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Comparison of Meshed versus Sheet Skin Graft for Treatment of Loss of Scrotum, Post Fournier Gangrene Surgery

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ABSTRACT

Background: Fournier's gangrene leads to significant scrotal tissue loss, traditionally managed with sheet skin grafts. Recently, meshed grafts have been introduced for improved coverage and healing. Due to limited comparative studies, this research was designed to evaluate outcomes between meshed and sheet skin grafts for scrotal reconstruction.

Objectives: To compare meshed versus sheet skin graft for treatment of loss of scrotum, post Fournier gangrene surgery in terms of patient satisfaction at a tertiary care hospital.

Duration: Three months w.e.f 08-05-2025 to 07-08-2025

Methodology: After ethical approval, 60 male patients with scrotal skin loss post-Fournier's gangrene surgery at Services Hospital, Lahore, were enrolled and randomized into two groups: meshed (Group A) and sheet (Group B) skin grafts. After counseling and consent, all underwent standardized graft procedures under general anesthesia, followed by postoperative care and follow-up.

Results: The study included 60 patients (mean age 42.10 ± 10.63 years, BMI 25.88 ± 3.65 kg/m²). Group A (meshed graft) showed higher satisfaction (80% vs. 46.7%, p = 0.007) and Genital Perception Scale scores (p = 0.003). Satisfaction was higher in all subgroups, though some lacked statistical significance due to sample size.

Conclusion: Meshed skin grafts were more effective than sheet grafts in scrotal reconstruction following Fournier's gangrene, demonstrating superior aesthetic outcomes, greater patient satisfaction, and similar complication rates. Stratified analysis revealed consistently higher satisfaction across all subgroups with meshed grafts, although statistical significance was limited, likely due to the small sample size.

Key Words: Fournier Gangrene, Skin Transplantation, Scrotum, Surgery, Mesh Graft, Sheet Graft, Reconstructive Surgical Procedures.

INTRODUCTION

Fournier's gangrene (FG) is a rare but life-threatening necrotizing fasciitis affecting the perineum and scrotum,

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first described by Jean-Alfred Fournier in 1883.[1] It predominantly affects men, with an incidence of approximately 1.6 per 100,000 in the United States.[1] Risk factors for FG include diabetes, chronic alcoholism, immunodeficiency, long-term steroid use, malignancy, cytotoxic therapy, malnutrition, and low socioeconomic status.[1,2] The condition is more commonly reported in low- and middle-income countries (LMICs), where delayed presentation and limited resources worsen outcomes.[3] Prompt surgical debridement remains the cornerstone of treatment, aimed at excising necrotic tissue and halting disease progression.[4] Once stabilized, reconstructive surgery becomes essential, as up to 67% of patients require some form of reconstruction to restore functional and aesthetic integrity of the scrotal and perineal region.[5,6] Reconstruction in these cases is technically demanding, with the primary goals being the restoration of a sensate, durable, and cosmetically acceptable scrotum, as well as supporting psychological recovery and social reintegration.[7] The standard therapeutic approach combines surgical debridement with intravenous fluids and broad-spectrum antibiotics.[8,9] Following initial management, options for reconstruction include primary closure, local flaps, full-thickness skin grafts (FTSGs), and split-thickness skin grafts (STSGs).[10] While FTSGs yield good cosmetic outcomes, their use is limited by donor site constraints and higher failure rates due to their limited fluid permeability. STSGs, which include the epidermis and part of the dermis, offer broader coverage and allow re-harvesting after healing. These can be used either as meshed or sheet grafts, each with specific advantages.[10,11] However, robust objective data on long-termpatient satisfaction, function, and cosmetic outcomes remains scarce.[2] Mortada et al. (2021) in Saudi Arabia while comparing meshed versus sheet skin graft for treatment of scrotum skin loss reported significantly higher rate of patient's satisfaction in meshed group than sheet group (86.7% vs. 41.7%; p-value=0.014).[10] But the evidence[10] is limited to a single foreign study. There was no local or other foreign study on the subject matter to the best of candidate's knowledge. Therefore, keeping in view burden of the disease, it was imperative to have more studies for creating local evidence. Results of this study will help to choose more appropriate technique of reconstruction of scrotum skin loss due to Fournier's gangrene in future practice.

METHODOLOGY

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The study was conducted as a randomized controlled trial at the Department of Plastic Surgery, Services Hospital, Lahore, over a six-month period following ethical approval of the synopsis. A total of 60 male patients, aged 18 to 60 years, who had undergone surgery for Fournier's Gangrene resulting in scrotal skin loss and required grafting for scrotal reconstruction, were enrolled. The sample size was calculated to achieve 80% power and a 5% level of significance, based on expected patient satisfaction frequencies of 86.7% for the meshed graft group and 41.7% for the sheet graft group.[10] Non-probabilities consecutive sampling was used, with patients randomized into two groups via the lottery method: Group A receiving meshed skin grafts (n=30) and Group B receiving sheet skin grafts (n=30). Patients with ASA status III or above and those undergoing repeat graft procedures after failure of the initial graft were excluded to control confounding factors. Following informed consent, detailed patient histories were collected, and clinical assessment was performed, including evaluation for Fournier's Gangrene signs such as inflammation, skin discoloration, crepitus, and necrosis. Scrotal loss was defined as absence of scrotal skin post-surgery, and graft uptake was assessed one week postoperatively, classified as 100%, 75-99%, 50-74%, or less than 50%. Patient satisfaction was measured using the Genital Perception Scale or SF-36 score, with a threshold of ≥30 indicating satisfaction. All surgical procedures were carried out under general anesthesia with endotracheal intubation for airway management. Preoperative preparation included shaving of the lower abdomen, genital region, and bilateral thighs to minimize infection risk, followed by intravenous administration of broad-spectrum antibiotics. Split-thickness skin grafts (STSG) were harvested from one or both thighs depending on defect size, using mineral oil and a Zimmer dermatome at a thickness of 0.015 inches. The donor sites were dressed with Sofra-tulle or Bactigras. In Group A, meshed grafts were sutured circumferentially around the scrotum using Vicryl 3/0, while in Group B, unmeshed sheet grafts were circumferentially sutured around the penile shaft with additional suturing at the sub coronal base. A urinary catheter was inserted prior to dressing, and recipient sites were covered with Sofra-tulle dressings. The penile shaft was immobilized in an erectile position using a sponge to optimize graft adherence and minimize movement, and stretching was performed during graft application to prevent wrinkles that could

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jeopardize graft viability. Postoperatively, patients received intravenous Augmentin, ciprofloxacin, and metronidazole to prevent polymicrobial infections; intravenous antibiotics were continued for 24 hours and then switched to oral Augmentin for five days. Maintaining graft immobility for at least five days was crucial for successful graft take. Patients were generally discharged on the fifth postoperative day. To reduce bias, all procedures were performed by the same surgical team, and data were recorded by the resident involved. At 15 days' follow-up, patients completed the genital perception scale proforma to assess satisfaction. Data analysis was performed using SPSS version 26. Numerical variables such as age and BMI were presented as mean ± standard deviation, while categorical variables including diabetes (blood sugar >200 mg/dl), hypertension (BP >160/90 mmHg), autoimmune disorders, patient satisfaction, hematoma, infection, and seroma were presented as frequencies and percentages. Comparisons of means between groups were conducted using independent sample t-tests, while categorical data were compared using chi-square tests, with significance set at $p \leq 0.05$. The frequency of patient satisfaction was specifically compared using chi-square analysis. Additionally, stratified analysis was conducted to examine the effect of potential confounders such as age, BMI, diabetes, hypertension, and autoimmune disorders on patient satisfaction, with post-stratification chi-square tests applied to determine significance at the same p-value threshold.

RESULTS

The study included a total of 60 patients with a mean age of 42.10 ± 10.63 years. Among them, 38.3% were between 18 and 40 years of age, while the majority (61.7%) were in the 41 to 60 years age group. The mean BMI was 25.88 ± 3.65 kg/m², with 43.3% of the participants falling within the normal weight range and 56.7% classified as overweight or obese. Regarding comorbid conditions, 35.0% of the patients had diabetes, and 43.3% had hypertension. Additionally, 18.3% of the patients had a history of autoimmune disorders, whereas 81.7% did not report any autoimmune disease. Data is given in Table 1.0. Both groups were statistically comparable at baseline across all evaluated variables, with no significant differences observed (p-value > 0.05), as shown in Table 2.0. A comparison of outcomes between the two groups is presented in Table 3.0. The mean

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Genital Perception Scale score was significantly higher in Group A (meshed graft) at 32.20 ± 3.24, compared to 28.80 ± 4.94 in Group B (sheet graft), with a statistically significant difference ($p = 0.003$). Patient satisfaction was also notably higher in Group A, where 80.0% of patients reported being satisfied, in contrast to only 46.7% in Group B. This difference was statistically significant ($p = 0.007$). These findings suggest that meshed skin grafts may lead to better aesthetic perception and greater patient satisfaction compared to sheet grafts in the reconstruction of scrotal defects following Fournier's gangrene. Table 4.0 presents a comparison of postoperative complications between the two groups. Hematoma formation was observed in 13.3% of patients in Group A and 6.7% in Group B, while infection was reported in 16.7% of Group A and 10.0% of Group B. Seroma occurred in 6.7% of patients in Group A and 13.3% in Group B. However, none of these differences were statistically significant, with p-values of 0.671 for hematoma, 0.706 for infection, and 0.671 for seroma. These findings indicate that the rates of common postoperative complications were comparable between the meshed and sheet skin graft groups. Stratified analysis of patient satisfaction revealed that Group A (meshed graft) consistently showed higher satisfaction rates across most subgroups compared to Group B (sheet graft). Statistically significant differences were observed in patients aged 41–60 years ($p = 0.021$), non-diabetics ($p = 0.008$), non-hypertensives ($p = 0.034$), and those without autoimmune disorders ($p = 0.019$). Although satisfaction rates were also higher in Group A across other subgroups, including younger patients, those with comorbidities, and different BMI categories, these differences did not reach statistical significance ($p > 0.05$) as shown in Table 5.0.

Table 1.0: Demographic Characteristics of Patients included in the Study

Characteristics	**Total (n=60)**
Age (years)	42.10±10.63
• 18-40 years	23 (38.3%)
• 41-60 years	37 (61.7%)
BMI (kg/m^2)	25.88±3.65
• Normal Weight	26 (43.3%)
• Overweight / Obese	34 (56.7%)

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Diabetes	
• Yes	21 (35.0%)
• No	39 (65.0%)
Hypertension	
• Yes	26 (43.3%)
• No	34 (56.7%)
Autoimmune Disorder	
• Yes	11 (18.3%)
• No	49 (81.7%)

Table 2.0: Comparison of Baseline Characteristics between the Study Groups

Characteristics	Group A (n=30)	Group B (n=30)	p-value
Age (years)	41.67±10.20	42.53±11.21	0.755 *
• 18-40 years	10 (33.3%)	13 (43.3%)	0.426 **
• 41-60 years	20 (66.7%)	17 (56.7%)	
BMI (kg/m²)	26.24±3.85	25.53±3.46	0.460 *
• Normal Weight	11 (36.7%)	15 (50.0%)	0.297 **
• Overweight / Obese	19 (63.3%)	50 (50.0%)	
Diabetes			
• Yes	11 (36.7%)	10 (33.3%)	0.787 **
• No	19 (63.3%)	20 (66.7%)	
Hypertension			
• Yes	11 (36.7%)	15 (50.0%)	0.297 **
• No	19 (63.3%)	15 (50.0%)	
Autoimmune Disorder			
• Yes	6 (20.0%)	5 (16.7%)	0.739 **
• No	24 (80.0%)	25 (83.3%)	

*Independent sample t test/ **Chi Square test, taking p-value≤0.05 as significant.

Table 3.0: Comparison of Genital Perception Scale Score and Patient's Satisfaction between the Groups

Characteristics	Group A (n=30)	Group B (n=30)	p-value
Genital Perception Scale	32.20±3.24	28.80±4.94	0.003 *

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Patient's Satisfaction			
• Yes	24 (80.0%)	14 (46.7%)	0.007 **
• No	6 (20.0%)	16 (53.3%)	

*Independent sample t test/ **Chi Square test, taking p-value≤0.05 as significant.

Table 40: Comparison of Complications between the Groups

Complication	Yes / No	Group A (n=30)	Group B (n=30)	p-value
Hematoma	Yes	4 (13.3%)	2 (6.7%)	0.671
	No	26 (86.7%)	8 (93.3%)	
Infection	Yes	5 (16.7%)	3 (10.0%)	0.706
	No	25 (83.3%)	27 (90.0%)	
Seroma	Yes	2 (6.7%)	4 (13.3%)	0.671
	No	28 (93.3%)	26 (86.7%)	

Chi Square test / Fisher's Exact test, taking p-value≤0.05 as significant.

Table 5.0: Comparison of Patients' Satisfaction between the Groups Stratified for Sub Groups

Variable	Sub Groups	Group A (n/n, %)	Group B (n/n, %)	p-value
Age	18-40 years	8/10 (80.0%)	7/13 (53.8%)	0.192
	41-60 years	16/20 (80.0%)	7/17 (41.2%)	0.021
BMI	Normal Weight	9/11 (81.8%)	7/15 (46.7%)	0.069
	Overweight / Obese	15/19 (78.9%)	7/15 (46.7%)	0.075
Diabetes	Yes	8/11 (82.7%)	6/10 (60.0%)	0.537
	No	1619 (84.2%)	8/20 (40.0%)	0.008
Hypertension	Yes	9/11 (81.8%)	8/15 (53.3%)	0.131
	No	15/19 (78.9%)	6/15 (40.0%)	0.034
Autoimmune Disorder	Yes	5/6 (83.3%)	3/5 (60.0%)	0.387
	No	19/24 (79.9%)	11/25 (44.0%)	0.019

Chi Square test / Fisher's Exact test, taking p-value≤0.05 as significant.

DISCUSSION

Fournier's gangrene is a rapidly progressing, life-threatening polymicrobial necrotizing fasciitis of the perineal, genital, and perianal regions.[12] It predominantly affects men and is associated with various predisposing factors, including advanced age, diabetes mellitus, chronic renal failure, immunosuppressive diseases, peripheral artery disease, chemotherapy, malignancy, alcoholism, smoking, urological surgeries, urinary tract infections, paraphimosis, urethral stricture, traumatic catheterization, and anorectal pathologies

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such as perianal, ischiorectal, and intersphincteric abscesses. Early diagnosis, hemodynamic stabilization, broad-spectrum antibiotic therapy, and aggressive surgical debridement remain the cornerstones of effective management. However, post-debridement reconstruction, particularly of scrotal defects, continues to pose significant challenges due to its impact on both functional outcomes and patient self-image.[13-15] Traditionally, sheet skin grafts have been used to cover scrotal defects, but they often fall short in terms of conforming to the scrotal contour and allowing adequate wound drainage. Meshed skin grafts, introduced more recently, offer better conformity, drainage, and graft take, especially in irregular wound beds. Despite these theoretical advantages, comparative data evaluating the outcomes of meshed versus sheet skin grafts remain limited particularly in local and regional clinical settings.[10,16] To address this gap, the present study was undertaken to compare these two grafting techniques in scrotal reconstruction following Fournier's gangrene. This study included 60 patients with a mean age of 42.10 ± 10.63 years and a mean BMI of 25.88 ± 3.65 kg/m². Most participants were aged 41–60 years, and over half were overweight or obese. Comorbidities included diabetes (35.0%), hypertension (43.3%), and autoimmune disorders (18.3%). Both groups were comparable at baseline ($p > 0.05$). Group A (meshed graft) showed significantly higher Genital Perception Scale scores and satisfaction rates than Group B (sheet graft). Postoperative complications were similar. Stratified analysis favored Group A across most subgroups, with statistical significance in older, non-diabetic, non-hypertensive, and immunocompetent patients. This study adds valuable data to the limited literature on optimal grafting techniques for scrotal reconstruction following Fournier's gangrene. Maguina et al. described split-thickness skin grafts as a safe and technically straightforward option, providing satisfactory cosmetic and functional outcomes. Building on this, Biju et al. analyzed 34 cases of Fournier's gangrene over a ten-year period and identified skin grafting as the predominant reconstructive method, particularly for scrotal and penile defects. In their series, grafts were used in nearly three-quarters of cases with low revision rates, and flap reconstruction was rarely required for scrotal defects. These findings align closely with our results and further support the practicality of grafting in this anatomical region. Importantly, the present study advances this evidence by directly comparing meshed and

sheet grafts, an aspect seldom addressed in previous literature. El-Sabbagh, in his series of 12 patients with scrotal defects, highlighted the role of flap-based approaches for larger tissue loss. While small- to medium-sized defects were closed primarily or with advancement flaps, extensive defects were effectively reconstructed using pudendal thigh flaps, with satisfactory long-term results. This underscores that while grafts suffice for most cases, local flaps remain valuable in selected scenarios with extensive tissue loss. Similarly, Susini et al. emphasized the importance of comprehensive multidisciplinary management in Fournier's gangrene, combining antibiotics, aggressive debridement, and reconstructive techniques. They noted that the anatomical configuration of the perineum makes skin grafts and local random flaps highly adaptable options, reserving more invasive procedures for exceptional cases. More recent evidence by English et al. (2024) further illustrates the importance of individualized planning. Their case demonstrated how multidisciplinary input and consideration of comorbidities contributed to a favorable outcome. They also highlighted the potential role of autologous skin cell suspension as an adjunct to skin grafting in patients with complex wounds, though long-term data are still needed to evaluate possible risks such as graft contracture. A direct comparison can be drawn with the study by Mortada et al., which is the only other work to evaluate meshed versus sheet skin grafts for genital reconstruction. In their series of 27 patients, meshed grafts achieved higher rates of complete take (66.6% vs 41.6%) and greater patient satisfaction (86.2% vs 41.7%) compared with sheet grafts, with the differences reaching statistical significance (p=0.014). Their findings are consistent with our observations and reinforce the conclusion that meshed grafts not only provide reliable coverage but also yield superior cosmetic and functional outcomes in scrotal reconstruction.

CONCLUSION

Meshed skin grafts were more effective than sheet grafts in scrotal reconstruction following Fournier's gangrene, demonstrating superior aesthetic outcomes, greater patient satisfaction, and similar complication rates. Stratified analysis revealed consistently higher satisfaction across all subgroups with meshed grafts, although statistical

significance was limited, likely due to the small sample size.

LIMITATIONS & RECOMMENDATIONS

This study's strength lies in its comparative design, balanced sample size, and focus on region-specific data, addressing a significant gap in the literature on scrotal reconstruction techniques. However, its limitations include a relatively small sample size and short-term follow-up, which may limit generalizability and long-term outcome assessment. Future studies should incorporate multicenter trials, larger cohorts, and extended follow-up to validate findings, explore functional outcomes, and develop standardized guidelines for optimal graft selection post-Fournier's gangrene.

Conflict of Interest: None

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REFERENCES

1. Huayllani MT, Cheema AS, McGuire MJ, Janis JE. Practical review of the current management of Fournier's gangrene. Plastic Reconstr Surg Glob Open. 2022;10(3):e4191.

2. Insua-Pereira I, Ferreira PC, Teixeira S, Barreiro D, Silva Á. Fournier's gangrene: a review of reconstructive options. Cent Eur J Urol. 2020;73(1):74-9.

3. Nnabugwu II, Onumaegbu OO, Okolie LT. Fournier's gangrene: a retrospective review of management outcomes and seasonal variations of clinical presentation. Afr J Urol. 2021;27(3):1-6.

4. Khalid A, Devakumar S, Huespe I, Kashyap R, Chisti I. A comprehensive literature review of fournier's gangrene in females. Cureus. 2023;15(5):e38953.

5. Zhang JY, Xiao CF, Wang C, Yao YB. Bibliometric insights in fournier's gangrene: research landscapes, turning points, and global trends. Front Surg. 2023;10:1057486.

6. Auerbach J, Bornstein K, Ramzy M, Cabrera J, Montrief T, Long B. Fournier gangrene in the emergency department: diagnostic dilemmas, treatments and current perspectives. Open Access Emerg Med. 2020:12(1):353-64.

7. Zhang KF, Shi CX, Chen SY, Wei W. Progress in multidisciplinary treatment of Fournier's gangrene.

Infect Drug Resist. 2022;15(1):6869-80.

8. Wójcik B, Superata J, Tuleja T, Kobielska E, Szyguła Z. Advances in Management of Fournier's gangrene by coupling intensive hospital treatment with innovative post-discharge hyperbaric oxygen therapy rehabilitation: a case report. Cureus. 2023;15(3):e36639.

9. Lewis GD, Majeed M, Olang CA, Patel A, Gorantla VR, Davis N, et al. Fournier's gangrene diagnosis and treatment: a systematic review. Cureus. 2021;13(10):e18948.

10. Mortada H, Alhablany T, Alkahtani D, Rashidi ME, Altamimi A. Meshed versus sheet skin graft for scrotum and perineal skin loss: a retrospective comparative study. Cureus. 2021;13(9):1-11.

11. Kavanagh F, Singhal S, Rozen WM. Split thickness skin graft compression: a scoping review. Gland Surg. 2023;12(2):297-301.

12. Kundan M, Ambedkar SN, Kumar R, Nyekha V. Outcome of Fournier's gangrene in relation to Fournier Gangrene Severity Index (FGSI) score. J Fam Med Prim Care. 2024;13(8):2941-5.

13. Hart J, DeSano J, Hajjar R, Lumley C. Total scrotal reconstruction following Fournier's gangrene with bilateral prelaminated superior medial thigh flaps. BMJ Case Rep. 2021;14(4):e240618.

14. Susini P, Marcaccini G, Efica J, Giuffre MT, Mazzotta R, Caneschi C, et al. Fournier's gangrene surgical reconstruction: a systematic review. J Clin Med. 2024;13(14):4085.

15. Tripodi D, Amabile MI, Gagliardi F, Frusone F, Varanese M, De Luca A, Pironi D, D'Andrea V, Sorrenti S, Cannistrà C. Algorithm of rational approach to reconstruction in Fournier's disease. Open Med. 2021;16(1):1028-37.

16. El-Sabbagh AH. Coverage of the scrotum after Fournier's gangrene. GMS Interdiscip Plast Reconstr Surg DGPW. 2018;15;7:01.

17. Biju NE, Sadiq M, Raj S, Patel A, Shah R, Weale RD, et al. Fournier's gangrene reconstruction: a 10-year retrospective analysis of practice at Guys and St Thomas's NHS Foundation Trust. J Plast Reconst Aesthet Surg. 2023;80:13-5.