

Cultivated Epidermal Allograft (Epifast®) for Extensive Genital and Thigh Burns: A Case Report

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ABSTRACT

Genital burns represent a reconstructive challenge due to the anatomical complexity of the region, functional relevance, and high risk of infection. Cultivated epidermal allografts have emerged as an effective alternative to promote rapid re-epithelialization while avoiding donor-site morbidity. We report the surgical management and clinical evolution of a young adult male with extensive second-degree burns involving the genital region and thighs, highlighting the role of Epifast® in accelerating healing and preserving genital function.

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INTRODUCTION

Burn injuries are a major cause of morbidity worldwide, particularly among young adults. While extremity and trunk burns are more common, involvement of the genital and perineal regions poses unique challenges due to constant moisture, bacterial colonization, and the need to preserve aesthetic and functional outcomes. Surgical management in these areas is often limited by the risk of infection and complications, which has historically restricted extensive clinical research in this population [1,2].

Cultivated epidermal allografts, such as Epifast®, consist of cryopreserved human keratinocyte cultures that promote rapid re-epithelialization. Their clinical use has been associated with reduced healing time, favorable cosmetic outcomes, and the absence of donor-site morbidity, making them particularly attractive for anatomically sensitive regions [3-5].

CASE PRESENTATION

A 22-year-old male presented to the emergency department with multiple burn injuries following direct flame exposure. Initial evaluation revealed deep second-degree burns involving both thighs and superficial

second-degree burns affecting the perineum, penis, scrotum, intergluteal region, hands, and face. The total burned surface area was estimated at 20% of the total body surface area (TBSA).

Approximately 90% circumferential involvement of the penile shaft was documented. After stabilization and multidisciplinary assessment, a staged surgical strategy was implemented, consisting of four procedures:

1. Initial surgical debridement of devitalized tissue.
2. Placement of cultivated epidermal allograft (Epifast®) on the hands, perineum, and lower extremities.
3. Application of silver-based dressings on the lower extremities.
4. Additional placement of Epifast® on the thighs to enhance epithelial regeneration.

RESULTS

At presentation, deep burns affected the thighs and perineal region, with extensive circumferential penile involvement. During follow-up, progressive re-epithelialization was observed without evidence of infection or graft-related complications. Complete wound closure was achieved, with residual hyperpigmentation but satisfactory scar quality (figures 1-3).



Figure 1. raw area pre-placement of epifast patches

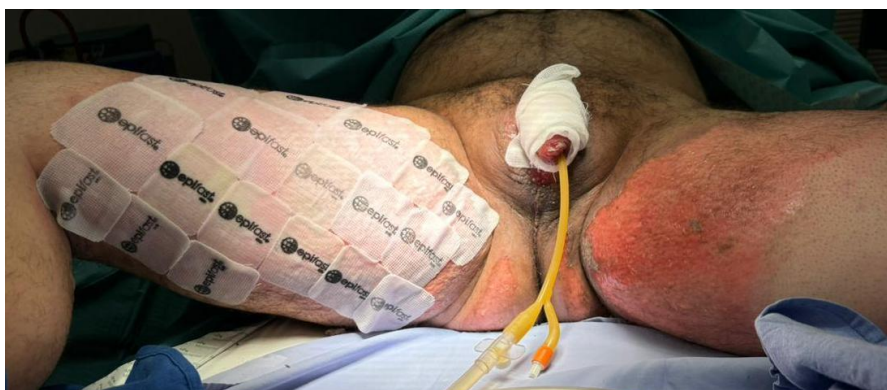


Figure 2. Surgical debridement and application of epifast patches



Figure 3. Follow-up with adequate healing

Genital anatomy and function were preserved, with no urinary or sexual dysfunction. The patient remained hospitalized for three weeks and was discharged with a favorable clinical outcome.

Category	Details
Patient demographics	22-year-old male
Mechanism of injury	Direct flame exposure
Total body surface area burned	20% TBSA

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Burn depth and distribution	Deep second-degree burns: bilateral thighs. Superficial second-degree burns: perineum, penis, scrotum, intergluteal region, hands, and face
Genital involvement	Approximately 90% circumferential involvement of the penile shaft
Initial management	Hemodynamic stabilization and comprehensive burn assessment
Surgical procedures	(1) Initial surgical debridement of devitalized tissue(2) Placement of cultivated epidermal allograft (Epifast®) on hands, perineum, and lower extremities(3) Application of silver-based dressings on lower extremities(4) Additional Epifast® placement on thighs
Adjuvant wound care	Silver-impregnated dressings on lower extremities
Hospital length of stay	3 weeks
Re-epithelialization	Progressive and complete, without graft-related complications
Complications	None (no infection or graft failure)
Aesthetic outcome	Adequate scar maturation with residual hyperpigmentation
Functional outcome	Preservation of genital anatomy and urinary/sexual function
Final outcome	Favorable clinical evolution and discharge without sequelae

DISCUSSION

Early and appropriate management of burn injuries is essential to reduce complications, length of hospital stay, and healthcare costs. In genital burns, treatment is further complicated by anatomical exposure, contamination risk, and the need to preserve functional and aesthetic integrity [2,6].

Cultivated epidermal allografts have demonstrated significant advantages in the management of second-degree burns, including rapid re-epithelialization—often within seven days—adequate cosmetic outcomes, and immediate availability without donor-site morbidity [3–5,7]. These characteristics are particularly advantageous in genital and perineal burns, where traditional split-thickness skin grafting may be associated with increased morbidity.

Our findings are consistent with previous reports supporting the safety and efficacy of Epifast® in complex wounds and burn injuries, reinforcing its role as a valuable alternative in anatomically sensitive regions [4,5].

CONCLUSION

Cultivated epidermal allografts such as Epifast® represent a safe and effective therapeutic option for extensive second-degree burns involving the genital region. Their use promotes rapid re-epithelialization, minimizes complications, and preserves functional and aesthetic outcomes, making them especially suitable for challenging anatomical areas.

REFERENCES

- I. Castellanos-Ramírez DK, González-Villordo D, García-Bravo LJ. Wound management. **Cir Gen.** 2014;3(2):112–120.
- II. Urbina G, Rider J. Management of complex wounds with dermal substitutes. **Rev Chil Cir.** 2016;68(3):245–249.
- III. De Luna-Gallardo C, Cahuana-Quispe AI, Márquez-Espiella C. Use of cultivated epidermal allograft in chronic wounds: A novel therapeutic alternative. **J Cutan Aesthet Surg.** 2022;15(3):237–243.

- IV. Mares MR, Álvarez TL, Rosales PJ, Porras BA. Use of cultured epidermal cells allografts on deep facial burns in adults. **Cirugía Plástica.** 2016;26(3):112–118.
- V. Martínez-de Jesús FR, Frykberg FR, Zambrano-Loaiza R, Jude EB. Re-epithelialization of neuropathic diabetic foot wounds using cryopreserved allografts of human epidermal keratinocyte cultures (Epifast). **J Clin Med.** 2022;11:7348.
- VI. Gurtner GC, Neligan PC, Liu DZ. **Plastic Surgery Principles.** 5th ed. Elsevier; 2020:220–222.
- VII. Chau RE. Evaluation of healing in partial skin graft donor sites using xenografts compared with synthetic cellulose dermal substitutes. **Horiz Med.** 2019;19(3):20–26.