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Research Article

OUTCOME OF SPLIT-THICKNESS-SKIN GRAFT [STSG] FOR TREATMENT OF SEVERE HIDRADENITIS SUPPURATIVA OF THE AXILLA AT PLASTIC SURGERY DEPARTMENT NISHTAR HOSPITAL, MULTAN.

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Abstract:

Background: Hidradenitis suppurativa [HS] is a pain full, chronic, inflammatory disease involving the apocrine glands of the axillary, groin and mammary regions with significant scarring, physical and psychosocial sequel. The lesions are usually painful and appear in regions where skin rubs together, such as armpits or groin HS prevalence ranges from 0.05 to 1%.^[1] Severe axillary HS is associated with high rates of recurrence, scarring, infection, fistula formation, skin cancer [SCC] and it requires extensive surgical resection with challenging reconstruction associated with risk of post-operative complications^[2]. The most effective method for reconstruction of the axilla after excision of HS is yet to be identified^[3]. Surgical excision of the affected tissue and coverage is the gold standard treatment. When the process becomes chronic, wide surgical excision and coverage with split-thickness skin graft [STSG] is a good option.^[4]

Methods: A descriptive case series study was conducted on 70 subjects with soft tissue defects created after the excision of H.S of the axilla and coverage was done with STSG over 3 years, we enrolled 70 consecutive patients with Hurley's Stage II and III HS of the axilla who underwent surgical excision with reconstruction using STSG [n=]. We evaluated and compared intraoperative and post-operative data, quality of life [dermatology life quality index questionnaire] and pain/discomfort [visual analogue scale] before and after surgery.

Results: Seventy surgical procedures were done in which wide local excisions with 2-3 cm healthy margins followed by coverage with STSG was performed. Regarding post-operative complications, there was hematoma formation in 10 cases [13.13], infection occur in 05 [07.1] cases and no complication in 55 [78.60] cases. As for STSG, there was partial lost in 09 [12.8] cases, complete STSG lost in 02 [02.85]. The results show that successful treatment, without recurrence, was accomplished in 84.24% of the cases. The intervention was generally well tolerated

Patients who underwent surgical excision and STSG reconstruction had significantly faster recovery. All patients reported an improved quality of life [QOL] after them. All patients reported a reduction in pain /discomfort.

Conclusion: Conservative treatment methods for the control of this disease have little or no effects especially stage 2 and stage 3 on axillary hidradenitis suppurativa. The morbidity, skin changes and depression and risk of SCC associated with this disease is significant, and the only successful treatment is wide surgical excision and reconstruction/ coverage with STSG.

Keywords: Hidradenitis Suppurativa [HS]; Split-Thickness Skin Graft [STSG], Improved Quality of Life [QOL].

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INTRODUCTION:

Hidradenitis suppurativa is a chronic relapsing disorder of the follicle pilosebaceous units [FPSUs]. Hidradenitis suppurativa [HS], also known as acne in versa, was first described in 1839 by Alfred Velpeau, who reported H.S is a chronic inflammation in the skin with formation of superficial abscesses and recurrent draining souses predominantly in the axilla, breast, and perianal regions. Hidradenitis suppurativa has been referred to by multiple names in the literature, as well as in various cultures[5]. In 1854, VerneiuI suggested an association between HS and sweat glands The incidence may be as high as one in 300.[6] An estimated 1% of the population suffers from hidradenitis suppurativa/acne inversa[7].The disease typically occurs after puberty, in the second and third decade of life and seems to decrease over time, with a lower prevalence among those of 55 years and older.[8] Patients with a positive family history of HS seem to develop lesions at a younger age.[9] There is no clear racial predilection, although some studies point to a higher prevalence in individuals of African descent.[10]

The exact cause of HS is still unknown and most probably multiple factors are involved The primary event in the pathogenesis is believed to be follicular hyperkeratosis with plugging and dilatation of the pilo follicular sebaceous unit, rupture and extrusion of follicular contents, including keratin, corneocytes, bacteria and sebaceous matter into the dermis. Subsequently, as a result inflammation, abscess and sinus tract formation can occur.

3.2 Smoking and obesity are two well-established risk factors in the development of HS. Approximately 80-90% of the HS patients smokes or has a history of smoking. Wiltz et al. reported an association between smoking and perianal HS in 70% of patients. Obesity is an exacerbating factor, and weight loss can help control the disease severity.[4]

The patients usually complaint of sweating, heat, stress, fatigue and tight clothing as aggravating

factors. The role of chemical depilatories, deodorants, and talcum powder as a trigger factor for HS is controversial.. Bacterial cultures of HS are frequently sterile. Previous microbiological studies found a wide range of bacteria sporadically associated with HS lesions, including Staphylococcus and Streptococcus.[11] A role for hormones was advocated by Stellon et al. who noticed a link between initiation of treatment with certain combined oral contraceptives and the onset of HS, possibly due to the progestogens in these contraceptives.[12] Additionally, Mortimer et al. found a higher concentration of total testosterone in HS patients than in a control group without HS. In 1985, Fitzsimmons et al. systematically investigated the genetic basis of HS in 26 families and observed an autosomal dominant inheritance pattern with a variable penetrance[13]. This was later confirmed by von der Werth et al.[14]

Several studies suggest that HS is a disease of immune dysregulation[15]. HS is associated to other immune mediated diseases like pyoderma gangrenosum [PG] or Crohn's disease. Besides smoking and obesity, more comorbidities have been linked to HS, including hypertension, dyslipidemia, arthropathies and polycystic ovarian syndrome, in an adjusted analysis. However, a more recent report associated HS with metabolic syndrome [diabetes mellitus, hypertension, dyslipidemia and obesity][16]. HS and co-occurring [skin] diseases are broadly mentioned in literature. Since 1991 several case-reports have described the co-occurrence of Crohn's disease and HS[17-19]. SCC may be considered to be a severe complication of HS, probably due to chronic inflammatory status. In such a developed phase, antibiotics are usually ineffective alone and surgical treatment is required[20]. Axillary location seems to be more frequent in women. The gluteal, inguinal, perineal, and perianal zones are more frequently involved in men. HS appears more commonly in young adults and is observed after puberty[4]. Children are never affected unless they have precocious puberty[8].

Currently available medical treatments are, however, insufficient and their efficacy is only transient. As a result, advanced-stage severe HS requires invasive surgical removal of all the involved tissue[1-3, 21, 22].

In this study, we present our experience with extensive axillary hidradenitis suppurativa cases, its surgical treatment and outcomes.

Staging

The Hurley clinical staging of hidradenitis suppurativa from 1989 is still relevant today

- First stage: Solitary/multiple, isolated abscess formation without scarring or sinus tracts
- Second stage: Recurrent abscesses, single/multiple widely separated lesions, with sinus tract formation and cicatrization
- Third stage: Diffuse/broad involvement or multiple interconnected sinus tracts/abscesses across the entire area.

OBJECTIVES:

To describe the surgical treatment of chronic axillary hidradenitis suppurativa, Hurley's stage II and III covering with STSG to reconstruct the defects in the axilla after excision of the involved area.

METHODS:

In this retrospective study which is carried out at Plastic Surgery Department, Nishtar Hospital, Multan, the medical records of 70 HS patients were treated between 2015 to 2018. 70 patients from both sexes those fulfilling the inclusion criteria were recruited for the study from the OPD of Nishtar hospital Multan. After taking complete history, performing general, physical, local and systemic examination routine and specific investigations were carried out. Pre-anesthesia evaluation was done. The permission was taken from the ethical Committee and the informed consent was obtained from the patient. The pre-operative photographs of the wounds of the patient were taken. Wide Local excision was done as complete excision of the affected tissue due to H.S, beyond the borders of activity, leaving clear margins. This Wide excision was done under general anesthesia and only [Hurley stage II and III] were included. The donor site for split thickness skin graft [S.T.S.G] was taken from the thigh. After surgical procedure the patients were shifted to the ward and appropriate postoperative care was done regarding fluid & electrolyte balance, pain control, nutritional status and antibiotic therapy. All patients were observed,

monitored for post-operative complications and dressing of the recipient site for any soakage twice daily for first 5 days in the ward. On day 5, the dressing of the axilla [recipient site] was removed and the status of STSG take was noted. At discharge, the study Performa was filled and photographs of recipient site [axillae] were taken.

The first follow-up visit was after one week. All the patients were subsequently followed-up at every week for three weeks. At each follow-up, the STSG of the axilla and donor site were examined for any late complications like skin graft loss [partial or complete] and the functional and aesthetic restorations were assessed and donor-site aesthetic appearance was observed.

RESULTS:

In total 70 excisions followed by coverage with STSG were performed. In 70 patients [45 were men and 25 women]. All the data regarding compiled and analyzed through SPSS version 21.0. Qualitative data like gender of the patients and Postoperative Complications of the STSG [Hematoma, Infection, Partial STSG Loss, Complete STSG Loss, and Aesthetic Depression] will be analyzed by frequencies. Quantitative data like age of the patients will be analyzed by presenting the mean age with STD. Patient characteristics and results are summarized in Table 2 and 3. Clinical course Postoperative pain, requiring pain medication, was present after 61% of the surgical interventions. The average duration for patients for resuming daily activities was 04 weeks. The average time required for total wound healing was 3.2 weeks. The overall rate of postoperative complications was 24%. Most important post-operative complications are STSG loss which may be partial or complete, postoperative bleeding and postoperative infection.

Successful treatment, without any recurrence, was accomplished in 84.28% of the cases [Figs. 1 and 2]. The disease recurrence within the operated fields occurred in 14% of the cases, after an average duration of 10 months. In 11% of the cases, de novo suppurating lesions appeared near the initial sites of surgery, after an average duration of 5 months. Patient satisfaction, the surgical procedure and clinical course were well tolerated and patients were generally satisfied. Cosmetic appearance Patients rated the cosmetic results reasonable or good in 83% of the cases. The remaining 17% considered the cosmetic appearance as poor.

Table.1

STSG Survival	Frequency	Percent
Partial Loss	9	12.8
Complete Loss	2	2.85
Complete Survival	59	84.28
Total	70	100.0

Table.2

POST.OP.COMPLICATIONS	Frequency	Percent
Hematoma	10	13.13
Infection	5	7.1
No Complication	55	78.6
Total	70	100.0

DISCUSSION:

Various surgical techniques are used in HS patients, such as incision and drainage, de roofing, CO2 laser surgery, radiation and excision followed by various wound closure methods[23, 24]. Incision and drainage offer only temporary relief, and lesions almost invariably recur. De roofing consists of removal of the 'roofs' of sinus tracts with preservation of the bottom of the tracts, which leads to fast re-epithelialization. CO2 laser ablation is believed to be a tissue-saving technique in which repeated vaporization of affected skin is performed [25]. The mainstay of surgical management remains complete excision of affected tissue while leaving clear margins. No consensus exists on the ideal extent of the margins used for excisions. Surgery is most valuable in the chronic and recurrent stages specially II and III of hidradenitis suppurativa. In mild cases limited excision can be used. For more advanced disease most authors recommend a wider margin of 1-3 cm into healthy tissue, or total removal of all hair-bearing tissue. Inadequate excision of diseased tissue is the major cause of recurrence [3]. The recurrence rate in patients treated with radical surgery varies considerably depending on the site affected; the highest rate is 50% in the sub mammary region. An overall recurrence rate of 2.5% has been estimated after wide surgical excision, with a median postoperative follow-up of 36 months. Wide surgical excision, with margins well beyond the clinical borders of activity, remains the most definitive surgical therapy. No surgical

consensus exists on the ideal extent of the margins. Although recurrence rates may be lower with surgery that is more aggressive, recurrences continue[3]. In my study we excised the involved area with 2-3cm healthy tissue [Hurley stage II and III]. Adequate excision to eradicate the disease often results in a defect that precludes primary closure; therefore, other techniques must be used to achieve wound coverage i.e STSG.

We present the efficacy and patient satisfaction of patients with moderate to severe HS, who were treated with local excisions and coverage with STSG. Seventy surgical procedures were done in which wide local excisions with 2-3 cm healthy margins followed by coverage with STSG was performed. Regarding post-operative complications, there was hematoma formation in 10 cases [13.13], infection occur in 05 [07.1] cases and no complication in 55 [78.60] cases. As for STSG, there was partial lost in 09 [12.8] cases, complete STSG lost in 02 [02.85]. The results show that successful treatment, without recurrence, was accomplished in 84.24% of the cases. The intervention was generally well tolerated

CONCLUSION:

From this study, we conclude that wide local excision followed by coverage with STSG is a valuable treatment for patients with moderate to severe HS, with low morbidity, low complications and a high patient satisfaction rate.



REFERENCES:

1. Sugio Y, Tomita K, Hosokawa K. Reconstruction after Excision of Hidradenitis Suppurativa: Are Skin Grafts Better than Flaps? Plastic and reconstructive surgery Global open. 2016;4[11]:e1128.
2. Bilali S, Todi V, Lila A, Bilali V, Habibaj J. Surgical treatment of chronic hidradenitis suppurativa in the gluteal and perianal regions. Acta chirurgica Iugoslavica. 2012;59[2]:91-5.
3. Mehdizadeh A, Hazen PG, Bechara FG, Zwingerman N, Moazenzadeh M, Bashash M, et al. Recurrence of hidradenitis suppurativa after surgical management: A systematic review and meta-analysis. Journal of the American Academy of Dermatology. 2015;73[5 Suppl 1]:S70-7.
4. Ather S, Chan DS, Leaper DJ, Harding KG. Surgical treatment of hidradenitis suppurativa: case series and review of the literature. International wound journal. 2006;3[3]:159-69.
5. Roustan G. Hidradenitis Suppurativa: Need for Early Diagnosis and Management of the Disease and Associated Conditions. Actas dermo-sifiliograficas. 2019;110[4]:261.
6. Tcheron H, Herlin C, Bekara F, Fluieraru S, Teot L. Hidradenitis Suppurativa: A Systematic Review and Meta-analysis of Therapeutic Interventions. Indian journal of dermatology, venereology and leprology. 2019;85[3]:248-57.
7. Cosmatos I, Matcho A, Weinstein R, Montgomery MO, Stang P. Analysis of patient claims data to determine the prevalence of hidradenitis suppurativa in the United States. Journal of the American Academy of Dermatology. 2013;68[3]:412-9.
8. Revuz JE, Canoui-Poitaine F, Wolkenstein P, Viallette C, Gabison G, Pouget F, et al. Prevalence and factors associated with hidradenitis suppurativa: results from two case-control studies. Journal of the American Academy of Dermatology. 2008;59[4]:596-601.

9. Schrader AM, Deckers IE, van der Zee HH, Boer J, Prens EP. Hidradenitis suppurativa: a retrospective study of 846 Dutch patients to identify factors associated with disease severity. *Journal of the American Academy of Dermatology*. 2014;71[3]:460-7.
10. Shlyankevich J, Chen AJ, Kim GE, Kimball AB. Hidradenitis suppurativa is a systemic disease with substantial comorbidity burden: a chart-verified case-control analysis. *Journal of the American Academy of Dermatology*. 2014;71[6]:1144-50.
11. Short KA, Kalu G, Mortimer PS, Higgins EM. Vulval squamous cell carcinoma arising in chronic hidradenitis suppurativa. *Clinical and experimental dermatology*. 2005;30[5]:481-3.
12. Vasey FB, Fenske NA, Clement GB, Bridgeford PH, Germain BF, Espinoza LR. Immunological studies of the arthritis of acne conglobata and hidradenitis suppurativa. *Clinical and experimental rheumatology*. 1984;2[4]:309-11.
13. Fitzsimmons JS, Guilbert PR, Fitzsimmons EM. Evidence of genetic factors in hidradenitis suppurativa. *The British journal of dermatology*. 1985;113[1]:1-8.
14. von der Werth JM, Jemec GB. Morbidity in patients with hidradenitis suppurativa. *The British journal of dermatology*. 2001;144[4]:809-13.
15. Kelly G, Sweeney CM, Tobin AM, Kirby B. Hidradenitis suppurativa: the role of immune dysregulation. *International journal of dermatology*. 2014;53[10]:1186-96.
16. Miller IM, Ellervik C, Vinding GR, Zarchi K, Ibler KS, Knudsen KM, et al. Association of metabolic syndrome and hidradenitis suppurativa. *JAMA dermatology*. 2014;150[12]:1273-80.
17. Pescitelli L, Ricceri F, Prignano F. Hidradenitis suppurativa and associated diseases. *Giornale italiano di dermatologia e venereologia : organo ufficiale, Societa italiana di dermatologia e sifilografia*. 2018;153[3 Suppl 2]:8-17.
18. Garg A, Hundal J, Strunk A. Overall and Subgroup Prevalence of Crohn Disease Among Patients With Hidradenitis Suppurativa: A Population-Based Analysis in the United States. *JAMA dermatology*. 2018;154[7]:814-8.
19. Aletaha D, Epstein AJ, Skup M, Zueger P, Garg V, Panaccione R. Risk of Developing Additional Immune-Mediated Manifestations: A Retrospective Matched Cohort Study. *Advances in therapy*. 2019.
20. Kohorst JJ, Shah KK, Hallemeier CL, Baum CL, Davis MDP. Squamous Cell Carcinoma in Perineal, Perianal, and Gluteal Hidradenitis Suppurativa: Experience in 12 Patients. *Dermatologic surgery : official publication for American Society for Dermatologic Surgery [et al]*. 2019;45[4]:519-26.
21. Nesmith RB, Merkel KL, Mast BA. Radical surgical resection combined with lymphadenectomy-directed antimicrobial therapy yielding cure of severe axillary hidradenitis. *Annals of plastic surgery*. 2013;70[5]:538-41.
22. Gatek J, Dudesek B, Kratka A, Vrana D, Duben J. Severe hidradenitis suppurativa. *Rozhledy v chirurgii : mesicnik Ceskoslovenske chirurgicke spolecnosti*. 2014;93[9]:468-71.
23. Highton L, Chan WY, Khwaja N, Laitung JK. Treatment of hidradenitis suppurativa with intense pulsed light: a prospective study. *Plastic and reconstructive surgery*. 2011;128[2]:459-65.
24. Mendes R, Zatz RF, Modolin MLA, Busnardo FF, Gemperli R. Radical resection and local coverage of hidradenitis suppurativa - acne inversa: analysis of results. *Revista do Colegio Brasileiro de Cirurgioes*. 2018;45[3]:e1719.
25. Mikkelsen PR, Dufour DN, Zarchi K, Jemec GB. Recurrence rate and patient satisfaction of CO2 laser evaporation of lesions in patients with hidradenitis suppurativa: a retrospective study. *Dermatologic surgery : official publication for American Society for Dermatologic Surgery [et al]*. 2015;41[2]:255-60.