

Chronic Subareolar Abscess and Fistula

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The vexing syndrome of non-lactational chronic recurring subareolar abscess and fistula was accurately described by Zuska, Crile, and Ayres in 1951¹, but the condition continues to frustrate patients and physicians alike. Zuska et al recognized the association of the condition with squamous metaplasia and keratin plugging of the nipple ducts and correctly noted that “excision of the sinus tract and its indurated base without removal or incision of the terminal portion of the involved duct results in recurrence of the abscess or in persistence of the drainage.” Later it was noted that patients with a history of heavy cigarette smoking were particularly susceptible to develop subareolar infections.^{2,3} One school of thought has been that the smoking causes squamous metaplasia, perhaps by lowering β -carotene, with resulting duct obstruction due to keratin plugging and secondary infection due to stasis.⁴ An alternate hypothesis is that the smoking damages the ducts by direct toxins, microvascular damage, and altered bacterial flora and that the squamous metaplasia is secondary to chronic inflammation.^{5,6} Regardless of whether the keratin filled terminal ducts in the nipple are the primary etiology or a secondary phenomenon, their removal gives the best chance of cure for the condition.

The condition is not related to pregnancy or lactation, but is most often seen in women in their thirties who have a long history of smoking. They often have had recurrent abscesses with periodic flare ups over several years and have had many failed attempts at surgical extirpation. Many of the women have inverted nipples or a central cleft in the nipple, but whether this is cause or effect is conjectural.

If the patient presents with an abscess that is pointing in thin skin, it must be opened and drained, but the incision can be kept small and no drain is necessary.⁷ Ideally, the abscess will present before the skin is thinned and ultrasound guided aspiration and irrigation with xylocaine is the optimal treatment. Repeat aspiration every few days is sometimes necessary to affect a resolution. The aspirate should be cultured both aerobically and anaerobically since anaerobes are a common offender. It is particularly important to begin broad spectrum antibiotics that will cover the majority of potential pathogens when the abscess is treated with aspiration rather than open drainage. *Staphylococcus aureus* is the most common pathogen, and the incidence of methicillin resistant staph is increasing.⁸ Anaerobes are also common offenders, in addition to diphtheroids, *Pseudomonas*, *Proteus* and *Streptococcus*. Trimethoprim-sulfamethoxazole (Bactrim, Septra) is the single best initial choice of antibiotic. Metronidazole (Flagyl) should also be begun until cultures are available unless the abscess has been opened.

A minority of patients will have no further symptoms following antibiotics and/or drainage, but the majority will have recurrent abscesses or develop intermittently draining fistulae which usually open at the border of the areola. If symptoms become recurrent, proper surgical treatment is necessary to cure the problem. Although patients should be encouraged to stop smoking for a variety of health reasons, the inability of the patient to

stop smoking should not be used as a reason to deny operative intervention. There is no evidence that smoking cessation reverses the damage to the ducts and alleviates the problem, but it may decrease the likelihood of involvement of other ipsilateral or contralateral ducts. Approximately 80% of patients will experience recurrence after surgical treatment that does not include excision of the lactiferous ducts.⁹ Passaro et al, at the Cleveland Clinic emphasized the importance of removing not only the subareolar granulation tissue, but also the ducts within the nipple.¹⁰ A radial incision was favored, opening the nipple vertically to gain access to the ducts within. Success was reported in 47 of 48 patients, though some patients required several operations to achieve it. The Mayo Clinic reported a 91% success rate when the central cleft of the nipple and the ducts within the nipple were resected along with the underlying chronically infected subareolar tissue.¹¹ The excision was accomplished using a curvilinear incision in the periareolar region. The most successful approach was described by Lannin from Yale University School of Medicine.¹² He reported success in 26 of 26 patients who had duct excision by placing a probe through the fistulous opening and out the nipple, excising a wedge in a radial fashion like a “slice of pie.” All incisions healed primarily with excellent cosmesis. This is the technique favored by the author who has had similar excellent results without recurrence.

¹ Zuska JJ, Crile G, Ayers WW. Fistulas of lactiferous ducts. *Am J Surg* 1951;81:312-17.

² Schafer P, Furrer C, Mermillod B. An association of cigarette smoking with recurrent subareolar breast abscess. *Int J Epidemiol* 1988;17(4):810-13.

³ Bundred NJ, Dover MS, Coley S, et al. Breast abscesses and cigarette smoking. *Br J Surg* 1992;79:58-9.

⁴ Meguid MM, Oler A, Numann PJ, Khan S. Pathogenesis-based treatment of recurring subareolar breast abscesses. *Surgery* 1995;118:775-82.

⁵ Dixon JM. Periductal mastitis/duct ectasia. *World J. Surg* 1989;13:715-19.

⁶ Dixon JM. *Breast Surgery*. 3rd ed. Philadelphia:Elsevier Saunders,2006.

⁷ Dixon JM. *ABC of Breast Diseases*. 3rd ed. Oxford:Blackwell, 2006.

⁸ Moazzez A, Kelso RL, Towfigh S, et al. Breast abscess bacteriologic features in the era of community-acquired methicillin-resistant *Staphylococcus aureus* epidemics. *Arch Surg* 2007;142(9):881-4.

⁹ Versluijs-Ossewaarde FN, Ruoumen RMH, Goris RJA. Subareolar breast abscesses: characteristics and results of surgical treatment. *Breast Journal* 2005;11(3):179-82.

¹⁰ Passaro ME, Broughan TA, Sebek BA, Esselstyn CB. Lactiferous fistula. *J Am Coll Surg* 1994;178:29-32.

¹¹ Li S, Grant CS, Degnim A, Donohue J. Surgical management of recurrent subareolar breast abscesses:Mayo Clinic experience. *Am J Surg* 2006;192:528-9.

¹² Lannin DR. Twenty-two year experience with recurring subareolar abscess and lactiferous duct fistula treated by a single breast surgeon. *Am J Surg* 2004;188:407-10.