e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(1); 476-481

Original Research Article

A Hospital Based Observational Assessment of Radical Excision of HS of Bilateral Axilla and Reconstruction with Posterior Arm Flap

Radha Raman

Assistant Professor, Department of Plastic Surgery, PMCH, Patna, Bihar, India

Received: 15-11-2022 / Revised: 05-12-2022 / Accepted: 29-12-2022
Corresponding author: Dr. Radha Raman
Conflict of interest: Nil

Abstract

Aim: This study presents the experience of radical excision of HS of bilateral axilla and reconstruction with posterior arm flap.

Methods: The present study was conducted in the Department of Plastic Surgery, PMCH, Patna, Bihar, India for one year and patients with HS in the axillary region who underwent reconstruction with posterior arm flap were included in the study.

Results: Overall, 10 patients (7 male, 3 female) with axillary Hurley grade 3 HS were included in the study. Of these, 3 patients had left-sided, 4 patients had right-sided, and 3 patients had bilateral axillary HS. All of the defects were reconstructed, with 17 PAPF being utilised in total following wide excisions of the involved areas. The mean age of the patients was 31.1 years, with a range of 16 to 49 years. 4 of the patients had diabetes mellitus, 6 of the patients were smokers and one patient had diabetes with habit smoking. Majority of the patients underwent island flaps. The flap sizes ranged from a minimum of 20 cm2 to a maximum of 84 cm2 (mean 39.5 cm2). Follow-up of patients ranged from 12 to 42 months. Wound dehiscence was detected in one patient, and another patient developed marginal necrosis in the postoperative period; otherwise, no complications were observed.

Conclusion: Radical excision of axillary hidradenitis must be considered early on presentation. After wide excision, simultaneous bilateral reconstruction with posterior arm flap is a simple and reliable technique with an excellent patient-reported outcome.

Keywords: Hidradenitis suppurativa, Radical excision, Axilla reconstruction, Posterior arm flap

Introduction

The axillary region is an anatomically important structure which hosts the shoulder joint and the major vessels and nerves traveling from the thorax to the arm. Although axillary defects are not seen frequently, when needed, reconstruction of this area should be performed meticulously due to its critical location and crucial content. [1]

Hidradenitis suppurativa (HS) is a chronic inflammatory disease arising from the hair follicles in apocrine gland-rich areas; it is also one of the most common indications for axillary surgery. Hidradenitis suppurativa has a serious impact on the quality of patients' daily life, as it causes both physical and psychological problems. There are several treatment options, depending on the severity of the condition. In the early stages of HS, a conservative

approach along with medical treatment is usually effective; however, as the disease is progressive, in its advanced stages, radical excision of the affected glands is the only current cure. [2]

Recurrent infection of the axilla with hidradenitis suppurativa (HS) is a debilitating disease. Antibiotics alone are not effective in the treatment of recurrent and advanced disease. [3] Radical excision of all the involved tissues up to the fascia is mandatory to eliminate the disease definitively. [4] The resultant defect should be reconstructed with well-vascularized tissue. Simultaneous reconstruction of bilateral axillary defect can be done with the posterior arm flap, which has a robust blood supply.

Historically HS was thought to be a disease of the sweat glands based purely on Velpeau' s description of anatomical distribution of the disease in the axilla and perineum. It was in 1922 that the disease was localized to the apocrine glands. [5] The histological features were initially described by Brunsting in 1939, with further histological studies confirming the disease to be a defect in the follicular epithelium. [6] HS can affect any area with apocrine sweat glands and has the potential to involve multiple sites concurrently. Commonly affected sites include the axilla, groin, perineum and perianal areas. [7] It is more common in the axilla for women and the perineal region in men. [8] Axillary HS is bilateral in 75% of cases. [9] The exact aetiology of HS still remains unclear; however, possible cited associations include cigarette smoking, obesity, diabetes mellitus, and Crohn's disease. [10,11] HS is a chronic debilitating condition that has widespread functional and psychosocial implications. Patients have difficulty with maintaining hygiene, are prone to recurrent infections and report a poor quality of life. [7]

This study presents the experience of radical excision of HS of bilateral axilla and reconstruction with posterior arm flap.

Methods

The present study was conducted in the Department of plastic surgery, PMCH, Patna, Bihar, India for one year and patients with HS in the axillary region who underwent reconstruction with posterior arm flap were included in the study.

Patient variables including age, gender, body mass index (BMI), duration of complaints, sites involved, and details of previous treatment were recorded. Surgical variables included the size of a defect, length of hospital stay, and complications. On follow-up, recurrence and patient satisfaction were recorded.

Surgical Technique

General anesthesia was used in all patients. Patients were positioned in a supine posture with both arms abducted and rested on hand tables. The involved tissue was excised radically, with all the unhealthy subcutaneous fat and fibrotic tissue and the sinuses, including the fascia. Most often, the dissection extended till the axillary vein was exposed.

With the arm lifted at 90° from the table and supported by an assistant, an ellipsoid-shaped posterior arm flap was designed with its long axis connecting the olecranon and the posterior axillary fold. A constant perforator was detected with the help of a handheld Doppler (8MHz) at 1 to 2 cm medial to the post axillary border and 3 to4 cm distal to the axillary crease on the arm. Size of the flap may vary depending on the size of the defect, with the farthest length reaching the junction of proximal 2/3rd and distal 1/3rd of the arm, while the width depends on skin pinch and ability to close the donor primarily.

Elevation of the flap is straightforward, from distal to proximal, in the subfascial plane up to the marked perforator. The skin and the subcutaneous tissue were

incised down through the brachial fascia, including the fascia into the flap. The plane is in between the triceps brachii muscle and the fascia. The pedicle can be seen on the undersurface of the flap, running within the fascia. At this point, either an islanded flap or a flap with a skin bridge would be easily transposed on the defect. Perforator dissection is not mandatory for the flap to reach the defect in the axilla. The donor site was closed primarily after keeping a suction drain.

Results

Table 1: Patient details

Patient	Gender	Age	Side Flap	Dimensions (cm)	Comorbidity	Flap Type	Complication	Follow up in months
1	Male	22	L	5 x 4	Smoker (8 pack-year)	Pedicled	None	42
2	Female	44	Bilateral	10x6	DM	Pedicled Island	Wound dehiscence	39
3	Male	48	R	6 x4	DM Smoker (30 pack-year)	Island	None	37
4	Male	35	R	5x 4	Smoker (20 pack-year)	Island	None	33
5	Male	28	Bilateral	8 x5	DM Smoker (20 Pack-year)	Island	None	24
6	Female	24	R	7 x 3	None	Island	None	
7	Male	28	Bilateral	8 x5	DM Smoker (20 pack-year)	Island	None	30
8	Female	24	R	7 x3	None	Island	None	28
9	Male	16	L	7 X 6	Smoker (1 pack-year)	Island	None	30
10	Male	43	L	9 x4	Smoker (24 pack-year)	Island	Marginal necrosis	33

Overall, 10 patients (7 male, 3 female) with axillary Hurley grade 3 HS were included in the study. Of these, 3 patients had left-sided, 4 patients had right-sided, and 3 patients had bilateral axillary HS. All of the defects were reconstructed, with 17 PAPF being utilised in total following wide excisions of the involved areas. The mean age of the patients was 31.1 years, with a range of 16 to 49 years. 4 of the patients had diabetes mellitus, 6 of the patients were smokers and one patient had diabetes with habit smoking. Majority of the patients underwent island flaps. The flap sizes ranged from a minimum of 20 cm2 to a maximum of 84 cm2 (mean 39.5 cm2). Follow-up of patients ranged from 12 to 42 months. Wound dehiscence was detected in one patient, and another patient developed marginal necrosis in the postoperative period; otherwise, no complications were observed.

Discussion

Hidradenitis suppurativa was first described by Velpau in 1839. [11] It was believed to arise from the apocrine glands, and was thus also referred to as apocrinitis [12]; however, more recent histological studies have shown that HS actually arises from the follicular epithelium. [13] The underlying pathological mechanism involves infundibular keratosis, follicular epithelial hyperplasia, cellular debris accumulation, and cyst formation in the hair follicle resulting in occlusion of the follicle, which eventually lead to rupture of the follicle. As a result of follicle rupture, release of keratin and bacteria triggers an immune reaction, and abscess

formation, sinus tract formation, scarring, and even contracture formation may then be seen, depending on the severity and the duration of the inflammation. [14] The prevalence of HS ranges from 1% to 4% of the population. [15]

According to the modified Dessau definition, this condition is diagnosed using a combination of diagnostic lesions, topographic features, and the history of the disease. [16] Hidradenitis suppurativa is seen in women 3 times more than in men, and it is usually seen in people in their early 20s; however, HS has also been reported in children and postmenopausal women. [17] The main risk factors include obesity, smoking, gender, age, and genetic susceptibility. Excessive sweating, stress, tight clothing, friction, using deodorant and other cosmetic products, shaving, consuming fermented beverages, and menstruation are among other potential risk factors. [18]

In our experience, a posterior arm flap is a preferred choice, considering its simplicity and reliability. It is based on an unnamed constant artery arising from the brachial artery or the profunda brachii artery through the triceps muscle aponeurosis at the termination of the tendon of teres major. Initially, it was described as a free flap by Masquelet et al. [19] Later, pedicled posterior arm flap was used in axillary reconstruction after excision in severe HS [20] and axillary burn contractures. [21] It is used with a skin bridge at the base or an islanded flap in axilla reconstruction. The constant robust vascularity explains the low incidence of complications in these patients, corroborated in all studies. [22] It is a consistently reliable flap with no instances of flap ischemia or partial or complete flap failure. Donor-site morbidity was only in the form of a linear scar in the back of the arm, which was accepted readily in our patients because of the brachioplasty effect seen simultaneously on both arms. [23] The color and contour match is acceptable, with no secondary procedures needed in most patients. In bilateral cases, Sirvan et al preferred to operate the less affected side after there was complete healing on another side. [24] Similarly, Thomson et al also preferred a second procedure for the contralateral side. [25]

Where the defect is larger, there is no restriction of the use of additional local flaps as required. In the postoperative period, splinting for immobilization is not required; this differs from most of the other surgical treatment options. Patients undergoing this procedure were discharged on either their first or second postoperative day, and then followed in the outpatient clinic. [26] For male patients with hair on their posterior arms, although the axilla is reconstructed with similar hairy tissue, we recommend epilation in order to reduce the risk of recurrence. For female patients, the fact that this area has a much lower incidence of hair follicles results in reduced risk of recurrence. In case of a complication leading to the loss of the posterior arm flap, the flaps from thoracic or back regions remain as secondary options for further reconstruction. Two patients demonstrated minor complications in our series. One of them had wound dehiscence and underwent secondary suturation after thorough debridement. The flaps from these procedures can look bulky at the initial stage due to the fact that the arm tissue is relatively thicker than the axillary tissue. The flap atrophies with time and the wound edges become level. In unilateral reconstruction cases, minimal asymmetry between the proximal levels of the arms thus develops eventually.

Conclusion

Radical excision of HS of the axilla must be considered early on presentation, since this is definitive treatment. Simultaneous reconstruction of the bilateral axilla with posterior arm flap is a simple and reliable technique, with an excellent patient-reported outcome.

References

1. Sirvan SS, Demir IA, Irmak F, Sevim KZ, Dagdelen D, Yazar SK, Karsidag S. Posterior arm perforator flap for axillary reconstruction after hidradenitis suppurativa excision. Plastic Surgery. 2019 Aug;27(3):204-10.
2. Schmidt M, Dunst-Huemer KM, Lazzeri D, Schoeffl H, Huemer GM. The versatility of the islanded posterior arm flap for regional reconstruction around the axilla. J Plast Reconstr Aesthet Surg. 2015;68(7):953-959.
3. Alikhan A, Lynch PJ, Eisen DB. Hidradenitis suppurativa: a comprehensive review. Journal of the American Academy of Dermatology. 2009 Apr 1;60(4):539-61.
4. Rompel R, Petres J. Long-term results of wide surgical excision in 106 patients with hidradenitis suppurativa. Dermatologic surgery. 2000 Jul;26(7): 638-43.
5. Slade DE, Powell BW, Mortimer PS. Hidradenitis suppurativa: pathogenesis and management. British journal of plastic surgery. 2003 Jul 1;56(5):451-61.
6. Attanoos RL, Appleton MA, Douglas-Jones AG. The pathogenesis of hidradenitis suppurativa: a closer look at apocrine and apoeccrine glands. British Journal of Dermatology. 1995 Aug;133(2):254-8.
7. Tanaka A, Hatoko M, Tada H, Kuwahara M, Mashiba K, Yurugi S. Experience with surgical treatment of hidradenitis suppurativa. Annals of plastic surgery. 2001 Dec 1;47(6):636-42.
8. Altmann S, Fansa H, Schneider W. Axillary hidradenitis suppurativa: a further option for surgical treatment. Journal of Cutaneous Medicine and Surgery: Incorporating Medical and Surgical Dermatology. 2004 Feb; 8(1): 6-10.
9. Finley EM, Ratz JL. Treatment of hidradenitis suppurativa with carbon dioxide laser excision and second-intention healing. Journal of the American Academy of Dermatology. 1996 Mar 1;34(3):465-9.
10. Civelek B, Aksoy K, Bilgen E, İnal I, Sahin U, Çelebioğlu S. Reconstructive options in severe cases of Hidradenitis suppurativa. Open Medicine. 2010 Dec 1;5(6):674-8.
11. Velpeau A, Bechet JZ. Dictionnaire de médecine, un repertoire générale des Sciences Medicals sous le rapport theorique et pratique. Paris. 1839;2:18 39-91.
12. BRUNSTING HA. Hidradenitis suppurativa; abscess of the apocrine sweat glands: a study of the clinical and pathologic features, with a report of twenty-two cases and a review of the literature. Archives of Dermatology and Syphilology. 1939 Jan 1;39(1):10 8-20.
13. John H, Manoloudakis N, Stephen Sinclair J. A systematic review of the use of lasers for the treatment of hidradenitis suppurativa. J Plast Reconstr Aesthet Surg. 2016;69(10) :1374-1381.
14. von Laffert M, Stadie V, Wohlrab J, Marsch WC. Hidradenitis suppurativa/acne inversa: bilocated epithelial hyperplasia with very different sequelae. Br J Dermatol. 201 1;164(2):367-371.
15. Alikhan A, Lynch PJ, Eisen DB. Hidradenitis suppurativa: a comprehensive review. J Am Acad Dermatol. 2009;60(4):539-561.
16. Zouboulis CC, Desai N, Emtestam L, et al. European S1 guideline for the treatment of hidradenitis suppurativa/acne inversa. J Eur Acad Dermatol Venereol. 2015;29(4):619-644.
17. Esmann S, Dufour DN, Jemec GB. Questionnaire based diagnosis of hidradenitis suppurativa: specificity, sensitivity and positive predictive

value of specific diagnostic questions. Br J Dermatol. 2010;163(1):102-106.
18. von der Werth JM, Williams HC. The natural history of hidradenitis suppurativa. J Eur Acad Dermatol Venereol. 2000;14(5)389-392.
19. Masquelet A C, Rinaldi S. Anatomical basis of the posterior brachial skin flap. Anat Clin. 1985;7(03):155–160.
20. Elliot D, Kangesu L, Bainbridge C, Venkataramakrishnan V. Reconstruction of the axilla with a posterior arm fasciocutaneous flap. Br J Plast Surg. 1992;45(02):101–104.
21. Guha G, Agarwal A K, Gupta S. Posterior arm flap in management of axillary contracture. Burns. 2013;39 (05):972–977.
22. Guha G, Agarwal A K, Gupta S. Posterior arm flap in management of axillary contracture. Burns. 2013;39 (05):972–977.
23. Huemer G M. Some thoughts on the posterior brachioplasty. Plast Reconstr Surg. 2011;127(06):2516–2517.
24. Sirvan S S, Demir I A, Irmak F. Posterior arm perforator flap for axillary reconstruction after hidradenitis suppurativa excision. Plast Surg (Oakv) 2019;27(03):204–210.
25. Thomson DR, Saltrese S, Mehdi S. Modified Posterior Arm Flap for Axillary Hidradenitis Suppurativa. Ann Plast Surg. 2022 Jan 1;88(1):84-87.
26. Lechheb, Khadija, Berdi, Fadoua, Ennafah, Wafaa, & Lamsaouru, Jamal. Analyse Des Risques a Priori En Unite De Retrocession Au Sein De L'unite De Gestion Des Produits a Statuts Particuliers a L'hmimv De Rabat: Processus De Dispensation. Journal of Medical Research and Health Sciences, 2022;5(10): 2307–2316.