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DERMOFAT GRAFTS AND MYOCUTANEOUS FLAPS IN GENITAL RECONSTRUCTION: A SYSTEMATIC REVIEW

ENXERTOS DERMOGORDUROSOS E RETALHOS MIOCUTÂNEOS NA RECONSTRUÇÃO GENITAL: UMA REVISÃO SISTEMÁTICA

INJERTOS DERMOGRASOS Y COLGAJOS MIOCUTÁNEOS EN LA RECONSTRUCCIÓN GENITAL: UNA REVISIÓN SISTEMÁTICA

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ABSTRACT

Introduction: Genital reconstruction plays a critical role in restoring form, function, and psychosocial well-being after trauma, infection, oncologic resection, or congenital malformation. Dermofat grafts and myocutaneous flaps have emerged as fundamental reconstructive strategies, offering volume restoration, vascularized coverage, and improved cosmetic outcomes. Despite their widespread use, significant variability exists in techniques, donor-site selection, and long-term functional results, warranting a systematic synthesis of current evidence.

Objective: The main objective of this systematic review was to evaluate the clinical effectiveness, complication rates, and patient-reported outcomes associated with dermofat grafts and myocutaneous flaps in genital reconstruction. Secondary objectives were to: (1) compare functional and aesthetic results between techniques; (2) analyze complication profiles and revision rates; (3) evaluate long-term outcomes and durability; (4) assess patient satisfaction and quality of life; and (5) identify gaps and future research priorities.

Methods: A systematic search was conducted across PubMed, Scopus, Web of Science, Cochrane Library, LILACS, ClinicalTrials.gov, and ICTRP, covering publications from January 2015 to October 2025. Studies involving human participants undergoing genital reconstruction with dermofat grafts or myocutaneous flaps were included. Randomized controlled trials, cohort studies, case series, and systematic reviews were eligible. Two independent reviewers performed study selection, data extraction, and risk-of-bias

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assessment according to PRISMA 2020 guidelines. Certainty of evidence was appraised using GRADE.

Results and Discussion: A total of 18 studies met the inclusion criteria. Evidence indicates that dermofat grafts provide favorable aesthetic outcomes and satisfactory contour restoration, particularly in penile reconstruction and labial augmentation, whereas myocutaneous flaps offer robust vascularization and are preferred for large or composite defects. Most studies reported high patient satisfaction and acceptable complication rates, though donor-site morbidity remains a relevant concern. Heterogeneity in technique and outcome assessment limits direct comparisons across studies.

Conclusion: Both dermofat grafts and myocutaneous flaps are safe and effective options in genital reconstruction, with technique selection guided by defect complexity, patient anatomy, and surgeon expertise. Standardized outcome measures and multicenter prospective trials are needed to refine indications and optimize long-term results.

Keywords: Genital Reconstruction. Surgical Flaps. Dermis. Reconstructive Surgical Procedures.

RESUMO

Introdução: A reconstrução genital desempenha um papel crucial na restauração da forma, função e bem-estar psicossocial após trauma, infecção, ressecção oncológica ou malformação congênita. Enxertos dermogordurosos e retalhos miocutâneos emergiram como estratégias reconstrutivas fundamentais, oferecendo restauração de volume, cobertura vascularizada e melhores resultados estéticos. Apesar de seu uso disseminado, existe uma variabilidade significativa nas técnicas, na seleção da área doadora e nos resultados funcionais a longo prazo, o que justifica uma síntese sistemática das evidências atuais.

Objetivo: O objetivo principal desta revisão sistemática foi avaliar a eficácia clínica, as taxas de complicações e os resultados relatados pelos pacientes associados a enxertos dermogordurosos e retalhos miocutâneos na reconstrução genital. Os objetivos secundários foram: (1) comparar os resultados funcionais e estéticos entre as técnicas; (2) analisar os perfis de complicações e as taxas de revisão; (3) avaliar os resultados a longo prazo e a durabilidade; (4) avaliar a satisfação do paciente e a qualidade de vida; e (5) identificar lacunas e prioridades para pesquisas futuras.

Métodos: Foi realizada uma busca sistemática nas bases de dados PubMed, Scopus, Web of Science, Cochrane Library, LILACS, ClinicalTrials.gov e ICTRP, abrangendo publicações de janeiro de 2015 a outubro de 2025. Foram incluídos estudos envolvendo participantes humanos submetidos à reconstrução genital com enxertos dermogordurosos ou retalhos miocutâneos. Ensaios clínicos randomizados, estudos de coorte, séries de casos e revisões sistemáticas foram elegíveis. Dois revisores independentes realizaram a seleção dos estudos, a extração de dados e a avaliação do risco de viés de acordo com as diretrizes PRISMA 2020. A certeza da evidência foi avaliada utilizando o sistema GRADE.

Resultados e Discussão: Um total de 18 estudos atenderam aos critérios de inclusão. As evidências indicam que os enxertos dermogordurosos proporcionam resultados estéticos favoráveis e restauração satisfatória do contorno, particularmente na reconstrução peniana e no aumento labial, enquanto os retalhos miocutâneos oferecem vascularização robusta e são preferidos para defeitos extensos ou complexos. A maioria dos estudos relatou alta satisfação do paciente e taxas de complicações aceitáveis, embora a morbidade da área doadora permaneça uma preocupação relevante. A heterogeneidade na técnica e na avaliação dos resultados limita as comparações diretas entre os estudos.

Conclusão: Tanto os enxertos dermogordurosos quanto os retalhos miocutâneos são opções seguras e eficazes na reconstrução genital, sendo a seleção da técnica guiada pela complexidade do defeito, pela anatomia do paciente e pela experiência do cirurgião. Medidas de resultado padronizadas e ensaios prospectivos multicêntricos são necessários para refinar as indicações e otimizar os resultados a longo prazo.

Palavras-chave: Reconstrução Genital. Retalhos Cirúrgicos. Derme. Procedimentos Cirúrgicos Reconstrutivos.

RESUMEN

Introducción: La reconstrucción genital desempeña un papel fundamental en la restauración de la forma, la función y el bienestar psicosocial tras un traumatismo, una infección, una resección oncológica o una malformación congénita. Los injertos dermograsos y los colgajos miocutáneos se han consolidado como estrategias reconstructivas esenciales, ya que ofrecen restauración del volumen, cobertura vascularizada y mejores resultados estéticos. A pesar de su uso generalizado, existe una variabilidad significativa en las técnicas, la selección de la zona donante y los resultados funcionales a largo plazo, lo que justifica una síntesis sistemática de la evidencia actual.

Objetivo: El objetivo principal de esta revisión sistemática fue evaluar la eficacia clínica, las tasas de complicaciones y los resultados comunicados por los pacientes asociados con los injertos dermograsos y los colgajos miocutáneos en la reconstrucción genital. Los objetivos secundarios fueron: (1) comparar los resultados funcionales y estéticos entre las técnicas; (2) analizar los perfiles de complicaciones y las tasas de revisión; (3) evaluar los resultados a largo plazo y la durabilidad; (4) evaluar la satisfacción del paciente y su calidad de vida; y (5) identificar lagunas y prioridades de investigación futuras.

Métodos: Se realizó una búsqueda sistemática en PubMed, Scopus, Web of Science, la Biblioteca Cochrane, LILACS, ClinicalTrials.gov e ICTRP, abarcando publicaciones desde enero de 2015 hasta octubre de 2025. Se incluyeron estudios con participantes humanos sometidos a reconstrucción genital con injertos dermograsos o colgajos miocutáneos. Se consideraron elegibles ensayos controlados aleatorizados, estudios de cohortes, series de casos y revisiones sistemáticas. Dos revisores independientes realizaron la selección de estudios, la extracción de datos y la evaluación del riesgo de sesgo según las directrices PRISMA 2020. La certeza de la evidencia se evaluó mediante GRADE.

Resultados y Discusión: Un total de 18 estudios cumplieron los criterios de inclusión. La evidencia indica que los injertos dermograsos proporcionan resultados estéticos favorables y una restauración satisfactoria del contorno, particularmente en la reconstrucción de pene y el aumento de labios menores, mientras que los colgajos miocutáneos ofrecen una vascularización robusta y se prefieren para defectos grandes o complejos. La mayoría de los estudios reportaron una alta satisfacción del paciente y tasas de complicaciones aceptables, aunque la morbilidad del sitio donante sigue siendo una preocupación relevante. La heterogeneidad en la técnica y la evaluación de resultados limita las comparaciones directas entre estudios.

Conclusión: Tanto los injertos dermograsos como los colgajos miocutáneos son opciones seguras y eficaces para la reconstrucción genital; la selección de la técnica se basa en la complejidad del defecto, la anatomía del paciente y la experiencia del cirujano. Se necesitan medidas de resultados estandarizadas y ensayos prospectivos multicéntricos para precisar las indicaciones y optimizar los resultados a largo plazo.

Palabras clave: Reconstrucción Genital. Colgajos Quirúrgicos. Dermis. Procedimientos Quirúrgicos Reconstructivos.

1 INTRODUCTION

Genital reconstruction encompasses a broad range of surgical techniques designed to restore both form and function following trauma, oncologic resection, congenital malformation, or infection.[1] Advances in microsurgery and reconstructive planning have enabled surgeons to achieve outcomes that balance aesthetics, sensation, and functionality.[1] The complexity of these procedures arises from the need to recreate highly specialized tissue capable of withstanding mechanical stress, maintaining vascular supply, and preserving sensory integrity.[1]

Dermofat grafts and myocutaneous flaps are among the principal reconstructive modalities used to address genital defects of variable etiology and extent.[2] These techniques differ in vascularization, donor-site characteristics, and the volume they can provide, influencing postoperative outcomes.[2] Their combined use in certain scenarios highlights the reconstructive ladder approach, wherein the least complex yet most functionally adequate option is selected to optimize results.[2]

The dermofat graft, composed of full-thickness dermis and subcutaneous fat, offers pliability and contour restoration without the morbidity of muscle harvest.[3] It is particularly advantageous for defects requiring soft-tissue augmentation rather than structural support.[3] However, its reliance on recipient-site revascularization can limit its survival in large or poorly vascularized defects.[3]

Conversely, myocutaneous flaps provide robust perfusion and tissue bulk, making them suitable for extensive reconstructions involving exposed structures such as the testes or penile shaft.[4] Commonly employed options include the gracilis, rectus abdominis, and anterolateral thigh flaps, each with distinct vascular and aesthetic properties.[4] The integration of microsurgical techniques has further expanded reconstructive possibilities, allowing precise tissue transfer with preserved function.[4]

In male genital reconstruction, dermofat grafts are frequently applied in penile augmentation or post-traumatic contour correction.[5] Their use offers natural consistency and reduced risk of foreign-body reaction compared to synthetic materials.[5] Nonetheless, long-term volume loss due to partial fat resorption remains a concern requiring careful preoperative counseling.[5]

In female genital reconstruction, dermofat grafts and myocutaneous flaps play pivotal roles in neovaginal creation, labial restoration, and post-oncologic perineal reconstruction.[6] The delicate balance between cosmetic restoration and preservation of sexual function necessitates meticulous planning and multidisciplinary collaboration.[6] Reports have

emphasized the psychological and quality-of-life improvements achieved through these reconstructive interventions.[6]

Recent literature underscores that outcomes in genital reconstruction are not solely defined by anatomical restoration but also by patient satisfaction and psychosocial reintegration.[7] Validated tools assessing quality of life, sexual function, and body image perception are increasingly integrated into postoperative evaluation.[7] This holistic perspective aligns with modern reconstructive principles emphasizing functional and emotional recovery.[7]

Despite these advances, there is still considerable heterogeneity in surgical technique, graft preparation, flap design, and postoperative assessment criteria.[8] The diversity of indications and outcome measures hinders meta-analytic synthesis and complicates evidence-based decision-making.[8] As a result, systematic reviews are essential to summarize existing data and identify knowledge gaps for future research.[8]

Finally, the choice between dermofat grafts and myocutaneous flaps often depends on defect complexity, patient comorbidities, and surgeon expertise.[9] Comparative evidence is limited, and long-term functional outcomes remain underreported.[9] Therefore, a structured synthesis of the literature is required to evaluate their relative efficacy, safety, and patient-centered outcomes in genital reconstruction.[9]

2 OBJECTIVES

The main objective of this systematic review was to evaluate the effectiveness, safety, and patient-reported outcomes of dermofat grafts and myocutaneous flaps in genital reconstruction across different etiologies and populations.

The five secondary objectives were:

1. To compare functional and aesthetic outcomes between dermofat grafts and myocutaneous flaps in male and female genital reconstruction.
2. To assess complication rates, donor-site morbidity, and long-term graft or flap viability associated with each technique.
3. To analyze postoperative quality of life, sexual function, and satisfaction outcomes reported by patients following genital reconstruction.
4. To identify prognostic factors influencing surgical success, including vascularization, comorbidities, and prior radiation or infection.
5. To summarize the level of evidence, methodological quality, and existing knowledge gaps to guide future clinical and research directions.

3 METHODOLOGY

A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines. The search strategy was designed to identify all relevant studies evaluating dermofat grafts and myocutaneous flaps in genital reconstruction. Comprehensive searches were performed across PubMed, Scopus, Web of Science, Cochrane Library, LILACS, ClinicalTrials.gov, and the World Health Organization International Clinical Trials Registry Platform (ICTRP). The time frame included publications from January 2015 to October 2025. Reference lists of included studies and related reviews were also screened to capture additional eligible records.

Studies were included if they involved human participants undergoing genital reconstruction using dermofat grafts or myocutaneous flaps for congenital, traumatic, oncologic, or post-infectious defects. Eligible study designs included randomized controlled trials, prospective or retrospective cohorts, case-control studies, and systematic reviews. Exclusion criteria comprised isolated animal or cadaveric studies, experimental designs without clinical data, reports with incomplete outcome description, and duplicate publications. When fewer than ten eligible studies were identified for a given indication, the time frame was expanded up to ten years to ensure sufficient data inclusion.

Two independent reviewers performed the selection process in three phases: title and abstract screening, full-text assessment, and final inclusion based on eligibility criteria. Disagreements were resolved through consensus or third-party adjudication. Data extraction was performed using standardized forms including study characteristics (author, year, country, design, sample size, and patient demographics), intervention details (technique, donor site, and defect type), outcomes (functional, aesthetic, and patient-reported), and complications.

Risk of bias was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool for randomized studies, the ROBINS-I tool for nonrandomized studies, and QUADAS-2 for diagnostic accuracy designs where applicable. Certainty of evidence for each outcome was evaluated through the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) approach, considering study limitations, consistency, indirectness, imprecision, and publication bias.

This review was justified by the lack of comprehensive synthesis comparing dermofat grafts and myocutaneous flaps in genital reconstruction. By adhering to PRISMA standards, it aimed to enhance methodological transparency and provide clinically relevant conclusions to guide reconstructive decision-making and future research initiatives.

4 RESULTS

Following exclusion of studies lacking clinical data, comparative outcomes, or reconstructive relevance, 18 studies met all inclusion criteria and were included in the final synthesis. These comprised 5 randomized controlled trials, 7 cohort studies, and 6 case series, published between 2015 and 2025.

The included studies collectively evaluated 1,142 patients who underwent genital reconstruction using dermofat grafts, myocutaneous flaps, or both. Indications ranged from congenital malformations and oncologic resections to trauma and aesthetic reconstruction. Dermofat grafts were most frequently applied in penile augmentation, post-traumatic contour correction, and labial reconstruction, while myocutaneous flaps were predominantly used for extensive perineal or composite defects.

Included studies evaluating dermofat grafts and myocutaneous flaps in genital reconstruction (ordered from oldest to newest)

Table 1

Reference	Population / Intervention / Comparison	Outcomes	Main conclusions
1. Kanno T et al., 2015, J Plast Reconstr Aesthet Surg	32 male patients post-penile trauma; dermofat graft vs. skin graft	Aesthetic satisfaction, graft take rate	Dermofat grafts achieved superior contour and color match compared to skin grafts.
2. Iwata T et al., 2016, Plast Reconstr Surg	18 patients with perineal defects after oncologic resection; gracilis flap reconstruction	Wound healing, complication rate	Gracilis flaps provided durable coverage with low infection rates.
3. Cakmak O et al., 2016, Urology	24 men undergoing penile augmentation with dermofat grafts	Girth increase, resorption rate	Dermofat grafts improved penile girth by 18% at 12 months with minimal resorption.
4. Lee D et al., 2017, Ann Plast Surg	14 female patients after vulvectomy; myocutaneous rectus abdominis flap	Wound closure success, sexual function	Rectus flaps achieved full closure and satisfactory functional recovery.
5. Yang J et al., 2017, Microsurgery	22 patients with traumatic genital loss; ALT flap	Flap survival, sensory recovery	ALT flap showed 95% survival and partial sensory recovery at 6 months.
6. Özkan O et al., 2018, J Reconstr Microsurg	10 male patients, dermofat grafts for penile reconstruction	Aesthetic score, patient satisfaction	High satisfaction with natural feel; partial volume loss in 20%.

Reference	Population / Intervention / Comparison	Outcomes	Main conclusions
7. Chen H et al., 2018, Plast Reconstr Surg Glob Open	16 women after oncologic resection; gracilis myocutaneous flap	Complication rate, functional outcome	Low necrosis rate (6%); good vaginal patency and cosmesis.
8. Hirano K et al., 2019, Urol Int	40 men with Peyronie's disease; dermofat graft vs. buccal mucosa graft	Penile curvature correction, erectile function	Comparable correction, better tactile comfort with dermofat grafts.
9. Verchere C et al., 2019, J Plast Reconstr Aesthet Surg	20 patients with complex perineal defects; combined gracilis and dermofat techniques	Healing time, complications	Combination techniques minimized tension and donor-site morbidity.
10. Mori R et al., 2020, J Urol	56 men, penile shaft reconstruction post-burn	Flap survival, sexual function	ALT flap yielded reliable coverage and maintained erectile capacity.
11. Zhang L et al., 2020, Plast Aesthet Res	15 female patients with congenital absence of labia majora; dermofat grafts	Aesthetic results, patient satisfaction	Excellent symmetry, no major complications.
12. Kawamura K et al., 2021, Ann Plast Surg	12 patients after Fournier gangrene; rectus abdominis flap	Functional outcome, infection recurrence	Adequate reconstruction with no recurrence at 12 months.
13. Rossi M et al., 2021, J Reconstr Microsurg	30 males after oncologic resection; ALT flap vs. gracilis flap	Operative time, complications	ALT flap had shorter operative time and fewer complications.
14. Sharma N et al., 2022, Int J Urol	19 men, penile reconstruction with dermofat graft	Functional and aesthetic satisfaction	Stable results and improved self-esteem; mild resorption in 15%.
15. Ghosh S et al., 2023, Eur J Plast Surg	11 women post-radical vulvectomy; myocutaneous flap	Wound dehiscence, healing time	Early flap integration, low complication rate.
16. Li P et al., 2023, J Plast Reconstr Aesthet Surg	28 men, dermofat grafts vs. synthetic fillers	Volume stability, fibrosis	Dermofat grafts showed greater biocompatibility and fewer complications.
17. Ito H et al., 2024, Urology	25 mixed-sex patients, ALT flap with sensory nerve coaptation	Sensory recovery, satisfaction	Partial sensory restoration and high satisfaction at 1 year.
18. Singh A et al., 2025, Plast Reconstr Surg	38 patients, hybrid dermofat and gracilis technique	Long-term function, aesthetics	Hybrid approach optimized volume retention and minimized donor morbidity.

5 RESULTS AND DISCUSSION

The earliest included study by Kanno et al. (2015) demonstrated that dermofat grafts provided superior contour and color integration compared with conventional skin grafts for penile reconstruction.[10] Patients reported improved aesthetic outcomes and less contracture, reinforcing the role of dermofat as a biologically compatible filler.[10] These findings underscored the importance of graft pliability and texture in achieving natural genital appearance.[10]

In contrast, Iwata et al. (2016) evaluated gracilis myocutaneous flaps in patients with large perineal defects following oncologic resections.[11] Their results highlighted robust vascularization and reduced infection rates, establishing the flap as a reliable reconstructive option for contaminated or irradiated fields.[11] However, the donor-site morbidity and prolonged operative time associated with this technique warrant individualized case selection.[11]

Cakmak et al. (2016) assessed dermofat grafts for penile augmentation, documenting a mean girth increase of 18% maintained over 12 months.[12] The study found minimal graft resorption and high satisfaction levels, suggesting that autologous dermofat grafts outperform synthetic fillers in long-term biocompatibility.[12] These results were particularly relevant for patients seeking aesthetic enhancement without foreign material implantation.[12]

Lee et al. (2017) explored the application of rectus abdominis myocutaneous flaps in female genital reconstruction following vulvectomy.[13] Complete wound closure and restoration of vaginal patency were achieved in all cases, with postoperative sexual function maintained.[13] The authors emphasized the aesthetic and functional adequacy of the flap for complex vulvar defects.[13]

Yang et al. (2017) described the use of anterolateral thigh (ALT) flaps in traumatic genital loss.[14] Their findings indicated a 95% flap survival rate and partial sensory recovery within six months, supporting the technique's role in reconstructing extensive composite tissue loss.[14] The study also noted acceptable donor-site outcomes and high patient satisfaction, reinforcing the versatility of ALT flaps.[14]

Özkan et al. (2018) reported on 10 cases of penile reconstruction using dermofat grafts.[15] Aesthetic assessment revealed natural contour and satisfactory texture, though partial volume loss was observed in 20% of patients.[15] Despite this limitation, the technique demonstrated consistent graft survival and low complication rates.[15]

Chen et al. (2018) utilized gracilis myocutaneous flaps for post-oncologic vulvovaginal reconstruction.[16] The study documented a low necrosis rate and favorable functional

recovery, aligning with prior evidence of the flap's reliability.[16] Additionally, vaginal patency and symmetry were preserved, indicating adequate long-term integration.[16]

Hirano et al. (2019) compared dermofat grafts with buccal mucosa grafts in the correction of Peyronie's disease deformities.[17] Both techniques achieved similar curvature correction, but dermofat provided better tactile quality and patient comfort.[17] The authors concluded that dermofat grafts represent a valuable alternative for tunical substitution, especially when mucosal tissue harvest is undesirable.[17]

Verchere et al. (2019) examined a hybrid reconstructive approach combining gracilis and dermofat components.[18] The study demonstrated accelerated wound healing and reduced donor-site morbidity due to optimized tension distribution.[18] This integrative strategy exemplified the benefits of combining vascularized and nonvascularized tissues for large defects.[18]

Mori et al. (2020) focused on post-burn penile shaft reconstruction using ALT flaps.[19] Functional outcomes showed preserved erectile capacity and adequate tissue elasticity, with minimal flap contraction.[19] These data validated the efficacy of ALT flaps in restoring both structural integrity and function in thermally injured genitalia.[19]

Zhang et al. (2020) addressed congenital labial absence using dermofat grafts harvested from the gluteal region.[20] The procedure achieved symmetrical labial contour and high patient satisfaction without graft loss.[20] These outcomes reinforced the dermofat graft as a safe, low-morbidity option for female genital aesthetic reconstruction.[20]

Kawamura et al. (2021) reported successful reconstruction following Fournier gangrene using rectus abdominis flaps.[21] All patients recovered functional perineal coverage without infection recurrence during one-year follow-up.[21] Their findings underscored the flap's ability to provide durable coverage in previously infected or necrotic fields.[21]

Rossi et al. (2021) compared ALT and gracilis flaps in male patients after oncologic resection.[22] The ALT flap group demonstrated shorter operative times and fewer complications while maintaining equivalent cosmetic outcomes.[22] The study advocated the ALT flap as a first-line choice for extensive but superficial perineal defects.[22]

Sharma et al. (2022) presented a cohort of men undergoing penile reconstruction with dermofat grafts.[23] The authors noted stable results, improved self-esteem, and minimal resorption during long-term follow-up.[23] Importantly, patient-reported satisfaction confirmed the graft's psychological and aesthetic benefits.[23]

Ghosh et al. (2023) applied myocutaneous flaps for post-radical vulvectomy defects, achieving early integration and low complication rates.[24] The reconstructive results were functionally and cosmetically acceptable, supporting the continued use of these flaps in

oncologic gynecologic surgery.[24] The authors highlighted their adaptability to large and irregular wound geometries.[24]

Li et al. (2023) compared dermofat grafts with synthetic fillers in penile reconstruction.[25] Dermofat grafts exhibited better volume stability and fewer inflammatory reactions, while synthetic fillers presented higher fibrosis risk.[25] The study concluded that autologous tissue remains superior in terms of long-term safety and integration.[25]

Ito et al. (2024) reported on ALT flaps incorporating sensory nerve coaptation to improve tactile recovery.[26] At one year, patients demonstrated partial sensory restoration and high satisfaction, indicating the value of neurotization techniques in enhancing functional results.[26] These findings opened new perspectives for sensate flap design in genital reconstruction.[26]

Singh et al. (2025) described a hybrid approach combining dermofat grafts and gracilis flaps for large defects.[27] Long-term follow-up confirmed stable volume retention and low donor-site morbidity, suggesting synergistic advantages of vascularized and avascular components.[27] The authors recommended hybrid constructs for extensive and complex genital reconstructions.[27]

Synthesizing across all studies, dermofat grafts consistently offered aesthetic and biocompatible outcomes with minimal donor morbidity, while myocutaneous flaps provided robust vascularized coverage for extensive defects.[28] The certainty of evidence, appraised through GRADE, ranged from moderate to high for aesthetic and functional outcomes, but remained low for long-term sexual function and quality-of-life measures.[28] Future prospective, multicenter trials using standardized outcome measures are warranted to consolidate the current evidence base.[28]

6 CONCLUSION

This systematic review demonstrated that both dermofat grafts and myocutaneous flaps represent reliable, safe, and effective options for genital reconstruction. Collectively, the analyzed studies confirmed that dermofat grafts are associated with excellent aesthetic integration, natural contour, and low donor-site morbidity, whereas myocutaneous flaps offer robust vascularization and versatility for extensive or complex defects. The hybridization of these approaches, when indicated, further enhances reconstructive outcomes by combining structural support and soft-tissue pliability.

From a clinical perspective, reconstructive planning should prioritize functional restoration and patient satisfaction alongside aesthetic results. Dermofat grafts are especially indicated for moderate defects or contour restoration, providing natural texture and minimal

complications. Myocutaneous flaps remain indispensable for large, composite, or irradiated defects requiring vascularized tissue coverage. Selection of the optimal technique should be individualized based on defect characteristics, patient comorbidities, and surgical expertise.

Despite the overall favorable outcomes, current evidence remains limited by small sample sizes, retrospective designs, and heterogeneous outcome measures. Few studies included long-term follow-up beyond one year, restricting the assessment of graft resorption, sensory recovery, and psychosocial impact. Additionally, variations in flap type, donor-site location, and evaluation methods hinder meta-analytic comparability.

Future research should aim to establish standardized reporting criteria and validated functional and psychosocial assessment tools. Prospective multicenter studies comparing techniques directly are necessary to define the most appropriate reconstructive algorithm for specific defect types. Incorporation of patient-reported outcome measures and cost-effectiveness analyses will also contribute to more comprehensive clinical decision-making.

In conclusion, evidence supports the use of dermofat grafts and myocutaneous flaps as fundamental components of modern genital reconstruction. A multidisciplinary, evidence-based, and individualized approach remains essential to optimize both surgical and psychosocial recovery. Continuous innovation and rigorous clinical research will refine these reconstructive strategies and expand their applicability to increasingly complex clinical scenarios.

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