



Plastic Surgery

VARIATIONS AND MODIFICATIONS OF CROSS FINGER FLAPS IN HAND INJURIES

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ABSTRACT

Introduction: In the era of advancing microsurgery, though various flaps are being innovated the time tested cross finger flap still becomes the saviour in many injuries of the fingers. Be it of any location in the finger or any etiology of tissue loss cross finger flap can be planned in any way to provide a pliable soft tissue cover with less donor site morbidity.

Materials and Methods: Review of 121 patients who had undergone Cross Finger Flap surgeries in our Institute from September 2015 to April 2017 due to trauma, infection, scar contractures.

Discussion: Cross finger flaps can be conventional or modified based on the site of the defects. It can be ulnar / radial based, distally/proximally based, extended across a joint and can be applied for any fingers and the thumb too . The reliable vascular plexus and the pliability of skin in the dorsum make it one of the ideal choice in the area with paucity of local flaps. Apart from the routine injuries for which cross finger flaps are used, we have extended its application for ring avulsion injuries for whom replantation is not possible and patient is not willing for a distant flap. The final outcome is as good as any other flap and the donor site morbidity is very less and acceptable with recovery of two point discrimination after 8-12 months.

Conclusion: Cross Finger Flaps are reliable and robust provided they are planned and performed meticulously. It provides stable cover and almost abates hospital stay and comes handy for young plastic surgeons who are yet to master microsurgical skills. We even came across a patient who presented to us 11 months later for division of the flap! which shows the versatility of the flap. It is true that the Cross finger flap is a Versatile, Variable & Valuable flap in Hand Injuries

KEYWORDS : Cross Finger Flap, E-CFF, Extended Cross finger flap, Hand injuries

INTRODUCTION

In the era of advancing microsurgery, though various flaps are being innovated the time tested cross finger flap still becomes the saviour in many injuries of the fingers especially for a beginner in hand surgery. Be it of any location in the finger or any etiology of tissue loss cross finger flap can be planned in any way to provide a pliable soft tissue cover with less donor site morbidity.

MATERIALS AND METHODS

Review of 121 patients who had undergone Cross Finger Flap surgeries in our Institute from September 2015 to April 2017

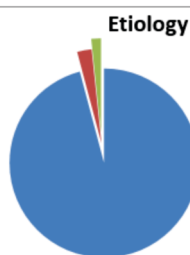
Inclusion Criteria

- 1) Trauma
- 2) Scar contractures
- 3) Infective sequelae

Exclusion criteria

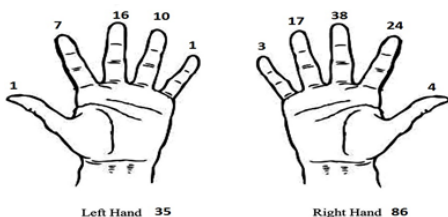
Patients lost on follow up of atleast two visits

Etiology and distribution of location:

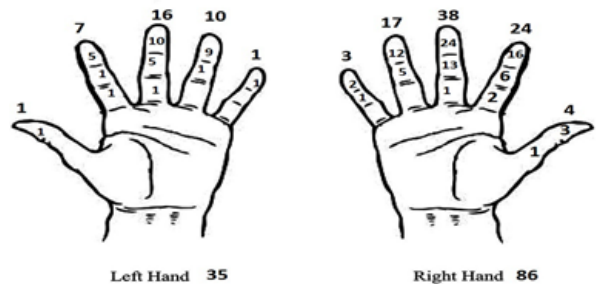


Trauma	118
Scar Contracture	2
Infection	1

Digit wise Distribution:



Location in each finger:



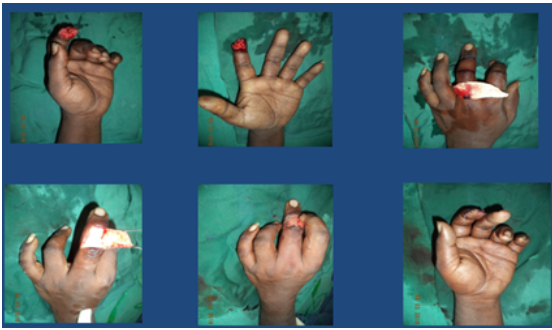
DISCUSSION:

Cross finger flaps can be conventional or modified based on the site of the defects. It can be ulnar / radial based, distally/proximally based, extended across a joint and can be applied for any fingers and the thumb too . The reliable vascular plexus and the pliability of skin in the dorsum make it one of the ideal choice in the area with paucity of local flaps. The conventional flap elevation is basically ulnar or radial based but it can also be raised as distally or proximally based flaps depending on the necessity and proper planning. This option comes in handy and valuable in managing soft tissue defects of fingers and thumb at any location or multiple digit involvement. The flap is usually divided after two weeks and mobilization exercises are started.

Apart from the routine injuries for which cross finger flaps are used, we have extended its application for ring avulsion injuries for whom replantation is not possible and patient is not willing for a distant flap. The final outcome is as good as any other flap and the donor site morbidity is very less and acceptable with recovery of two point discrimination after 8-12 months.

TYPE	Numbers
Radially Based	86
Ulnar Based	23
Proximally Based	4
Distally Based	3
Reversed Dermis	1
De - epitheliased	1
EXTENDED CFF	3

Steps of Classical Cross Finger Flap:

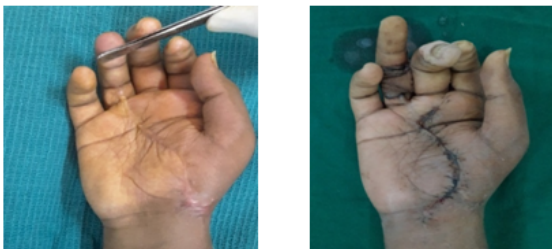


Clinical Pictures of Various types of Cross Finger Flaps:

Acute Traumatic Defects:



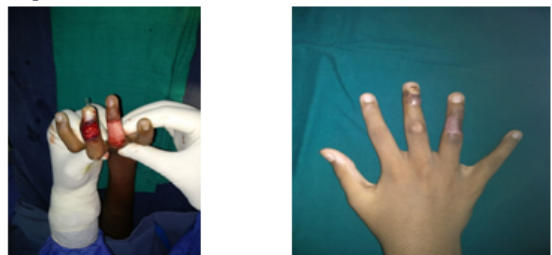
Release of scar contracture:



Post Infective sequelae:



De - epithelialised CFF:



Complications:

Whenever the venous plexus is injured or not taken proper care in the flap while elevation, the margins of the flap may become ischaemic which manifests as a discolouration along the suture line post-operatively. This can be managed by removing the tight sutures, adequate hydration, hand elevation and delaying the flap division. There may be saddening of the webs with the dressing and this may pose a chance for infection when strict asepsis is not followed in post-operative dressings. Infection of the flap has to be managed

aggressively with wound irrigation, iv antibiotics and coverage of secondary raw areas with grafts.



Ischaemia of flap



Flap Infection

Ring Avulsion- Extended Cross Finger Flap (E-CFF):

This is our innovative modification for ring avulsion injuries for whom replantation is not possible and the patient is not willing for a distant flap like groin flap cover. In this the flap is taken from the middle and proximal phalanx of the adjacent finger and a back cut is given in the distal part of the flap thereby covering the exposed bone and sutured back to the extensor paratenon. The remainder of the flap is inset in the conventional way for the volar defect and the dorsum is covered with the folded component or if defect is large enough for the flap to cover the proximal part, it is covered with a split skin graft. The flap is divided after two weeks and mobilization is started. The advantage is that it can be done on out-patient basis and early return to function compared to a pedicled flap. The functional outcome is comparable to that of a pedicled flap.



Points of caution :

- Raising flap distal to proximal- Extensor tendon may be injured when elevated the other way
- Diathermy for hemostasis - Charring of paratenon may lead to graft loss
- Immobilisation and adequate padding-Take adequate care to Prevent soddening and infection
- Strict asepsis during subsequent dressing changes- Chance of Infection in case of soddening
- Have an EXPERT nearby or BEAN EXPERT!!

CONCLUSION:

Cross Finger Flaps are reliable and robust provided they are planned and performed meticulously. It provides stable cover and almost abates hospital stay and comes handy for young plastic surgeons who are yet to master microsurgical skills. At times it even replaces distant flap like Extended CFF for ring avulsion. We even came across a patient who presented to us 11 months later for division of the flap! which shows the versatility of the flap. *It is true that the Cross finger flap is a Versatile, Variable & Valuable flap in Hand Injuries*

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