

## FLAPS ON THE LIMBS

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Resurfacing of tissue defects by various types flap is time bound management in Plastic Surgery. Covering of soft tissue defects of upper & lower limb has been done from realm of Gillies by tube pedicle to era of microvascular free flap of to-day. Purpose of this paper is to share our experience in use of different types of flaps, in places of skin loss with poor vascularity of recipient bed, osteomyelitis at the site of non union, places where secondary correction is needed, post burn contracture and congenital anomalies.

### Materials & Methods :

This series include one hundred cases of different type of injuries. Road accidents or old osteomyelitis of legs referred from Orthopaedic Department, Hand injuries, post burn contracture admitted directly to plastic Surgery Department of S. S. K. M. Hospital, Calcutta. The type of cases are tabulated below :—

**Table—I**  
Type of cases

Congenital deformity of hand	— 2
Injury hand	— 25
Burnt hand	— 30
Injury leg ( Recent & Old )	— 41
Congenital deformity of foot	— 2
Total—100	

For the monopedicle flaps either random or axial, no prior delay was done but delay before detachment between 12-14 days was undertaken. For bridge or bipedicle flap—No prior

**Table—II**

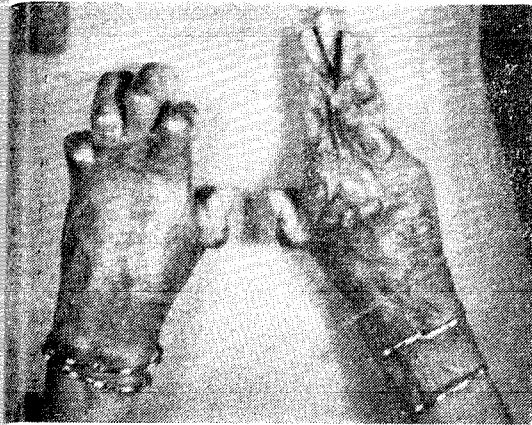
Shows various types flaps used

<i>Upper limb</i>		<i>Lower limb</i>	
1. Monopedicle	— 6	1. Cross leg	—20
2. Bipedicle both in palm & dorsum	—30	2. Cross thigh	—10
3. Groin	—13	3. Cross buttock	— 4
4. Hypogastric	— 4	4. Cross sole	—4
5. N. V. Island	— 4	5. Gastronaemius-myocutaneus	—5
57		43	
Total : 57+43 = 100			

delay or delay before final separation was practised, and there was no marginal necrosis after separation on the third week. Out of four cases of Neurovascularisland flap which gave excellent results, one of them complained pain on donar area while pressed over the recipient area of flap. For lower limb flap prior delay was done in some cases but delay before detachment was done in all cases. Immobilisation of legs with the plaster of paris were done in cases of cross leg flap and strapping with leucoplast was done in cases of cross arm flap and strapping with leucoplast was done in cases of cross arm flap. Hand cases were encouraged to walk from 2nd. week, which was not possible for lower limb patients.

Gastronaemius myocutaneus flap—Flap had been raised without a prior delay. Lower or distal limit of the flap extend to a point 5 cm. above the medial malleolus. Ant. margin was upto the lateral margin of sub-cutaneous border of the tibia and posterior margin

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(a)

I Hand Pre-operative Severe post-burn contracture of both hands with joint deformity



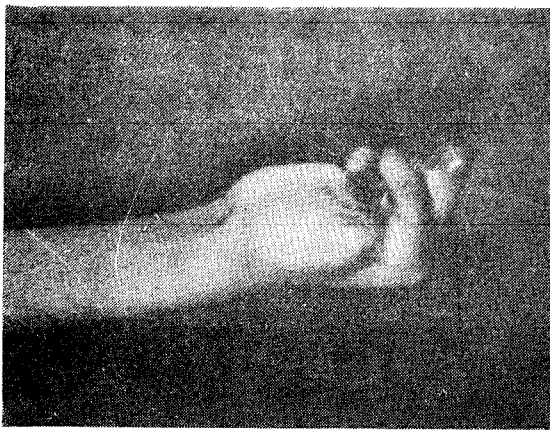
(b)

Post-operative same case after separation of Syndactyly



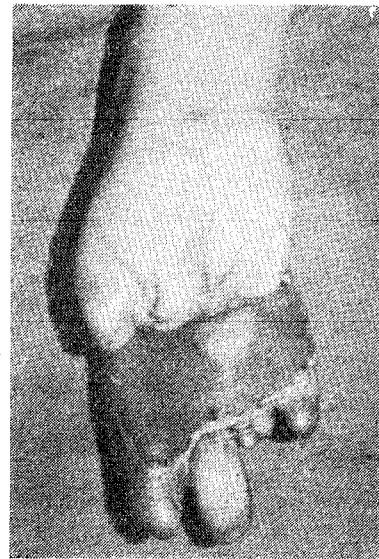
(c)

Follow up : Same case after physiotherapy, can do all house hold work.



(a)

II Hand Palmer contracture following bomb blast injury



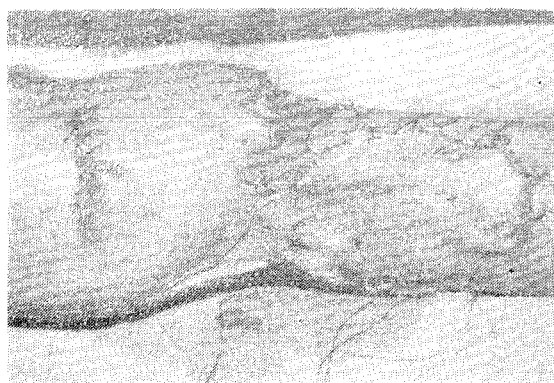
(b)

Same case after release of contracture exposed tendons of all fingers covered with a bridge flap in thigh.



(a)

III Leg Pre-operative :  
A case of osteoclastoma  
resection and fibular  
graft to tibia



(b)

Post-operative :  
Raw area and exposed  
graft covered with a  
medial gastrocnemius  
myocutaneous flap. Donor  
area covered with a skin  
graft

extend to the midline posteriorly. Deep fascia was included in the area distal to the muscle. Medial gastrocnemius separated widely from bed of expanded tendon without injuring saphenous vein on medial side and sural nerve in between the two heads. Feeding vessel to the muscle not traced but dissection stopped just below the knee joint where vessel enters the muscle. Its proximal attachment to the conjoint tendon is divided. There was no problem of immobilisation except a simple cast when it was done in the same leg. Proper immobilisation had been done with plaster of paris when a cross gastrocnemius myocutaneous flap was done and in that circumstances a delay was done on the 14th day. Final separation was done on third week, and cut end of the muscle returned to its bed.

### Results

Results are fairly satisfactory except for cross leg flaps where two cases had marginal necrosis in spite of prior delay, proper immobilisation and delay before final detach-

ment. All flaps in the hand behaved excellently. Even when no delay was done for bridge flap, secondary correction was needed in a few cases for thinning of the flap and reconstruction of tendon and repair of nerves.

### Discussion

#### Hand :

Split skin graft is a useful method for covering raw surfaces on the hand whenever possible. When vital structures are exposed a Flap is mandatory. Flaps from the abdomen have been widely used, but the post operative position is uncomfortable. The growing flap is an excellent flap for providing cover to raw surface over the hand, Being an axial flap, it has an excellent blood supply, does not require a delay, donor area can be closed primarily and post operative position is comfortable. It is also useful for thumb contractures. The author prefers a bridge flap from buttock or thigh for bad palmar contractures.

The abdomen provides a high reservoir large amount of flap skin is required. Apart

from covering a large area, constant pressure of this flap on dorsum or palm, brings a hyperextended joint or a hyperflexed joint (in case of a palmer contracture) to a neutral position. Moreover delay is not necessary. Donor area when large did not cause any problem. In axial pattern flaps detachment without delay usually gives marginal necrosis.

#### *In lower limb :*

Various types of flaps had been used as mentioned before. Because of poor vascularity delay is often required for flaps from the lower limb.

For small defects over weight bearing areas of sole one can try a cross sole flap from the non-weight bearing area. There is no need for prior delay but delay before detachment is necessary; Split skin graft to raw non-weight bearing area does not cause any problem. Gastrocnemius myocutaneous flap is excellent—where no prior delay is necessary. There is no question of length and breadth ratio and no fear of necrosis like cross leg flap, Gastrocnemius myocutaneous flap can provide

local coverage for most skin defects between the lower leg and the lower thigh and it can reduce the need for cross leg flaps. The neurovascular pedicle of the gastrocnemius myocutaneous flap is large and the donor defect is quite acceptable. Both medial and lateral gastrocnemius flaps can be used. None of the patient had any complaint with the donor area. In the absence of facilities for microvascular free flap, a myocutaneous flap is best to resurface the wounds over the leg.

#### **Summary**

Used for resurfacing defects of upper and lower limb have been discussed. Role of bridge flap to resurface fairly sizeable wound of the hand are discussed, also role of gastrocnemius myocutaneous flap in resurfacing lower limb has been discussed in detail.

#### **Acknowledgement**

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