

AXILLARY HIDRADENITIS SUPPURATIVA

A Simple and Effective Surgical Technique

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Confusion, conservatism, credulity, and cant have permeated physicians' attitudes toward hidradenitis suppurativa since the presumed description of this condition by Velpeau¹ in 1839. Although Verneuil² amplified the description of Velpeau and suggested the sweat glands as the site of the recurrent inflammation, progress in understanding the condition was slow until 1922. At that time Schieferdecker³ described the two types of sweat glands and proposed the terminology used today.

Fundamentally, the eccrine sweat glands are formed throughout the integument, are simple tubular in type, and open directly on a ridge of skin. The secretion of eccrine glands occurs without disruption of the cell. The apocrine glands are larger, regionally distributed, derived from hair follicles, and are usually immature until the secondary sex characteristics appear. The apocrine duct usually joins the pilosebaceous orifice and the secretion of apocrine glands evacuates a portion of the lining cell protoplasm when the free end of this cell ruptures. There are more apocrine bodies present in the Negro than in the caucasian; they are seen more frequently in the female than in the male of both races.⁴

Infection of the apocrine sweat glands probably occurs in retrograde fashion and has been experimentally produced by Shelley and Cahn.⁵ The disease is most frequently found in the axillary

area, but may occur in other apocrine areas such as the perineum and groin. The onset is insidious, beginning as a simple abscess which ruptures spontaneously. Satellite abscesses appear and the area becomes phlegmonous with multiple draining sinuses.

Dermatologists (Brunsting,⁶ Shelley,⁷ Steiner,⁷ and Hurley⁸) have clarified the classification and pathogenesis of hidradenitis suppurativa and have noted the futility of medical management of the chronic form of the disease.

Due to the efforts of surgeons (Greeley,⁹ Conway *et al*,¹⁰ Williams,¹¹ Snyder and Farrell,¹² Paletta,¹³ Harrison,¹⁴ and Armstrong *et al*¹⁵) most physicians are now aware of the desirability of excisional therapy for axillary hidradenitis suppurativa.

Whereas there is general agreement among knowledgeable surgeons with regard to the necessity of wide resection of the involved axillary skin and apocrine sweat gland areas, there has been controversy regarding reconstruction of the resulting wound.

Greeley suggested a Z-plasty or split-skin grafting either immediately or 10 to 14 days later, depending on the individual wound. Conway *et al* advised precasting and immediate split-skin grafting of the axilla. Paletta advised either split-skin graft or flap; Harrison and Armstrong *et al* advised flap closures.

Snyder and Farrell suggested that when the case permits, the surgical wound can

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The efforts of surgeons (Green⁹, et al,¹⁰ Williams,¹¹ Snyder,¹² Paletta,¹³ Harrison,¹⁴ and et al¹⁵) most physicians are of the desirability of excision and debridement for axillary hidradenitis.

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Some have suggested a Z-plasty or split-thickness skin grafting either immediately or 10 to 14 days later, depending on the individual. Conway et al advised preoperative split-skin grafting. Paletta advised either split-thickness skin graft or flap; Harrison and Armstrong advised flap closures.

Conway and Farrell suggested that when drainage is present, the surgical wound can

be closed *per primam*; they reported the use of this method on the perineum, stressing preoperative antibiotic preparation. Personal communication reveals that Snyder and other surgeons have, on occasion, performed primary closure of selected axillary wounds.

Following wide excision of axillary skin and subcutaneous tissue, most surgeons believe it necessary to replace the missing skin with a graft or flap. We questioned this concept, since we have observed clinically that skin can be mobilized to cover such deficiencies if the scar is placed parallel to the joint axis. Furthermore, we have been impressed by the ability of a properly motivated patient to overcome stresses on the axilla.¹⁶ With this in mind, the following study was undertaken.

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PATIENT CHARACTERISTICS

Ten consecutive patients with axillary hidradenitis were selected. Their ages ranged from 22 to 50 years, with an average of 35; two were white, 8 were black; 9 were female and one was male. One patient was diabetic. All had bilateral axillary involvement. All patients had the chronic form of the disease, although some were in acute exacerbation at the time of operation. The duration of the disease was from 4 months to 11 years. Most patients had previously had multiple incision and drainage operations, and multiple courses of systemic antibiotics (from other physicians).

We considered every patient with the chronic form of the disease to be a candidate for operation. The presence of draining pus was not a contraindication.

Whenever there was drainage available for culture and sensitivity studies, these were performed. Most cultures revealed a mixed variety of organisms, usually with gram-negative organisms predominating.

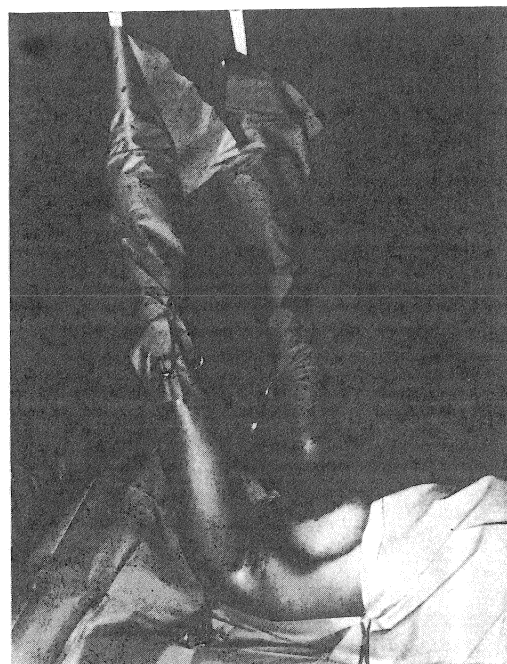


FIG. 1. Suspension of arms from overhead fixture to position patient in the operating room.

PATIENT PREPARATION

Beginning 24 hours prior to operation, antibiotics (as determined by sensitivity studies) were given systemically. In those cases where cultures could not be obtained, a broad spectrum antibiotic was selected. Antibiotics were continued during the operation and for 10 days afterwards. Axillary hair was shaved (whenever possible) or clipped.

OPERATIVE TECHNIQUE

General anesthesia was used for all cases. With the patient anesthetized in the supine position, both arms were suspended from an overhead fixture to give wide access to the axillae (Fig. 1). A folded sheet under the thoracic spine elevated the axillary areas above the table. Skin preparation was done with Betadine surgical scrub and solution. The axillae were operated upon simultaneously, using two surgical teams whenever possible.

A generous lenticular excision of the axillary skin and subcutaneous tissue was carried out (Fig. 2, left). The deep margin was the axillary fascia. The excisions extended over the pec-

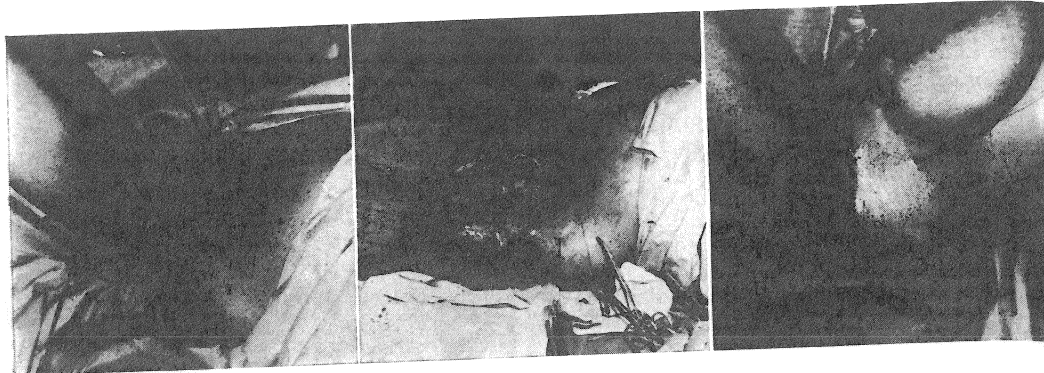


FIG. 2. (left) The extent of the excision is marked with dye. (center) Placement of the tie-over sutures. (right) Typical closed wound, in another patient, prior to application of the bolus dressing.

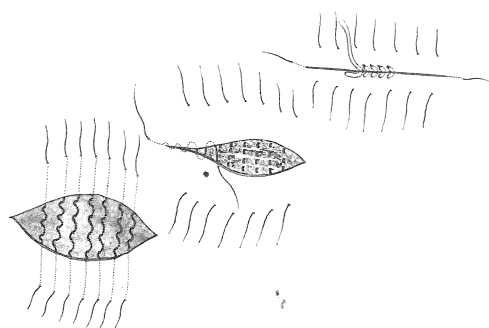


FIG. 3. Diagrams, showing placement of the various rows of sutures.

toralis major (anteriorly) and the *latissimus dorsi* (posteriorly). Enough skin and subcutaneous tissue was resected to remove all grossly visible disease. The amount of skin resected varied slightly, but a segment approximately 15×8 cm (measured in contracted state) was removed. The dissection proceeded from anterior to posterior, carefully staying on the surface of the axillary fascia and avoiding contamination of the deeper axillary contents. Hemostasis was secured with 4-0 chromic ties and electrocautery. (No nonabsorbable suture was permanently buried.) The skin edges were undermined between the dermis and the subcutaneous fat for a distance of 3 mm, to aid in eversion of the sutured edges. No other undermining was done.

The wounds were then irrigated and closure was begun with retention sutures of #1 nylon, placed about 4 cm from the wound edges to carefully pick up the axillary fascia at 2 or 3 points in the depths of the wound. From 8 to 16 such sutures were placed (Fig. 3). These sutures were tagged with hemostats and laid aside.

Next a 2-0 nylon subcuticular suture was started anteriorly and continued the entire length of the wound, exiting in several places for ease in removal (Fig. 3). Carefully placed 4-0 nylon vertical mattress sutures were used to achieve eversion of the central portion of the wound (Fig. 2, right)—but these loosely tied mattress sutures were not relied upon to contribute to the strength of the wound closure. The wounds were dressed with *Adaptic*® gauze and a bolus dressing of rolled abdominal pads. The #1 nylon sutures were then tied over this bolus dressing. No drains were used.

POSTOPERATIVE CARE

The patients' arms remained at their sides, without the use of splints or bandages. Movement anteriorly and posteriorly was permitted, but the patient was instructed not to abduct the extremity. Patients provided their own toilet care. They were discharged from the hospital as early as the first postoperative day, when the patient was a confident, intelligent, and cooperative person.

The bolus dressing was removed on the 4th postoperative day, the mattress sutures on the 5th or 6th day. The strength of these closures depended upon the carefully placed subcuticular sutures which remained in place for at least 14 days after operation. Patients were instructed to wash under their arms with soap and water 3 times daily after the bolus dressing had been removed. They

were not allowed to move their arms until the 17th day, and then only with ease or pain.

Beginning on the 4th day, progressive exercises were begun. To achieve full 180° abduction this usually required

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Of 10 patients (5 males, 5 females), 60% were treated, 60% without drainage, and 70% of the open areas at 7 d



FIG. 4. The final result. The small central breach.

were not allowed wide abduction of the arms until the 17th or 18th postoperative day, and then only to the level of tightness or pain.

Beginning on the 21st postoperative day, progressive active stretching exercises were begun. These continued until full 180° abduction was achieved, and this usually required 6 weeks.

RESULTS

Of 10 patients (20 wounds) consecutively treated, 60 per cent healed *per primam* without drainage and with no open areas at 7 days after operation.

Thirty-five per cent of the wounds had small areas of serous drainage where skin edges were incompletely healed at this time. They went on to heal by the 18th day. Only one of the wounds (5 per cent) had a significant central breakdown; this healed by secondary intention, without resort to grafting or secondary suture. It happened to be in the one male diabetic patient in the series (Fig. 4, below).

All patients achieved the abduction shown in Figure 4 between the 4th and 9th week. No secondary operations were necessary, no wound hematomas were

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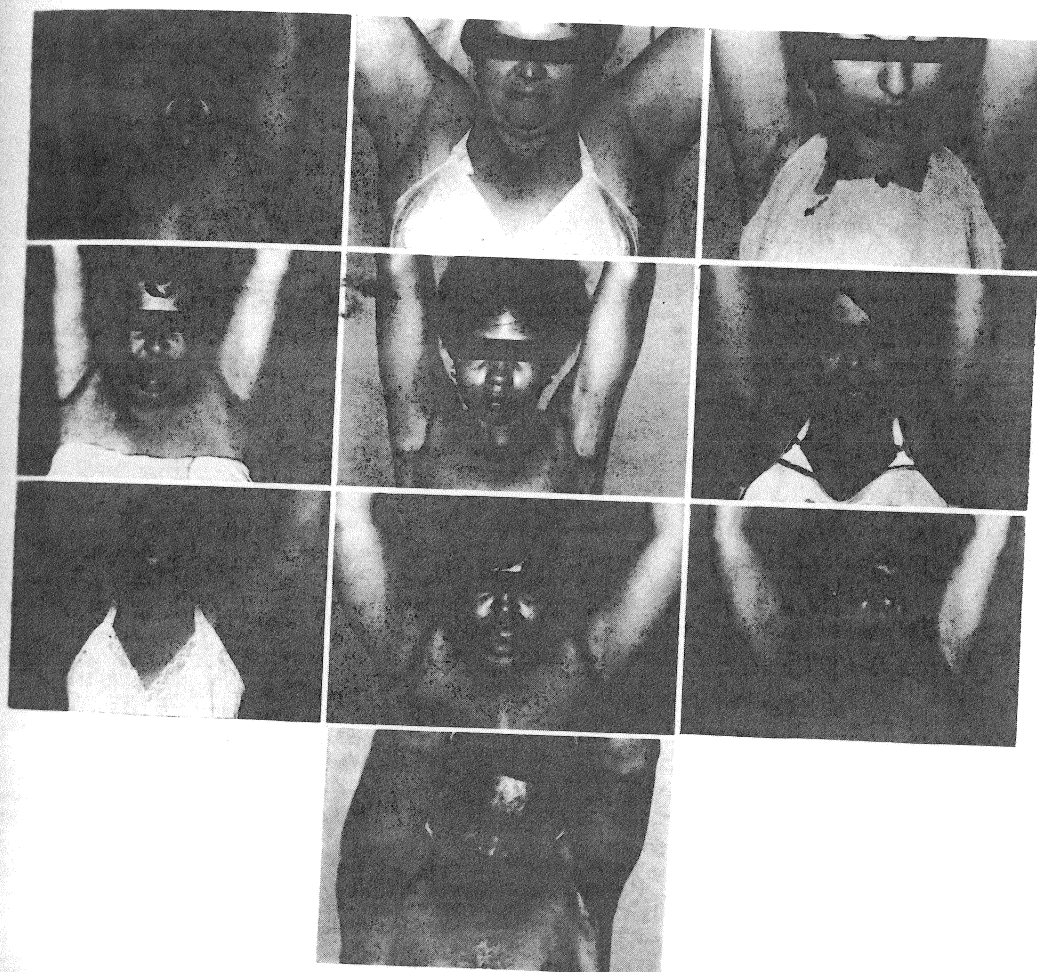


FIG. 4. The final results in the 10 patients. The bottom patient is the one who had the small central breakdown (in his left axillary wound) and he healed with the result shown.

encountered. One case of unilateral transient lymphedema of the forearm occurred. Two instances of unilateral medial brachial cutaneous anesthesia were noted. (These were probably due to section of the cutaneous nerves at the time of operation.) No other nerve deficits were encountered. There were no vascular complications. Four small stitch abscesses occurred. No recurrences were noted during the 6-week to one-year follow-up period. No blood transfusions were given to any patient in this series.

DISCUSSION

This series of patients has shown that wide resection of axillary skin and primary closure of the wound is feasible. We believe it to be the treatment of choice for the following reasons:

1. The technique is simple and effective.
2. It may be rapidly performed bilaterally—and simultaneously, even for rather large defects.
3. The resulting scar is mostly hidden in the axilla. Limitation of shoulder motion has not been a problem.
4. Blood loss is minimal; transfusion is not required.
5. No donor site defect is produced. This is particularly advantageous to black patients.
6. Wound healing problems are minimal.
7. Postoperative care is simple and hospitalization time is short.

We must stress the importance of precise closure of these wounds in the manner described. Minor technical errors, such as uneven approximation of the skin edges by the subcuticular suture, will result in delayed healing. Although it often requires 6 weeks for these patients to achieve full 180° abduction, it is often possible for them to return to work long before that time. Most activities can be performed with 0° to 90° abduction, and our patients achieved this range of motion by the 18th postoperative day.

SUMMARY

We believe excision of all involved axillary skin and subcutaneous tissue to be the treatment of choice for all cases of chronic axillary hidradenitis suppurativa. In 10 consecutive cases with rather large excisions, it was possible to achieve primary closure of the wounds without permanent restriction of shoulder motion.

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