methods: *This is a retrospective descriptive study conducted in Raja Muthiah Medical College, chidambaram during june 2014 to october 2017. All new patients with clinically or radiologically proven subareolar breast abscess were chosen. Those with breast cancer, immunocompromised status, peripheral breast abscess, Tuberculous mastitis were excluded. History, clinical and radiological examination findings, microbiological profile, treatment given and outcomes like number of recurrence, time to recurrence were recorded and analyzed.*

Results: *Out of 35 new cases of subareolar abscess, all were females in age range 18-60 years, only 2 patients gave history of passive smoking. More than 90% of patients had underlying duct ectasia in either one or both breasts. Organisms were isolated in 14 out of 33 patients, mostly Staphylococci. Incision and Drainage with antibiotics was the commonly performed procedure. The average number of recurrence was 1.8 (range 0 to 3) and the average time to recurrence was 3 months (15 days to 18 months).*

Conclusion: *Incision and drainage alone is insufficient for optimal management of subareolar abscess. The underlying duct has to be excised partially or totally to prevent development of mammary fistula and nipple inversion.*

Keywords: *subareolar abscess, duct ectasia, duct excision.*

Introduction

Mastitis and breast abscess is a common benign condition of the breast most of which are lactational abscesses. A small proportion of breast abscess is due to subareolar abscess which is different from lactational abscess in terms of etiopathogenesis, clinical presentation, microbiological profile and choice of management. subareolar abscess is a troublesome

condition for the patient as well as the surgeon due to its tendency to recur and result in mammary fistula. At the community level, patients initially present to primary care physicians or gynaecologists and are treated with antibiotics with or without incision and drainage only to recur at a later date. There are few studies that have analysed the outcome of managing subareolar abscess with I & D alone. Our aim is to

study the presence of risk factors, clinical and microbiological profile, outcomes of management and recurrence pattern which will help the treating surgeon in choosing the ideal method of treatment

Materials and Methods

This is a retrospective descriptive study conducted in Rajah Muthiah medical college hospital, Chidambaram during the period June 2014 to October 2017.

Inclusion Criteria

All new cases of clinically or radiologically proven cases of subareolar breast abscess who presented to the breast clinic (both inpatient and outpatient) were included in the study.

Exclusion Criteria

Peripheral breast abscess, lactational breast abscess, tuberculous and granulomatous abscess, breast cancer patients, those with severe immunocompromised states and uncontrolled diabetes were excluded.

Demographic data, presence of risk factors, clinical examination findings, radiological examination findings were recorded in a prewritten proforma. Blood investigation results, culture and sensitivity reports, nature of treatment given were recorded. Data on recurrence was collected by telephonic interview and mailed questionnaire. Results were tabulated and analysed.

Results

Total number of breast abscess cases was 150 out of which 35 cases were subareolar abscess who qualified for the study. Mean age of patients was 38 years [range 18 to 60 years]. All were females. Though subareolar abscess has been reported in

males none of our cases was male. Pain and swelling at the vermilion border were the commonest presenting symptoms. History of fever was present in less than 20% of cases. 17 % of our cases presented after spontaneous rupture and partial drainage of the abscess. Past history of nipple discharge was present in 40 % of cases. None of our cases gave history of smoking unlike described in the western literature though two cases gave history of passive smoking. History of congenital nipple retraction was present in 11% of cases. 29 out of 32 cases had radiological (mostly sonological) evidence of underlying duct ectasia involving either one or both breasts. Radiology report could not be traced in 3 patients. Pus culture and sensitivity report was available in 33 cases out of which no organisms were isolated in 19 cases. Staphylococcus aureus was the commonest organism isolated among the microbiological positive cases [8 out of 14 cases]. But we need to mention here that anaerobic culture was not done in any of our case. Nature of Treatment given to our patient is shown in table 1 which shows that commonest method of treatment advocated was incision and drainage of abscess by a stab incision at the vermilion border under cover of antibiotics. Only 7 cases (20%) had undergone partial or total excision of underlying ducts. Pathology report of all excised specimen demonstrated dilated ducts with infiltration by lymphocytes, macrophages and histiocytes. Average period of follow up was 18 months [range 3 to 36 months]. Three cases were lost to followup and out of remaining 32 cases, 15 cases had atleast one recurrence (47%). The average time to recurrence was 3 months [15 days to 8 months].

Table 1: Nature of treatment in relation to recurrence pattern

Nature of treatment given	No. of patients	No. of recurrences	Percentage of recurrence
Only antibiotics	3	3	100%
Antibiotics + aspiration	7	6	85%
Incision and drainage under antibiotic cover	18	5	33%
I&D with duct excision	5	1	20%
Total duct excision	2	0	0
Total	35	15/ 32	47%



Figure 1: Subareolar Abscess



Figure 2: periductal fibrosis with duct retraction

Discussion

Subareolar abscess has been described by numerous workers using a vast array of terminology historically dating back to 1850 when Birkett described 'morbid condition of the lactiferous ducts'. Terms such as mastitis obliterans, periductal mastitis, varicocele tumour of the breast, comedomastitis, mammary fistula, mammary duct ectasia/ zuska's disease have been used to describe various clinicopathological events of the same disease process affecting the mammary ducts^[1]. In 1995 Meguid^[2] coined the term Mammary Duct Associated Inflammatory

Disease Sequence (MDAIDS) for this sequence of clinical and pathological events starting from dilatation of major ducts and squamous metaplasia, accumulation of secretions, periductal infiltration by inflammatory cells, bacterial contamination and abscess formation that ultimately result in periareolar mammary fistula. Most of the subareolar abscess occurs in women belonging to the reproductive age group, though it has been reported rarely in males^[3]. Western literature has shown smoking^[4] as the primary underlying cause for this sequence, other identifiable causes being vitamin A deficiency, hormonal imbalance, deranged prolactin level, congenital nipple retraction etc. In our studies none of the patients gave history of smoking though 2 patients gave history of passive smoking. 4 out of 35 cases had congenital nipple retraction. Thereby in about 85% of cases no risk factor could be identified and additional studies are needed to identify cause for initiation of this disease process.

Studies have shown that the pathological changes underlying formation of a subareolar abscess viz duct ectasia, squamous metaplasia, ulceration of ductal epithelium, periductal mastitis etc start much before the actual clinical presentation as an abscess. The correlation between clinical and pathological findings was first described by Haagensen in 1951^[5]. He proposed stages in the pathogenesis of subareolar abscess starting with dilatation of the major subareolar mammary ducts, followed by accumulation of cell debris, periductal inflammatory cell infiltration and henceforth. Considering the various clinical expression of the same disease process, Meguid coined the term Mammary Duct Associated Inflammatory Diseases Sequence (MDAIDS) in 1995^[2]. The clinical sequence of events and their pathological correlates are depicted in table 2. He also observed that only a proportion of cases of duct ectasia progress through the entire sequence to result in mamillary fistula.

Table 2: clinicopathological sequence of MDAIDS

Stage	Symptom	Sign	Pathological finding
Duct ectasia	Asymptomatic/Nipple discharge	Greenish Nipple discharge, single or multiple duct	Ductal dilatation/ Squamous metaplasia/ stasis of secretion
Periductal mastitis	Non cyclical breast pain	Retroareolar tender mass	Infiltration of ducts by lymphocytes, macrophages
Periductal fibrosis	Nipple retraction/ nipple inversion	Central or single duct nipple inversion or retraction	Fibrosis and retraction of ducts
Periareolar abscess	Pain and swelling in periareolar region	Tender , inflamed mass at vermilion border	Bacterial contamination, abscess formation, destruction of ducts
Mammary fistula	Chronic discharging Sinus at vermilion border	Chronic discharging Sinus at vermilion border	Granulation tissue lined fistulous tract from skin to mammary duct

Commonest clinical presentation of a subareolar abscess is a red painful swelling along the vermilion border of the areola. Once there is formation of an abscess it ruptures spontaneously or incision and drainage is performed resulting in mammary fistula extending from the underlying duct to the overlying skin at the vermilion border. At this stage it is likely to be mistaken for a carcinoma due to underlying nipple retraction. A few abscesses may be controlled by antibiotics, but if the pathogenesis in the underlying duct is unaddressed, it may recur after a variable period of time.

Studies have shown that aerobic and anaerobic bacteria can be cultured from the nipple secretions in more than 90% of cases^[6]. In our study organisms were isolated in only 42% (14 out of 33) of cases most of which was staph aureus (8 out of 14 cases). This result is similar to that of western studies but in 58% of our cases no organism was isolated either because anaerobic culture was not done or due to previous administration of antibiotics.

Subareolar abscess can be clinically differentiated from other causes of breast abscess like lactational abscess, post traumatic abscess, tuberculous or granulomatous mastitis, inflammatory breast cancer etc mainly by its location along the vermilion border of the areola. Imaging studies like mammography and sonomammography give additional information on underlying disease process in the ducts^[7]. Studies have shown that duct ectasia can be demonstrated in a majority of

cases. In our studies sonological evidence of underlying duct ectasia was found in more than 90 % of cases.

Since only seven of our patients have undergone excision of the underlying duct either partial or total, pathological data is limited in our cohort of patients. All the available pathological specimens showed ductal dilatation, infiltration by lymphocytes, foamy macrophages and histiocytes. Followup data is available in 32 patients (three patients could not be contacted) which showed that patients who received antibiotics alone or who underwent aspiration of abscess undercover of antibiotics had 90% recurrence. Whereas recurrence was observed in 33% of cases who underwent incision and drainage of abscess undercover of antibiotics. No recurrence was reported in the 2 cases who underwent total duct excision, whereas one patient who underwent partial duct excision had recurrence (20%). This is consistent with other studies which have reported no or very low recurrence after Hadfield's total duct excision and rates as high as 34 to 78 % after incision and drainage alone^[8-10]. Hence it is obvious that optimal management of subareolar abscess lies not in simple drainage of the abscess but in dealing with the underlying pathological process within the mammary duct viz excision of the diseased ducts. For the first episode of subareolar abscess, it is sufficient to excise the involved duct whereas for recurrent episodes all major ducts have to be excised (Hadfield operation). Studies have shown that there are

minimal or no recurrence following total duct excision.

The purpose of this article is to re-emphasise the fact that simple incision and drainage is insufficient for the treatment of subareolar abscess, the underlying duct has to be excised to eliminate the underlying pathological process. Moreover proportion of non-lactational breast abscess is less compared to western population where smoking is implicated as a major cause. In Indian population, additional studies are needed to find out the risk factors which predispose to duct ectasia and cause progression to subareolar abscess and mammary fistula.

Conclusion

- 1) Subareolar abscess is the penultimate stage of a sequence of clinicopathological events involving the mammary ducts (Mammary Duct Associated Inflammatory Disease Sequence).
- 2) Though smoking has been proposed as a major cause in western literature, additional studies are needed in the Indian population to find out risk factors of this disease process.
- 3) Incision and Drainage alone is insufficient for management. The underlying duct has to be excised to prevent development of mammary fistula and nipple inversion.
- 4) Antibiotics have to be given for a period of 10 - 14 days. Choice of antibiotic should cover anaerobic organisms too.

Author Contribution

All authors contributed to collecting patient data, literature review and preparation of manuscript.

Limitations

The sample size in our study is relatively small to test for statistical significance.

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