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CLINICAL CASE

Partial medial second toe pulp free flap and dermal substitute with skin graft for salvage reconstruction of a complete skin envelope degloving of the small finger

Reconstruction par transfert partiel de 2^e orteil et substitut dermique avec greffe de peau d'un dégantage digital complet de 5^e doigt

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MOTS CLÉS

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Summary Skin envelope degloving of fingers are rare injuries that require rapid care and surgical treatment. Mostly caused by ring finger injuries, these traumas include bone, tendon and neurovascular pedicle damage. The authors present an unusual case of finger degloving limited exclusively to the skin envelope, without skeletal, tendinous or vascular lesion. This rare case of skin envelope degloving rendered microsurgical revascularization impossible. The authors report the results at 12 months following salvage reconstruction combining a partial second toe pulp free flap for the volar side and a dermal substitute with a thin skin graft for the dorsum.

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Résumé Les dégantages digitaux sont des traumatismes rares qui nécessitent une prise en charge chirurgicale rapide. Le plus souvent causés par des mécanismes de doigt d'alliance, ces traumatismes entraînent des lésions osseuses, tendineuses et pédiculaires. Les auteurs présentent un cas inhabituel de dégantage digital limité exclusivement au fourreau cutané sans atteinte osseuse, tendineuse ou vasculo-nerveuse. Ce mécanisme de dégantage uniquement limitée au fourreau cutané empêchait toute tentative de revascularisation microchirurgicale.

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Les auteurs rapportent les résultats à 12 mois d'une reconstruction par transfert partiel de 2ème orteil pour la face palmaire combinée à une couverture par substitut dermique et greffe de peau pour la face dorsale.

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Introduction

Evolution of microsurgical techniques and knowledge of the functional results of ring finger injuries have allowed for better treatment of this kind of trauma [1].

We report a case of complete degloving of the small finger. The mechanism of injury was a transverse pinching of the tissue, with the digit getting stuck in a hydraulic press, and being denuded from the pulp to the metacarpophalangeal joint due to a forceful retraction by the patient. There was no flexor or extensor tendon avulsion. Both collateral neurovascular bundles were uninjured and remained attached to the stump, which made revascularization of the skin envelope impossible.

This type of complete skin envelope degloving with no possibility of revascularization is not included in the classification schemes for ring avulsion injuries [2,3]. Therefore, the decision was made to use a microsurgical transfer of a partial second toe pulp free flap combined with a dermal substitute and a thin skin graft.

We present the results of this unusual digit reconstruction at 12 months following surgery.

Case report

A 29-year-old, zinc roofer, right-handed man suffered a complete degloving amputation injury to his left small finger

after the digit got stuck in a hydraulic press. Physical examination showed a total deglovement injury up to the metacarpophalangeal joint (Fig. 1).

The verification of the stump showed no osteoarticular damage, integrity of both flexor and extensor tendons, and unharmed radial and ulnar neurovascular bundles from the metacarpophalangeal joint to the fingertip. The nail matrix and bed remained intact on the stump.

The skin envelope had been well preserved. Unfortunately, after examination of the degloved skin, the absence of vascular bundles within the skin envelope made microsurgical revascularization impossible (Fig. 2). The degloved digit was protected with a sterile dressing. The surgery was performed 48 hours later.

Surgical technique

The pulp free flap included the plantar and medial skin of the second toe. Two dorsal veins were isolated. On the plantar side, the medial nerve and artery of the second toe were identified. At the distal part of the pulp, a thin part of the head of the distal phalanx was included and remained attached to the flap as a vascularized bone graft. The purpose was to achieve a bone-to-bone fusion and avoid gliding of the digital pulp after healing.

Set up of the pulp free flap on the degloved digit (Fig. 3). The bone chip harvested with the flap was fixed to the distal



Figure 1 A and B: Degloving of the left small finger.

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