

# Reversed Dermis Cross finger flap for dorsal finger defects: A Case Report

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## Abstract

## INTRODUCTION

Digital trauma associated with exposure of deep structures can lead to significant functional loss unless prompt soft tissue coverage is provided. The dorsal digital defect always poses a challenge for the reconstructive surgeon as not many options are available loco-regionally. The Reversed de-epithelialized cross finger flap, which is a modification of the traditional cross-finger flap, provides a good cover and has been found to be a reliable option for reconstructing dorsal defects of the digit.

## CASE REPORT

A 39 years old worker presented to us with a complex wound over the dorsum of right index finger following crush injury by a steel slab in iron cutting industry. This trauma was responsible for a defect involving loss of skin at the level of the middle phalanx, injury to the extensor system, and compound comminuted fractures of the proximal and middle phalanges. (Figure 1)

{image:1}

There was an associated fracture of the neck of second and third metacarpals. The patient was operated under regional anesthesia. The fractures were stabilized by the K-wires. Debridement of the wound was carried out followed by the extensor tendon repair. The dorsal digital defect was covered by a de-epithelialized reversed cross finger flap, raised from the adjacent middle finger. (Figure 2)

{image:2}

The donor and recipient digital raw areas were covered by split thickness skin graft, harvested from the thigh. The flap was divided and insetted after three weeks with satisfactory result. (Figure 3)

{image:3}

## DISCUSSION

The cross-finger flap is a commonly used flap for volar-directed tip injuries with exposed bone or tendon when insufficient pulp for the volar V-Y flap is present. The cross-finger flap for fingertip defects was first described by Cronin in 1945<sup>12</sup> and several modifications have been published since then.<sup>3,4,5,6,7,8</sup>

Use of this flap as a reversed cross finger flap has lately been described as subcutaneous flap or random-pattern de-epithelialized flap for the finger wounds by many authors to cover defects on the dorsum of phalanx.<sup>9,10,11,12</sup> The reversed cross finger flap is based on the dorsal cutaneous branches of the proper palmar digital arterial network, which supply the dorsum of the finger. Several studies have shown that these vessels are constant over the proximal and middle phalanges.<sup>1,3</sup>

The reversed cross finger flap has appeared as an excellent alternative for achieving early coverage of cutaneous wounds at the dorsal aspect of middle and distal phalanges of the long fingers. The merits are thinness, good pliability, easy dissection and the rapidity of the procedure. The disadvantages are use of uninjured finger to raise the flap, two-staged procedure, contour deformity and the delay that results in initial stiffness.

## TECHNICAL DETAILS

This flap includes all the tissues from the dermis to the paratenon of the extensor tendons. After de-epithelialization, the adipofascial tissues are raised as a flap and turned over to resurface the dorsal digital defects. The raw area of the flap is then covered with a split thickness skin graft. The donor site of the finger can be resurfaced with split thickness

(thigh) or full thickness grafts (groin).

Firstly, a template of the defect is fashioned from the recipient finger and superimposed to the adjacent finger dorsum from which the flap will be harvested. The adequacy and reach of the flap is then checked. The flap slightly bigger than the defect is then marked, de-epithelialized and raised from the donor finger under tourniquet. The flap is harvested thru the subcutaneous tissue and the level of dissection is just above the paratenon. It is useful to cut Cleland's ligament which helps in extending the reach of flap by about 20%. The de-epithelialized flap is opened like a book cover, turned 180°, and the de-epithelialized surface is insetted into the dorsal digital defect. Both the raw areas over donor and recipient fingers are then covered with a split-thickness skin graft harvested from the thigh. Multiple small holes are made before-hand in the graft which helps in egress of exudates and haematomas, if any. A bolster dressing with cotton wool soaked in acriflavine is then applied over paraffin tulle dressing on the graft. We routinely place a stitch through the nails of the donor and recipient fingers which helps in keeping the fingers together. A small dressing with adhesive tape on the top gives enough immobilization. The graft dressing is changed after 5 days. The flap can be divided after 18-21 days with final insetting. After the fingers are separated, active physiotherapy is encouraged to regain the full range of movements.

### CONCLUSION

We consider the reversed epithelialized cross-finger flap as a useful addition to the options for the large dorsal finger defects. This flap is simple, easy to execute and is a reliable reconstructive option in the management of dorsal defects of the digits with exposed deep structures.

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