Dermal regeneration template: a new option for the repair of a large surgical defect after Mohs surgery in epidermolysis bullosa

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Resumen

La epidermólisis ampollar es un raro trastorno hereditario caracterizado por fragilidad cutánea, formación de ampollas mucocutáneas recurrentes luego de un traumatismo mínimo y cicatrización deficiente de heridas. Además, algunas variantes se han asociado con la aparición de carcinomas espinocelulares. Presentamos el caso clínico de un paciente con epidermólisis ampollar, que presentó un extenso carcinoma espinocelular localizado en cara posterior de brazo. Este fue tratado con cirugía micrográfica de Mohs y el defecto quirúrgico resultante fue reparado aplicando una matriz de regeneración dérmica sobre la herida durante un mes. Posteriormente continuamos con curaciones y ungüento antibiótico sobre la herida dos veces al día, completando la cicatrización con un excelente resultado cosmético y funcional. Enfatizamos en el carácter novedoso de esta opción terapéutica y en su utilidad en pacientes con epidermólisis ampollar.

Palabras claves: Matriz de regeneración dérmica; Carcinoma espinocelular; Epidermolisis ampollar; Cirugía micrográfica de Mohs.

Abstract

Epidermolysis bullosa is a rare hereditary disorder characterized by skin fragility, recurrent mucocutaneous blisters following minimal trauma, and compromised wound healing. Moreover, some variants have been associated with squamous cell carcinoma. Following, we present the clinical case of a patient with epidermolysis bullosa, who presented a large squamous cell carcinoma of the arm. It was resected using Mohs micrographic surgery, and the final defect was repaired by applying a dermal regeneration template over the wound for a month. After this period, we continued using cures and antibiotic ointment over the wound twice a day, and healing was completed with excellent cosmetic and functional results. We emphasize the novelty of this therapeutic option, and its usefulness in patients with epidermolysis bullosa.

Key words: Dermal regeneration template; Squamous cell carcinoma; Epidermolysis bullosa; Mohs micrographic surgery.

Epidermolysis bullosa (EB) is a rare hereditary disorder characterized by skin fragility, recurrent mucocutaneous blisters following minimal trauma, and compromised wound healing.[1] Its prevalence is estimated to be 10.3 per million inhabitants in Australia.1 The most common classification divides EB into four categories, depending on the site of tissue separation within the cutaneous structure,[2] presenting different clinical manifestations, severity, and risk of possible complications.[3] Some variants of EB have been associated with the development of mucocutaneous squamous cell carcinomas (SCC), which tend to arise at sites of chronic blistering, wounds, and scarring.[3] Authors agree that skin cancers are the most frequent cause of death in patients with recessive dystrophic EB, where the risk of developing SCCs increases with age (7,5% risk at 20 years, 67% at 35 years, and 90% at 55 years).[3]

We present a patient with recessive dystrophic EB, who developed a large SCC of the posterior lower arm. He underwent Mohs micrographic surgery, achieving an excellent recovery of the surgical defect using a novel therapeutic tool, the dermal regeneration template (DRT).

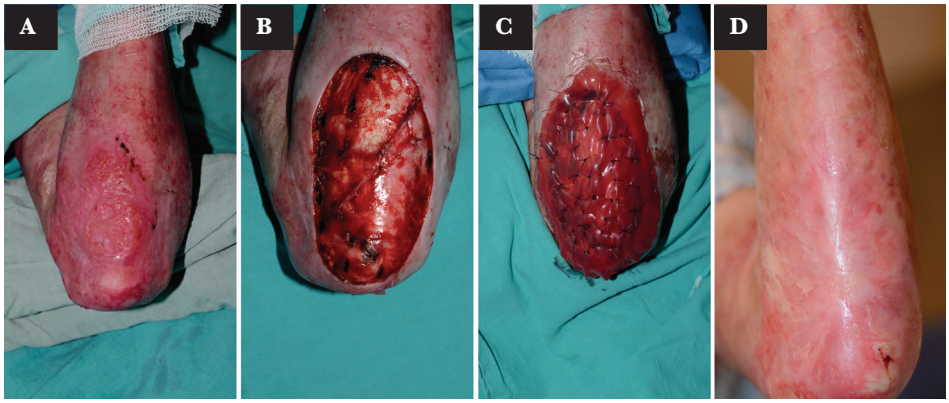

Figure 1
A. Squamous cell carcinoma located on the left forearm.
B. Surgical defect of 10 x 6 cm in diameter after Mohs surgery.
C. Dermal regeneration template was applied over the surgical defect, and fixed to the surrounding skin using a running suture, and perforating stitches to obtain full-contact between the surgical bed, and the matrix.
D. Complete healing of the surgical defect after a 4-months follow-up.

Clinical case

A 40-year-old man with a history of congenital epidermolysis bullosa was referred to our Cutaneous Oncology Unit presenting a SCC of the posterior left forearm, very close to the elbow. The tumor grew progressively during a year, until it became a 5 x 4 cm lesion, with an ulcerated and exophytic surface, being painful and occasionally bleeding (Figure 1A). Treatment with Mohs micrographic surgery resulted in a deep 10 x 6 cm surgical defect (Figure 1B). In consideration of the patient's comorbidities and defect size, we decided to use DRT (Integra®) for wound healing. Under general anesthesia, DRT was applied over the surgical defect and fixed to the surrounding skin with a running suture. To obtain full contact between the surgical bed and the matrix, several perforating stitches were performed (Figure 1C). The matrix was left on site for a whole month, and then antibiotic ointment was applied over the wound twice a day. Healing was successfully completed after 4 months, with excellent cosmetic and functional results (Figure 1D).

Discussion

DRT is an acellular bilayer wound matrix, composed of an outer silicone layer, which controls fluid loss similar to the normal epidermis, and an inner layer which contains cross-linked bovine cartilage and glycosaminoglycans, promoting the infiltration of fibroblasts, macrophages, lymphocytes, and capillaries.[4] It was designed for the management of extensive skin loss like burn wounds, complicated trauma wounds with exposed tendons and bones, or to reconstruct full-thickness defect after excision of cutaneous malignancies.[5] To the best of the author´s knowledge, this is one of the first reports on the use of DRT in EB.[3,6]

Conclusion

DRT could be an interesting and high-quality therapeutic option for the repair of large surgical defects in patients with EB.

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