CASE REPORT

Surgical Management of Hidradenitis Suppurativa of the Nipple–Areolar Complex

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Abstract: Involvement of the nipple–areolar complex is an infrequent area of distribution of hidradenitis suppurativa. The difficulty of this particular distribution has been encountered in the past and resulted in bilateral mastectomies. The authors describe successful treatment of a patient with hidradenitis suppurativa of the breasts and nipple–areolar complexes using breast-conserving measures. Normal breast contour was preserved and overall cosmetic result was good.

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Hidradenitis suppurativa (HS) is a common disorder of apocrine gland-bearing skin resulting in recurrent abscesses and draining sinus tracts. The most common sites involved include the axillae and inguinoperineal regions. A far rarer site of hidradenitis is that of the nipple–areolar complex. There have been few case reports in the literature regarding HS of the nipple–areolar complex and only one such case report in the plastic surgery literature. In that case, the HS was treated rather aggressively with bilateral mastectomies. In this report, we present a case of severe HS of the breasts and nipple–areolar complexes that were managed with breast conservation surgery involving conservative resection and split-thickness skin grafts.

CASE PRESENTATION

A 35-year-old black woman with a noncontributory past medical history presented with extensive axillary, breast, and perineal hidradenitis that had rapidly worsened over the previous 8 months (Figs. 1A–C). A relatively quiescent phase of the disease over the course of several years evolved into chronic sepsis with severe symptoms of persistent drainage from open wounds, weight loss (>100 lb), fevers, malaise, and inability to work. She was referred for surgical evaluation after multiple inpatient admissions requiring intravenous antibiotics. Initial surgical evaluation revealed a general state of malnourishment with evidence of temporal wasting and extensive wounds involving bilateral breasts, axilla, and perineal involvement from the infraumbilical region to the sacrum and also involving both medial thighs. Laboratory evaluation revealed a leukocytosis with a white blood cell count of 35,000 and a hematocrit of 23, consistent with anemia of chronic disease. Preoperative evaluation included CT scans of head, chest, and abdomen (all of which were found to be negative), and a skin biopsy that yielded results negative for cutaneous malignancy. The patient was administered broad-spectrum antibiotics for the duration of her hospitalization.

Serial excision, debridement, allografting, and split-thickness skin grafting were performed in three operative sessions over the course of a 5-day period to include all areas of involvement. Breast tissue was conserved, but the nipple–areola complex was excised from both breasts. All hair-bearing perineal skin was excised, including both labia majora and the skin around the anus. Total body surface area excised was approximately 20%. Split-thickness skin graft was harvested at 12 one-thousandths of 1 inch and meshed 1.5:1. Donor sites were covered with Xeroform gauze and skin graft sites were covered with nonadherent, fine mesh gauze, oxyclohexolene moistened fluff rolls, and dry dressings. Skin graft sites were taken down on postoperative day 3 and treated with daily dressing changes as mentioned. She was discharged home after an 11-day hospitalization, with a dressing regimen consisting of twice-daily applications of a triple-antibiotic ointment to all skin graft sites for 2 more weeks.

At 6 months of follow-up, the patient was found to have well-healed donor and skin graft sites (Figs. 2A,B). She had returned to gainful employment, gained weight of approximately 50 lb, and no longer had fevers or fatigue. At this time, she is contemplating further surgery for nipple reconstruction.

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**DISCUSSION**

HS was first described by Velpeau in 1839 and then characterized as originating in sweat glands by Verneuil in 1854. Schiefferdecker linked HS with apocrine sweat glands in 1922. However, inflamed apocrine glands are found only when in proximity to other inflamed structures. The true etiology of HS is unknown. Current thought is that HS is a disorder of terminal follicular epithelium within apocrine gland-bearing skin.

Prevalence of HS is 1:300. Peak onset is between ages 11 and 30 years. This correlation in onset has prompted many researchers to hypothesize that HS is androgen-dependent, but this view is controversial. Smoking, diabetes mellitus, obesity, reduced cutaneous levels of calprotectin, zinc, or ascorbate also have been linked with HS but no definitive etiology has been discovered.

HS first presents as nodules that eventually coalesce. These nodules either resolve temporarily or progress. Eventually, they become infected, leading to sinus tract formation, multiple subcutaneous abscesses, persistent pain, and scarring. In the acute setting, the infected apocrine glands rupture and coalesce, creating subcutaneous abscesses that ultimately drain through sinuses. Chronically, the skin in the area of the affected apocrine glands becomes altered by inflammation and fibrosis.

HS most commonly affects the axillae and inguinoperineal regions. Other areas of the body that have apocrine glands can be affected as well, including the areola of the breast, submammary region, periumbilical region, scalp, face, external auditory meatus, nape of the neck, and the shoulders. HS of the nipple–areolar complex also is known to occur but is infrequent. In one series, the incidence of mammary involvement was 13% in women and 2% in men. It is not clear what portion of those with mammary involvement also have HS of the nipple–areolar complex, or simply an extension onto the lateral breast from the axilla.

![FIGURE 1. Preoperative views of the patient with severe hidradenitis suppurativa of bilateral axillae, breasts (A,B), and groin (C).](image-url)
The severity of HS is variable. Some patients have relatively mild disease involving only one region, and spontaneous remission sometimes occurs. Other patients exhibit extensive involvement of axillae, the perineum, and other sites. The overall course of HS is one of exacerbations and remissions, with increasing areas and severity of skin involvement.

The complications of HS include local and systemic infections, restrictions in mobility secondary to fibrosis and scarring, and squamous cell carcinoma. Squamous cell carcinoma arising from the chronically fibrosed and scarred HS skin generally occurs after a history of HS for 10 or more years.16,17

Treatment of HS consists of medical and surgical therapies. Medical treatment of HS is performed in its early stages and usually consists of staphylococcal antibiotics for axillary HS and broad-spectrum drugs for perianal HS.18–20 However, even when antibiotic administration is tailored to specific bacteria cultured from HS lesions, initial improvement followed by relapse is the rule rather than the exception. Other medications such as steroids, synthetic retinoids, intralesional triamcinolone, and hypothalamic-pituitary-ovarian axis and adrenal suppression have yielded limited benefit and are not mainstays of therapy.

When medical management of HS is unsatisfactory, surgery becomes necessary. Local incision and drainage of individual lesions can be performed in acute HS. However, episodes of inflammation usually will continue to occur. In general, any skin that is inflamed, scared, or has sinus tracts should be outlined and excised. As long as a layer of fat is taken with the skin, the surgeon can be sure that the apocrine glands under the dermis have been removed. Historically, this procedure had been aided by the use of the iodine–starch method to identify apocrine gland-bearing areas; however, this method has been largely abandoned. It is sometimes necessary to remove deeper layers of tissue if an abscess has formed and has progressed into the deeper subcutaneous layers.

Excision of HS tissue often leaves a large defect that may not be amenable to primary closure. A variety of tech-
tiques have been used to close these defects including skin grafts, local skin advancement or transposition flaps, and secondary healing. Healing by secondary intention generally takes 2 to 3 months but avoids the creation of a skin donor site, and the eventual clinical and cosmetic results are usually good.22

With regard to treatment of HS of the nipple–areolar complex, the general principles as described apply. Moosa et al reported a case of severe HS of the breasts resulting in mastectomy.1 Although this is certainly a curative option, we believe that, in general, this should not be necessary. Because the apocrine glands and their associated abscesses are just below the dermis, excision of the involved skin with a thin layer of subcutaneous fat along with all abscesses should suffice, followed by local flap or skin grafting to maintain a normal contour. In the French literature, another technique for more mild cases has been described. Chavoin et al in 1994 treated nipple–areolar HS with a good result by detaching the areola at the dermal level, excising the underlying apocrine sweat glands, and fixing the areola as a graft similar to the technique used when performing free nipple grafting in breast reduction surgery.22 In conclusion, HS of the nipple–areolar complex is a rare but potentially debilitating disease that can be adequately treated while preserving breast contour.

REFERENCES