

Zuska's Disease: A Case Report of Recurrent Subareolar Breast Abscess and Review of the Literature

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Abstract

Case Report

Zuska's disease is a chronic non-puerperal subareolar mastitis characterized by recurrent abscess formation and fistulization of lactiferous ducts. It predominantly affects middle-aged women and is strongly associated with smoking, which plays a central role in its pathogenesis. We report the case of a 47-year-old woman with a history of heavy smoking and recurrent left breast abscesses over a 12-year period. Imaging findings, including ultrasound and mammography, confirmed the diagnosis and excluded malignancy. The underlying mechanism involves squamous metaplasia of lactiferous ducts (SMOLD), leading to keratin plug formation, ductal obstruction, and secondary infection. Management is based on antibiotics and image-guided drainage, while surgery is reserved for recurrent or complicated cases. Smoking cessation remains essential to prevent recurrence.

Keywords: Zuska's Disease, Subareolar Mastitis, Recurrent Breast Abscess, SMOLD, Squamous Metaplasia, Smoking.

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1. INTRODUCTION

Non-puerperal subareolar mastitis is a chronic inflammatory breast condition frequently associated with recurrent abscess formation. It is also referred to as subareolar abscess or lactiferous duct fistula. This entity was first described in 1951 by Zuska *et al.*, based on a series of five patients presenting with recurrent clinical manifestations [1].

Smoking is the main identified risk factor and plays a central role in the pathophysiology and chronicity of the disease. It predominantly affects women in their fourth decade; however, it may occur at any age. Rare cases have also been reported in men.

From an epidemiological perspective, bilateral involvement is observed in approximately 25% of cases. Although benign, this condition represents a diagnostic and therapeutic challenge due to its recurrent course and

its clinical and radiological resemblance to inflammatory and malignant breast diseases.

2. CASE PRESENTATION

A 47-year-old female patient, with a 40 pack-year smoking history, presented with recurrent episodes of left subareolar inflammation. She had a prior history of abscess at the same site.

Episode: 2013

A 47-year-old woman with a significant smoking history (40 pack-years) and a prior history of recurrent left breast abscess at the same site presented with a new inflammatory episode.

Clinical examination revealed an extensive erythematous plaque involving the infero-external quadrant of the left breast, associated with reactive axillary lymphadenopathy.



Figure 1: Ultrasound images of the left breast showing diffuse inflammatory infiltration associated with a well-defined subareolar abscess measuring 22 × 16 mm, located beneath a para-areolar scar.

Ultrasound-guided partial drainage yielded approximately 2.5 mL of purulent material, which was sent for bacteriological analysis. The patient had received prior antibiotic therapy with amoxicillin-clavulanic acid followed by pristinamycin.

Episode: 2023

The patient presented with a recurrent inflammatory episode of the left breast, in the context of

a history of recurrent abscesses, with the last episode occurring in December 2022. She had been started on amoxicillin-clavulanic acid one day prior to presentation.

Clinical examination revealed a painful erythematous para-areolar plaque in the infero-internal quadrant of the left breast, without any palpable mass or axillary lymphadenopathy.



Figure 2: Ultrasound of the left breast demonstrating a 12 mm triangular hypoechoic area in contact with the skin plane, without a well-defined fluid collection, suggestive of a pre-abscess stage. No associated axillary lymphadenopathy is observed.

2024 Follow-up

The patient was followed for recurrent left breast abscesses, with no known risk factors for breast carcinoma.

Clinical examination was reassuring, revealing only a small residual inframammary crust on the left side, without palpable mass or axillary lymphadenopathy.

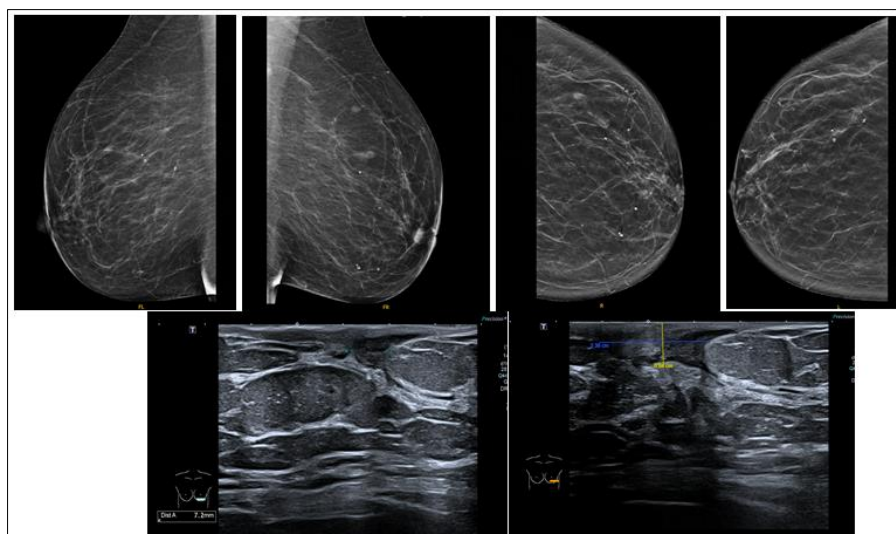


Figure 4: Follow-up imaging of the left breast demonstrating a favorable evolution of a previously documented intramammary abscess

Ultrasound shows a small 7 mm hypoechoic lesion adjacent to the left inframammary scar, without fluid collection or axillary lymphadenopathy.

Mammography confirms a benign appearance, classified as BI-RADS 2 on the left and BI-RADS 1 on the right, with no suspicious findings.

2025 Recurrence

The patient presented with a recurrent left breast abscess, initially treated with amoxicillin-clavulanic acid (1 g three times daily for 21 days).

Laboratory investigations were normal, and no fever was reported.

On clinical examination, there was a persistent infero-external peri-areolar induration associated with a tender, mobile nodule measuring approximately 1 cm at a typical site of recurrence. An old nipple retraction and a retracted scar were also noted. Early fistulization was observed with a central violaceous area, without significant systemic inflammatory signs.

Needle aspiration was minimally productive, yielding thick purulent fluid.

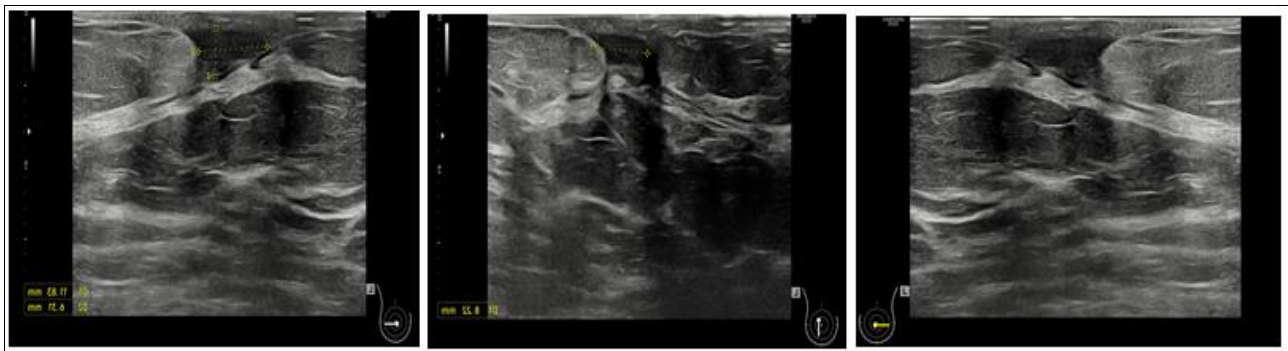


Figure 5: Ultrasound of the left breast demonstrating a small recurrent abscess measuring 12 × 6 mm.

The lesion appears minimally collected, with signs suggestive of early fistulization. These findings are consistent with a recurrent subareolar abscess. Further senological assessment is recommended, and continuation of antibiotic therapy was not indicated.

3. DISCUSSION

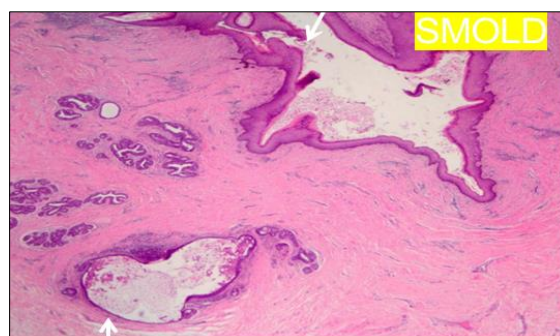
Microbiology and Clinical Presentation

Non-puerperal subareolar mastitis is classically associated with the SMOLD mechanism (Squamous Metaplasia of Lactiferous Ducts), which corresponds to squamous metaplasia of the ductal epithelium.

The main etiological factor is squamous epithelial metaplasia, strongly promoted by tobacco

exposure. The resulting keratinizing cells lead to the formation of keratin plugs, causing ductal obstruction. This obstruction induces secretory stasis, followed by ductal dilatation and eventual rupture of lactiferous ducts, leading to the development of peri- or subareolar abscesses. Cutaneous fistulization is frequently observed, particularly in the areolar region.

A second proposed mechanism involves chronic inflammation of the pilosebaceous unit, resulting in follicular squamous metaplasia. This process leads to secondary obstruction with keratin accumulation, followed by rupture into adjacent soft tissues, ultimately resulting in abscess formation.



CANAL NORMAL

The initial microbiological profile of non-puerperal subareolar mastitis is most commonly dominated by cutaneous *Staphylococcus* species. With

disease progression, repeated drainage procedures, or chronic evolution, the bacterial flora may become polymicrobial, frequently involving anaerobic organisms.

Clinically, the disease presentation varies according to its stage. In the acute phase, it typically begins with pain followed by the rapid development of a palpable inflammatory mass. With chronicity, persistent inflammation leads to fibrosis, resulting in a poorly defined mass adherent to the subcutaneous tissues, often associated with reduced pain intensity. This fibrotic evolution may also cause nipple retraction.

Nipple discharge is reported in approximately 20% of cases. It is usually serous or purulent in acute stages and becomes progressively thicker and more viscous in chronic disease.

Imaging Features

Mammography

Mammography may be normal in early stages. When abnormal, findings are non-specific and may include:

- Periareolar skin thickening
- Ill-defined mass or focal asymmetry (typically 1–5 cm)
- Occasional architectural distortion in chronic cases

These findings require correlation with clinical and ultrasound data due to their non-specific nature.

Ultrasound

Ultrasound is the first-line imaging modality and allows detailed lesion characterization. Typical findings include:

- Complex cystic lesion corresponding to abscess formation with thick walls
- Peripheral Doppler vascularity suggestive of inflammation
- Localized skin thickening
- Subcutaneous fat infiltration
- Ductal dilatation and associated lymphatic congestion

It also plays a key role in guiding percutaneous drainage procedures.

Magnetic Resonance Imaging (MRI)

MRI is reserved for atypical or recurrent cases. It typically demonstrates:

- Skin thickening with inflammatory enhancement
- Lesions with peripheral or persistent enhancement
- Central T2 hyperintense fluid component consistent with abscess formation

MRI is particularly useful for evaluating disease extension, detecting fistulous tracts, and excluding underlying malignancy.

Differential Diagnosis

The main differential diagnoses include neoplastic, inflammatory, and infectious conditions:

- **Inflammatory breast carcinoma:** the most important exclusion, typically presenting as a solid parenchymal mass with associated pathological lymph nodes and non-resolving evolution
- **Granulomatous mastitis:** inflammatory condition unrelated to infection or puerperium, usually with less abscess formation
- **Other recurrent periareolar mastitis:** characterized by subareolar localization, recurrent abscess formation, and absence of specific triggering context (e.g., lactation or known tumor)

Management and Outcome

Management remains controversial, ranging from conservative to surgical approaches.

Some authors advocate primary surgical treatment, including abscess excision combined with fistula resection and microdochectomy of the affected duct, aiming to eliminate the underlying cause and reduce recurrence risk.

Conversely, conservative management is often preferred initially and includes:

- Appropriate antibiotic therapy
- Ultrasound-guided abscess drainage

Close clinical and radiological follow-up (7–14 days) is recommended until resolution.

Surgery is indicated in cases of treatment failure, typically after 3–5 drainage attempts, or in recurrent and fistulizing disease.

Recurrence rates are high (25–50%), mainly due to persistent ductal obstruction, often requiring delayed surgical management.

Follow-up imaging after resolution (approximately 3 months) is essential to exclude underlying malignancy.

Ultrasound-Guided Drainage: Technical Considerations

Ultrasound-guided percutaneous drainage is a first-line minimally invasive therapeutic option for subareolar abscesses.

Technically, aspiration is performed using an 18G needle. In cases of thick or viscous content, a larger gauge (14G) may be required to facilitate drainage.

Saline irrigation (2–3 cycles) may be performed to reduce bacterial load and improve evacuation.

This technique is most effective for small abscesses (<3 cm) but can be attempted regardless of size due to its minimally invasive nature.

In case of failure, alternatives include:

- Placement of a temporary percutaneous drain
- Surgical excision in recurrent or complicated cases

Thus, ultrasound-guided drainage represents a key step in a progressive, stepwise therapeutic strategy tailored to disease severity.

4. CONCLUSION

This is a benign but recurrent inflammatory breast disease, commonly related to chronic ductal inflammation, with smoking playing a central role in both its onset and persistence. It typically presents with pain, purulent nipple discharge, and recurrent abscess formation.

Management is based on a stepwise approach including:

- treatment of infection with antibiotics when indicated,
- drainage of abscesses,
- and, in recurrent cases, surgical excision of the fistulous tract and affected ducts.

Smoking cessation is a key factor in reducing recurrence and improving long-term outcomes.

REFERENCES

- Zuska JJ, Crile G Jr, Ayres WW. Fistulas of lactiferous ducts. *Surgery*. 1951.
- Gannon MX, Crowson MC, Fielding JW. Periareolar pilonidal abscesses in a hairdresser. *BMJ*. 1988;297:1641–1642.
- Kasales CJ, Han B, Smith JS Jr, et al. Nonpuerperal mastitis and subareolar abscess of the breast. *AJR Am J Roentgenol*. 2014;202:W133–W139.
- Giess CS, Raza S, Birdwell RL. Distinguishing breast skin lesions from superficial parenchymal lesions. *Radiographics*. 2011;31:1959–1972.
- Going JJ, Anderson TJ. Chronic inflammatory lesions of the breast. *Histopathology*. 1987;11:1–13.
- Leong PW, Chotai NC, Kulkarni S. Imaging features of inflammatory breast disorders. *Korean J Radiol*. 2018; 19:5–14.
- Lepori D. Inflammatory breast disease: the radiologist's role. *Diagn Interv Imaging*. 2015; 96:1045–1064.
- Sanders MAG. Breast inflammatory SMOLD. *PathologyOutlines*.
- Trop I, Dugas A, David J, et al. Breast abscesses: evidence-based management. *Radiographics*. 2011; 31:1683–1699.
- Humphreys H, Taylor E. Management of periductal mastitis. *J Infect*. 2006; 52:81–85.