

Littler's Flap A Case Series – Reliable Option For Acute Soft Tissue Defect Of Thumb

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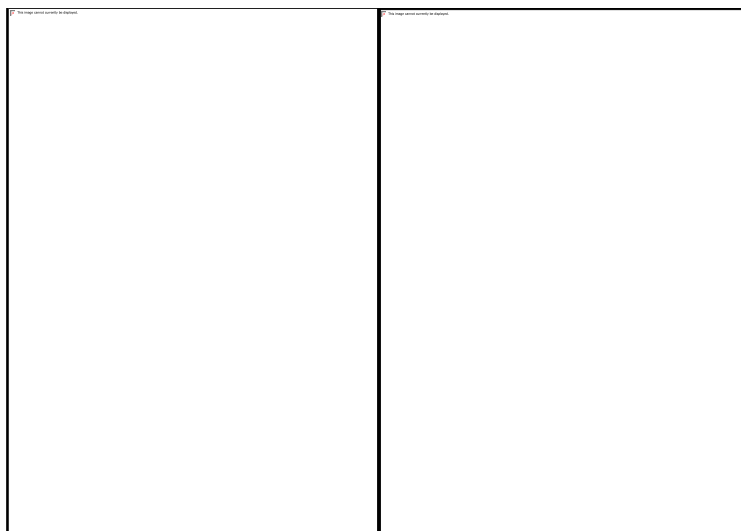
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ABSTRACT:

this descriptive study aims at observing the effectiveness of littlers flap for soft tissue coverage of thumb following traumatic injury . 7 patients who presented with irreparable injury to the pulp of thumb in our tertiary care emergency between january 2021 – december 2021 were included in the study. 6 patients were male and 1 patient was female with ages ranging from 11years – 57 years. patients were followed up for 6 months post procedure. sensory, functional and aesthetic content of the patient was observed. 6 out of the 7 flaps survived completely, 1 required covering of raw area with ftsg. all of the flaps had good colour, texture, contour match with no reports of venous congestion in the immediate post operative period. all 7 patients had good range of motion. the mean 2 point discrimination was 6mm(4- 8). there were no reports of hyperesthesia, cold intolerance, and numbness. tinels sign was positive in all patients on post operative day 1o.all of the patients had satisfactory aesthetic appearance. patients reported cortical reorientation within 6 months post procedure . no neuroma formation was observed. hence littlers flap is an excellent method for restoration of good sensory,functional and aesthetic outcomes for soft tissue defect of thumb.

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I. AIM :

Finger soft tissue defect is common following trauma, burns, and industrial injury. Such soft tissue defect becomes crucial if it occurs in the thumb since thumb is the most important structure for hand function possessing unique functions like opposition, circumduction, hand gripping and holding. Damage to the thumb has greater loss of function than damages to other fingers. Our aim with such soft tissue defects of the thumb was to restore significant functional, aesthetic appearance with reconstruction. Many reconstructive procedures are available such as replantation procedure, skin grafting, local and distal free flaps, sensate free flaps harvested from thenar, hypothenar, flexor aspect of wrist all being good options for restoring significant sensory and aesthetic appearance , but littler's island free flap proves to be one of the reliable techniques. In littler's island flap, flap is harvested from the medial side of 3rd and 4th finger and it provides good sensation, robust padding and dependable blood supply. Our observations with littlers flap is presented in this study. The study was performed in accordance

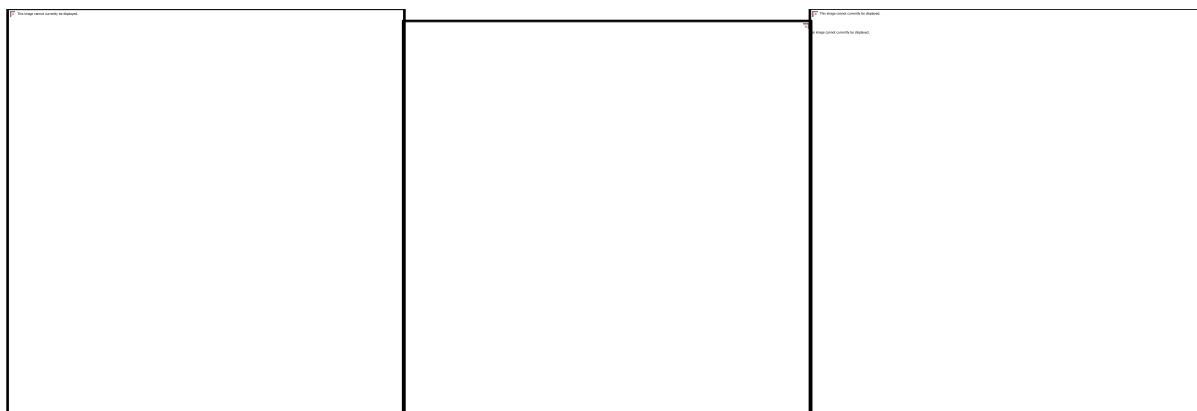
with the principles of declaration of helsinki. Informed consent was obtained from all patients included in the study and they consented for their images appearing in our publication.

II. MATERIALS AND METHOD:

7 patients who presented with irreparable injury to the pulp of thumb to our tertiary care emergency between january 2021 – december 2021 are included in the study. 6 patients were male and 1 patient was female with ages ranging from 11years – 57 years. Patients were followed up for 6 months post procedure. Sensory, functional and aesthetic content of the patients were observed. All patients had open injury with damage to distal phalynx, joint and tendons. Average time duration from injury to flap transfer was 24 hours (8hrs- 48 hrs). In all cases healthy finger was used for flap elevation. Donor area was the ulnar aspect of the middle finger. Surgery was performed in a blood less field under regional anaesthesia with tourniquet technique. Flap included skin of the distal segment of the donor finger till the hyponychial ridge in order to transfer the domain of major sensibility and to avoid occourence of painful neuromas.

III. OPERATIVE TECHNIQUE:

Palmar incision made in an zig zag fashion to the base of the hand. Common digital nerves, arteries, vein identified and dissected. Digital nerve is properly dissected from the common digital nerve. A subcutaneous plane of 1 cm thickness is created. Then the skin along with nerve and artery is mobilized. Flap sutured in place. Care is taken to ensure that there is no pressure on the neurovascular pedicle



IV. RESULTS:

In the immediate post operative period there was good colour, texture, and contor matching in all 7 patients. Venous congestion was not observed in any patient. 1 out of the 7 developed flap necrosis requiring ftsg. 2 pointdiscrimination was an average of 6 mm(4-8 mm).in the immediatepost operative period tinnels test was positive in all the patients. There was no occourence of parasthesia, hyperaesthesia, cold intolerance or numbness. 95 % mobility , cortical reorientation was obtained after 6 months of physiotherapy . All patients had sufficient hand grip with good pinchability.

PATIENT	1	2	3	4	5	6	7
AGE	22Y	11Y	57Y	34Y	26Y	28Y	52Y
SEX	M	M	F	M	M	M	M
OCCUPATION	COLLEGE STUDENT	SCHOOL STUDENT	HOUSEWIFE	ENGINEER	ENGINEER	INDUSTRIAL WORKER	FARMER
Mode of injury	crush injury	avulsion injury	Cut injury	RTA	crush injury	avulsion injury	cut injury
Hours from accident to surgery	8	12	48	12	24	12	48
Donor finger	Middle finger	Middle finger	Middle finger	Middle finger	Middle finger	Middle finger	Middle finger
Follow up	6 months	6 months	6 months	6 months	6 months	6 months	6 months
Colour, texture , contor match	good	good	good	good	good	good	good
Venous congestion	negative	negative	negative	negative	negative	negative	negative

2 point discrimination	4mm	4mm	8mm	7mm	6mm	6mm	8mm
Tinels sign	positive	positive	positive	positive	positive	positive	positive
Hyperaesthesia, cold intolerance, numbness	negative	negative	negative	negative	negative	negative	negative
neuroma	-	-	-	-	-	-	-
Flap necrosis	-	-	-	-	-	-	-
cortical reorientation	+	+	+	+	+	+	+
mobility	95%	98%	90%	90%	95%	90%	90%
Hand grip	0.7	0.8	0.6	0.8	0.8	0.6	0.7
pinch	0.8	0.7	0.8	0.8	0.8	0.8	0.8
Subjective evaluation.	good	satisfactory	satisfactory	satisfactory	good	satisfactory	satisfactory

V. DISCUSSION:

Hand injury is the most common injury in rta(especially 2 wheeler bike chain injury related),industrial accidents in developing countries. And since thumb is an highly developed structure and used in various skillfull activities, it is important to restore functions as early as possible. Small defects can be treated with full thickness grafts or secondary healing, whereas when larger tissue loss is involved it requires a flap for coverage and functional regaining. Reconstruction is also quite challenging. Flap transfer provies durable blood supply, skin cover and better sensitivity.

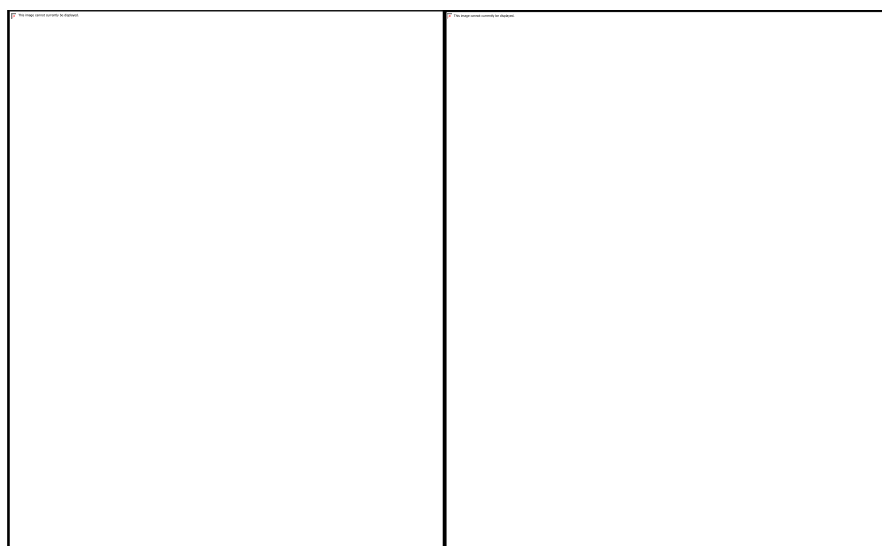
Litters hetrodigital flap was prefferd since there is low donor field morbidity, joint stiffness, defect can be reconstructed without finger shortening and it is a single staged procedure.

Fouchers flap has a disadvantage of having limited flap size.even though cross finger flap is feasible it cant be done in most hand injuires since there might be simultaneous injury to other fingers .most common post operative complication is venous congestion, but it was not observed in our patients. For tactelogenesis, a 2 point discrimination of less than 15 mm is considered satisfactory . The difference of tactelogenesis between the donor and reciepiant site was 1-3 mm. This is due to other factors like fibrosis, scar tissue formation and expansion of the flap. Cold intolerance was not spontaneous.

The results of donor and recipient site showed that all 7 patients achieved excellent to good results. Functional outcome was better since it is a single staged procedure and hence permitted early mobilization.patients were highly motivated to do physiotherapy daily for improvement of functional capacity. Cortical reorientation developed within 6 months.

Several authors reported variable results and it cant be compared with existing results due to difference in method, use of microsurgical equipments and expertise. But on the whole results were quite similar.

Litters hetrodigital flap is indicated in situation where sensory and motor loss of thumb is present due to loss of tissue and it provides sufficient sensory and motor functions . Patients must be little intelligent to understand the value of physiotherapy to obtain maximum results.



VI. CONCLUSION:

Littler's hetro digital flap is the most reliable, easily reproducible and an effective method of reconstruction done in a trauma setting with excellent post operative aesthetic and functional reports.

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