



Covering the Dorsal Finger Defect with Reverse Cross Finger Flap

Ters Çapraz Parmak Flebi ile Dorsal Defekt Kapatılması

Dorsal defect and Cross Finger Flap

Kaan Gürbüz, Erdal Uzun, Fırat Ozan
Orthopedic and Traumatology Clinic, Kayseri Research and Training Hospital, Kayseri, Turkey

Özet

Tendon gapi olan ya da olmayan ekstansör yüz parmak yaralanmalarında rekonstrüksiyon cerrahlar için ciddi zorluk oluşturur. Cerrahide lokal, bölgesel ya da serbest flepler kullanılabilse de sonuçlar çok yüz güldürücü olmayabilir. Bu yazıda tendon kaybının eşlik ettiği 3.parmak Dd (Digit Dorsal) 1, Dd2 and Dd3 düzeylerindeki ekstansör yüz yaralanmasını sunuyoruz. Tendon defekti palmaris longus kası tendonu kullanılarak rekonstrükte edilen, cilt defekti ise ters çapraz parmak flebi ile kapatılan hastada kozmetik ve fonksiyonel açıdan iyi ve tatmin edici sonuç elde edildi.

Anahtar Kelimeler

Flep; Ters; Çapraz Parmak; Ekstansör Zon

Abstract

Reconstruction of finger extensor zone defects with or without tendon gaps still remains a challenge for surgeons. Although surgical treatments may differ, and range from the use of local, regional, to free flaps, the outcomes for all cases are not satisfactory. In this case report, we present a case of a 3rd finger extensor side crush injury including a defect of Dd (Digit Dorsal) 1, Dd2 and Dd3 defects of extensor zones with tendon gap. Tendon gap was reconstructed using m. palmaris longus tendon graft and the defect was covered with reversed cross-finger flap (random pattern) with good cosmetic and excellent functional results.

Keywords

Flap; Reverse; Cross Finger; Extensor Zone

DOI: 10.4328/JCAM.4133

Received: 22.11.2015 Accepted: 17.12.2015 Printed: 01.03.2016

J Clin Anal Med 2016;7(2): 262-4

Corresponding Author: Erdal Uzun, Ortopedi ve Travmatoloji Bölümü, Kayseri Eğitim ve Araştırma Hastanesi, Kayseri, Turkey.

T.: +90 3523368884 E-Mail: nuzuladre@gmail.com

Introduction

Reconstruction of digit extensor zone defects with or without tendon gaps are challenging cases for surgeons, since these injuries include both extensor mechanism reconstruction and tissue coverage. Various types of random pattern or free flaps have been reported in the literature [1,2]. For adequate coverage of dorsal finger wounds, tubed flaps raised from the chest, abdominal, inguinal, and forearm areas are reliable, but these flaps will be bulky and the techniques offer poor cosmetic and functional results [3]. For a variety of reasons such as minimal donor site deformity, good pliability, the thinness, and the simplicity, and rapidity of the procedure, adipofascial flaps constitute an excellent option [1]. In this case report, we describe complex tissue and tendon defects of 3rd finger reconstruction with m. palmaris longus graft and reversed cross-finger flap (random pattern).

Case Report

A 22-year-old male mechanic presented after a crush injury to his dominant left hand 3rd finger, resulting in a composite tissue defect at the Dd1, Dd2 and Dd3 defects of extensor tendon zones with tendon gap. In the physical examination, there was a wide, contaminated tissue and tendon defect at the dorsum of the 3rd finger. Neurovascular examination was normal in the affected hand (Figure 1a).

Under axillary block anesthesia, the wound was irrigated and the necrotic tissues were debrided meticulously. After the intraoperative detailed evaluation it was decided to perform reversed cross-finger flap with tendon reconstruction. Then m. palmaris longus tendon graft was harvested and used for reconstructing the extensor mechanism of the 3rd finger (Figure 1b). The planned index finger flap was de-epithelialized and reflected to cover the defect in the adjacent 3rd finger (Figure 1c). With careful dissection via the aid of magnifying loupes, the split thickness skin graft was created at the donor site. That was later used to cover the defect on the index finger. Then the dissected de-epithelialized flap covered the dorsal defect on the adjacent finger (Figure 1d). After the de-epithelialized flap was reflected to cover the defect in the adjacent finger, the reflected flap was covered with split thickness skin graft that had been removed earlier from the inguinal site. Then the donor site was covered with the dissected skin (Figure 1d).

The flap division was performed after two weeks and the wounds were closed with retention sutures (Figure 2a,b). After the division, the patient was allowed early rehabilitation and encouraged to use a full range of motion. Through the follow-up period there was no dehiscence, infection, or complication related to flap survival. At the most recent follow-up, the range of motion was within normal limits without any extension gap at the affected site and the patients was happy with the esthetic appearance of the hand (Figure 2c,d,e).

Discussion

Trauma associated with the exposure of digital deep structures can lead to significant functional loss, so, most of the time, prompt soft tissue coverage is provided. Skin or soft tissue defects in the dorsal area of the finger often constitute difficulties for surgical procedures during treatment and the association

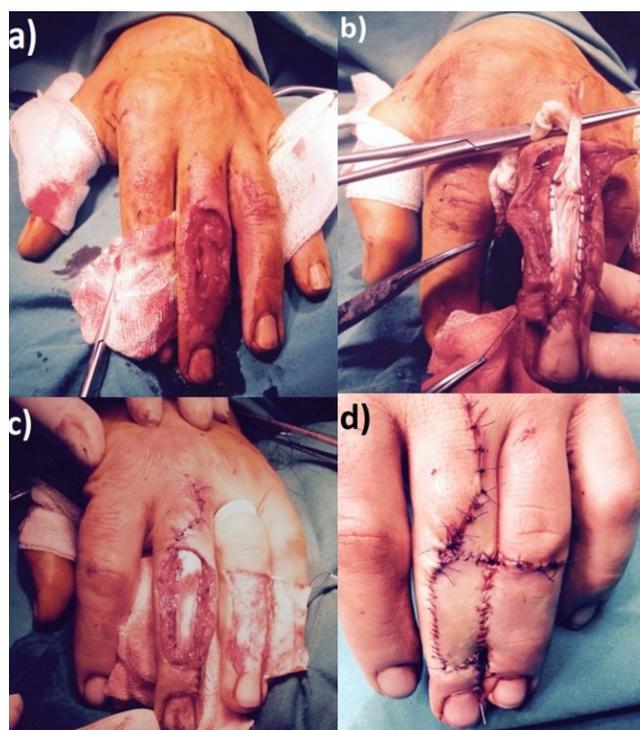


Figure 1. (a) Irrigated and meticulously debrided wound shows 3rd finger extensor tendon zones Dd1, Dd2 and Dd3 defects with total tendon loss. (b, c) Harvested M. Palmaris Longus tendon graft was used for reconstructing the 3rd finger extensor mechanism. (d) De-epithelialized and reflected index finger reverse cross flap to cover the defect in the adjacent finger.

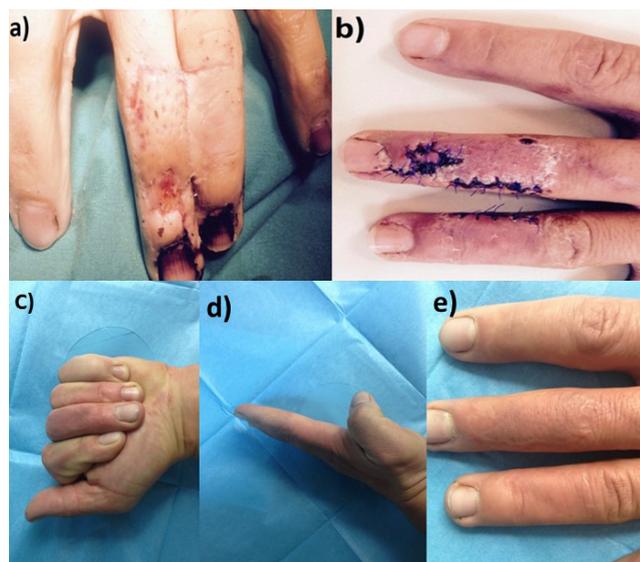


Figure 2. (a) Intraoperative view, before the division. (b) After two weeks from the division (c,d,e) A year after the surgery, the range of motion was within normal limits without any extension gap at the affected site and the patients was happy with the esthetic appearance of the hand.

with deep structures becomes more challenging. At present there are many differing reconstruction procedures and it is often difficult to find an exact nomenclature to suit all cases. Various flaps include: the homodigital subcutaneous flap [4], the proximally based axial digital artery transposition flap [5], the reverse digital artery flap [6], and the de-epithelialized cross-finger flap [2]. Also, by the modified techniques of reverse cross-finger flaps [7], dorsal digital defects can be reconstructed. In this current study we used a de-epithelialized cross-finger flap that was first described as a reversed dermis flap by Pakiam [2] and modified by Al-Qattan [7]. We left the subcutaneous fatty tissue on the dermis in which the dorsal vessels are situ-

ated. After 14 days, we separated the flap without any problem. Then, as early as the first postoperative day after separation, we allowed the patient to start rehabilitation to prevent extensor tendon adhesion and skin graft contraction.

Although the need for another surgery for the separation of the digits and finger stiffness may be the major concern in terms of joint motion with this technique, it is an easy flap and an excellent alternative for achieving early coverage of cutaneous wounds at the dorsal aspect of the long fingers. Also, early rehabilitation can prevent extensor tendon adhesion and decrease stiffness incidence [8]. At the most recent follow-up, the range of motion for both fingers were within normal limits without any extension gap at the affected site and the patients was happy with the esthetic appearance of the hand following reconstruction.

In conclusion, the reversed cross-finger subcutaneous flap is an easy flap to perform and to cover defects on the dorsum of phalanx and is an excellent option for coverage of wounds. Hand therapy is crucial during the healing phase of a de-epithelialized cross-finger flap and for the speedy recovery of all hand functions.

Competing interests

The authors declare that they have no competing interests.

References

1. Fejjal N, Belmir R, El Mazouz S, Gharib N, Abbassi A, Belmahi A. Reversed cross finger subcutaneous flap. A rapid way to cover finger defects. *Indian J Plast Surg* 2008;41(1):55-7.
2. Pakiam AI. The reversed dermis flap. *Br J Plast Surg* 1978;31:131-5.
3. Tark KC, Chung S, Shin KS, Lee YH. Rhomboid design for tubed inguinal flap in fingertip reconstruction. *Ann Plast Surg* 1996;36:354-9.
4. Voche P, Merle M. The homodigital subcutaneous flap for cover of dorsal finger defects. *Br J Plast Surg* 1994;47:435-9.
5. Fleegler EJ, Weinzweig N. The versatile axial pattern digital transposition flap. *J Hand Surg* 1988;13:494-500.
6. Lai CS, Lin SD, Chou CK, et al. A versatile method for reconstruction finger defects: reverse digital artery flap. *Br J Plast Surg* 1992;45:443-53.
7. Al-Qattan MM. Technical modifications and extended applications of the distally based adipofascial flap for dorsal digital defects. *Ann Plast Surg* 2004;52:168-73.
8. Shao X, Chen C, Zhang X, Yu Y, Ren D, Lu L. Coverage of fingertip defect using a dorsal island pedicle flap including both dorsal digital nerves. *J Hand Surg Am* 2009;34:1474-81.

How to cite this article:

Gürbüz K, Uzun E, Ozan F. Covering the Dorsal Finger Defect with Reverse Cross Finger Flap. *J Clin Anal Med* 2016;7(2): 262-4.