



## OUR EXPERIENCE OF RESURFACING OF HAND INJURY (POST BURN OR OTHERS) WITH PEDICLE GROIN FLAP WITH REVIEW OF LITERATURE

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### ABSTRACT

In this era of free flaps world wide, groin flap is an important pedunculated flap forms, that is being described by McGregor and Jackson (1972). Which has being further continued to be regarded as safest, reliable and versatile flap for the reconstruction or resurfacing of more over every hand injury which is being used widely in every center world wide.

In this study we are sharing our experience of -----patient having hand injuries covered with pedunculated groin flap, in this we described hand injury as post burn or crush injuries. This flap has given us wide availability safety reliability and versatility for the reconstructions and the hand injuries and for the above reasons we are also analyzing the advantages and limitations with socio-demographic status of the procedure with comparison of our data and the literature.

### KEYWORDS :

#### INTRODUCTION:

In current press of microsurgery (free flaps) there are also some limitations for the above in certain settings or conditions of patients where there in certain sitting like non availability of microvascular equipments or socio economic conditions of the patient and when there is some contra indication of the free flap that is health of the patient any bleeding disorder etc.

In the above conditions pedunculated groin flap is most or may be the only option for the reconstruction of hand injuries also still it have many surgical indications that is safety reliability and versatility with minimum pre and post operative complications and less time of procedure make this flap the procedure of choice in many centers world wide.

Defect of soft tissue injuries of hand in both volar and dorsum of hands imposing challenges towards the surgeons for reconstructions which lead to important functional impairment, these injuries include electric burn scar release, trauma and tumors. In literature many flaps has been described for resurfacing of there areas of hand but pedicle groin flap has being used for long and played and important role for the reconstructions.

This study present are experience of number of cases in which pedicle groin flaps were used for reconstruction of hand injuries and reviling the socio-demographic status of the flap with review of literature.

#### MATERIAL METHODS:

This is a retrospective study of the patient which are treated with pedunculated groin flap in between year 2015 to 2017 at are institute (Mahatma Gandhi Medical College and Hospital, Jaipur Rajasthan) in department of burn and reconstruction (plastic surgery) with proper approval of ethics committee of the university these data were scanned and evaluated.

This study also includes age gender cause of injury location of injury size of defect, size of flap, donor site, flap division time and method with complications postop recovery and follow-up.

We also documents the above features in our table and graphics forms for explaining our experience and patient satisfaction and follow ups.

Major complications were defined as flap necrosis, donor site infection, wound dehiscence, joint stiffness, hematoma.

Minor complications : seroma, wound infection, delayed healing.

#### RESULT :

In this retrospective study we used ----- groin flaps for resurfacing hand injuries for ----- patients in which ----- male, --- female with age of ---to --- yrs with mean age of --- yrs.were included.

Groin flaps were used for digits crush and burn injuries and covering degloving injuries with defect related to crush injuries also contracture release raw area and scar excision or tumours excision.

In these patients parts covered are exposed tendons, bones, joints, muscle, nerve vessels in the primarily lesions. Left or right side groin flap used which were ----- and ----- respectively, and flap donor sites were primarily closed in all the cases. flap size varied from ----- to ----- with mean of ----- and caudal migration.

The time interval of flap division was from 18 to 24 days with mean of 21 days ie partial divisions with ligation of vessels on third week and then followed by division of flap after 2- 4 days.

There was superficial distal ischemia of flap in one patient at flap division 4 th day so re surgery and grafting after Vac therapy done.

Among some cases infection was encountered as a major complications was treated with antibiotics and dressings.

Partiak wound dehiscence at the donor site was noted in 2-3 patients and was treated with secondary suturing and dressings with some also having minimal donor site infections like infection seroma numbness with lateral aspect of thigh (femoral cutaneous nerve injury).

No flap loss occurred in any of our cases and all defects were successfully closed.

Nearly some patients required one debulking procedure on average of -----.

Functional and aesthetic outcome was good in all patients the skin on the reconstructive hand was pliable and good in color other than lack of sensation non significant upper limb joint stiffness was present which was treated with physiotherapy

and got resolve in few weeks .

All the patients were very satisfied and good donor site scar ( minimal ) and our table provide summary of information of all patients.

**Discussion & review of literature**

Groin Flap Pedicle is a flap axial pattern based on SCIA which was defined by McGregor & Jackson in 1972. This flap is used for soft tissue coverage in same hand with same side with distal 2/3<sup>rd</sup> of forearm also. The flap can be single pedicle with bilobed. In the defects where there are exposed deep structures like tendons/ nerves/ veins/ bones/ joints. Also Extended groin flap (1977 Joshi) was also described in which Lat. Cutaneous Femoral Nerve is sacrificed which leads to numbness of Lat. Aspect of thigh and circulation is maintained with communicating branches of LFCA & SCIA.

Since the groin flap was described so early in the history of reconstructive surgery, so , they are used widely with safe / reliability & versatility of the use of flap for hand reconstruction. Generally it provides good coverage for long defects on the hand and forearm with independent blood supply to the site without sacrificing a major artery or need of end to end microvascular anastomosis.

**Advantages of groin flap:**

1. Vascular reliability & safety even variability (anatomic) exists
2. Good supply, so, viability is good
3. Easy to learn & simple procedure with short operative time
4. Secondary division of flap & Insert given as a OPD procedure
5. Also used in emergency with large surface coverage of defect
6. Early wrist physiotherapy
7. Good quality hairless skin
8. Acceptability of donor site scar, patient is very satisfied
9. Also bone graft accessibility (Ischial spine)

Although minimal donor site mobility is an advantage, the donor site can be primarily closed in almost all cases and some require grafting.

Alternately, extended flap technique can also be employed for refinement/ harvesting large flap for large defects and primary closure of donor site. The procedure is time consuming and may require 2 staged surgery as delayed flap reconstruction. In our study we didn't use it. However it is more often used in obese/fatty patients.

**Contraindications:**

1. Anatomic malformation
2. Previous groin surgery
3. Radiotherapy
4. Upper limb stiffness
5. Restricted shoulder movements
6. Risk increases with age
7. Systemic disease

No patients in our study presented with contraindications and for stiffness we used early physiotherapy and better counselling.

Graf & Biomer:- their study shows shoulder stiffness as a complication with increased age.

As there is a must given instruction of involuntary movement to prevent separation of flap and negative impact on vascular supply, so, immobilization was ensured.

**Disadvantages:**

Some disadvantages are reported as

1. Bulky
2. Requires multiple stages
3. Longer hospital stay
4. Patient discomfort
5. Stiffness of joints
6. Can't elevate hand after trauma
7. Primary reconstruction is delayed

Nevertheless, we have stressed that pedicle groin flap may still be indicated in the current era of microsurgery. The indications are:

1. Complex defects in children
2. Coverage of digital & hand defects after electric burn
3. Salvage the hand and thumb
4. Multi---- hand injuries
5. Length preservation in multiple digit amputation
6. Crush injury in Trauma
7. Post burn contracture release
8. Fore arm defects

**Review of literature**

- 1977 – joshi – Flap Neorotization done with Cutaneous Nerve of Hand and 12<sup>th</sup> Thoracic Nerve Lat. Cutaneous Branch
- White et al – Protective & sensory characteristic could be provided with neorotized groin flap
- Saint et al – reconstruction of concerned defects of thumb & dorsum of hand with groin flap into 2 pedicle flap (bilobed)
- Rashid et al – Bilobed flap reported in Alpert Syndrome patient and thumb contracture.
- Ton et al – reported reconstruction of web space & 2 digits with winged groin flap

A large portion of our patients include electric burn and degloving injury with digital amputation length saving. Also degloved digits with amputated portion saving bone and tendon reconstruction were used taking in groin flap for coverage. This helps in sustaining length and function in these cases.

Despite the inherent advantages of free flap for soft tissue coverage in upper limb reconstruction, **pedicle groin flap remains the world wide method used in.....** All the disadvantages can be greatly reduced with profuse planning to orient the flap towards defect and avoiding kinking of bone, early physiotherapy and delayed division and in..... in.... with ease. Increasing patients comfort and S..... and proper counselling and consent. All the above will be more helpful in making the flap a success in the Resurfacing hand injuries.

(Pedicle Flaps are lifeboat)

Free tissue transfer is optional form of coverage for hand injuries. Also flaps such as abdominal etc. can be used because of morbidity of donor sites / operating time long / pre or post op complications / morbidities/ specific infrastructure / trained and experienced team and good centers and because of smaller access of digits also. The free flaps are not much suitable where as pedicle groin flap seems to be great option with short operation time, easy surgery / minimal donor site scar/ patient satisfaction/ can be done at any centre. All make it best possible option for hand injury reconstruction.

**CLINICAL, THERAPEUTIC & OUTCOME CHARACTERISTICS OF THE PATIENTS**

	Age	Sex	Etiology	Structure exposed	Surfa ce of hand	Second ary site thinning	Post op compli cation	Fillup
1								
2								
3								

4								
5								
6								
7								
8								
9								
10								
11								
12								

**RESULTS**

	SATISFIED	VERY SATISFIED	RESURGERY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

**OBJECTIVE:**

From past so long groin flap played an important role in resurfacing hand injury that includes post burn and crush injury of hand. In this study we are saying are experience for the above with reliability and versatility of the groin flap in many patient with socio-demographic table and review of literature which is presented in present scenario.