

## The Direct Flat Flap Its Applications in Reconstruction Surgery

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By direct flat flap is meant a flat flap with a surgically formed pedicle on a temporary carrier with the aid of which the flap may be transferred to any area of the body from the donor area. With regard to the fact that the flap is transferred through temporary carrier the term indirect Flat Flap appears to be more suitable.

In the meantime direct flat flap method in plastic surgery is applied quite exceptionally. It may be due to the complexity of its technique for many surgeons as well as to the risks of failure involved. But if this flap is indicated in suitable cases, it may appear more advantageous as compared to other methods commonly applied in plastic surgery.

The purpose of this paper is to point out its advantageous application as verified by our own rather limited experience in this field. The technique of surgery may be divided into several phases. The first one of great importance is *the planning of flap and its pedicle*.

The flap should be planned as being larger than the area destined to be covered. The margin for of the flap contraction after its removal from bed must be kept in view as well as the extension of the area destined for covering the same after exstirpation of the scarred tissue. Further,

keep an allowance for possible complications resulting in reduced useful flap area by marginal necrosis or infection. In practice we plan the greater reserve, when a big defect is to be covered with direct flat flap.

The pedicle flap must be situated at the most advantageous spot with respect to convenient and suitable fixation of the carrier after the transfer of the flap. Further, the pedicle must be sufficiently large to be able to provide the flap with necessary nourishment after its separation from the donor area. The flap pedicle should reach approximately one third of the whole flap area in length.

The donor site of an extensive flaps is usually the skin of the anterior abdominal wall with forearm as the most suitable carrier.

Small flaps may require other donors areas, which are nearer to the destined site to be covered and finger may serve as the carrier.

After suturing the flap pedicle to the carrier we must not forget to mark the shape of drawn flap with the help of scarification by the apex of the scalpel.

After stitching up the pedicle the skin gets deformed owing to pedicle traction and also to defect suture tension under the pedicle. Scarification helps to secure the

right shape and size for the next phase and this is the *flap circumcision* with subsequent intradermal suture. This is performed 14 days after creating the flap pedicle.

Then follows *the raising of the flap* by degrees that the flap may be fully restricted to reception of nourishment from the pedicle and thus made fit to be transferred.

*In the flap transfer* which is a further phase one ought to keep in mind that the pedicle, too, is destined for utilization. For this reason the portion of the recipient's site corresponding with the flap pedicle is left intact and is covered in the next phase i.e. after separating the flap pedicle, which takes place 14—21 days after flap transfer.

*Flap shaping* forms the last phase. At any rate, this interference, if necessary, occurs less frequently than with the method applying tube pedicle flap.

The time allotted to this procedure from creating the pedicle of direct flat flap till the pedicle separation in flap transfer does not exceed six weeks.

To achieve a similar effect with the help of tube pedicle flap we would require at least 15 weeks—from the flap tubulization till spreading out in the destined site.

The main advantage in favour of a direct flat flap method in comparison with the tube pedicle flap is the basic reduction of the patient's hospitalization and treatment.

Another advantage of the flat flap as compared with the tube pedicle flap is the achievement of better cosmetic effect by the former method namely if applied for covering extensive facial areas. By applying this method we avoid any unfavourable scar

formation which cannot be ruled out in spreading out and shaping the tube flap.

**Indications :** Direct flap is applicable in cases where direct flap from immediate region of the destined site to be covered and cross flap, tube flap and free skin graft, respectively cannot be effected.

**Complications:** These may be avoided by observing conditions of physiologic surgery technique and antisepsis. Those which can occur are as follows :

1. *Necrosis* of a flap portion due to careless surgical technique or as a result of not creating a sufficiently large nourishing flap pedicle.

2. *Hematoma* which may occur in the phase of circumcision and flap raising suppose attention is not paid to consistent hemostasis and wound drainage.

3: *Infection* brought about mostly by infecting hematoma, not observing asepsis and antisepsis. It can be avoided by preventive application of a suitable antibiotic.

None of those complications is desired as they can frustrate the surgeon's effort to achieve a most perfect functional and shape reconstruction.

On the basis of our modest experience in this field we conclude by noting that in planning plastic operations the direct flat flap method may be recommended as one among other methods.

By observing the correct indication and surgical technique the patient's hospitalization is reduced considerably by this treatment. When the method is applied to facial deformities we may rightly expect excellent cosmetic and functional results.



1st patient : E. B. aged 21.

Fig. 1—Atrophic dermatitis after radiation of haemangioma in childhood.



Fig. 2—Flap pedicle creation in hypogastrium.



Fig. 3—Flap transfer to face.



Fig. 4—Condition after flap transfer and first modelling of the flap.



2nd patient : J. K. 21 years old.  
Fig. 5—Arterio-capillary facial haemangioma



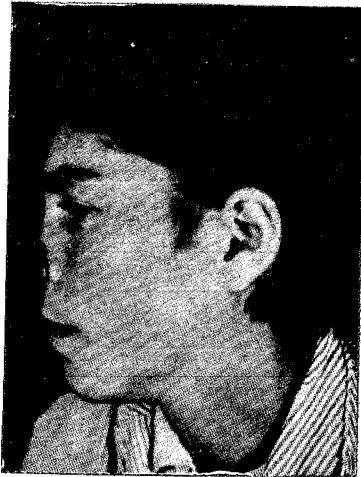
Fig. 6—Condition after flap transfer to face



3rd patient : M. V. 31 years of age.  
Fig. 7—Ala nasi deformed after damage by nitric acid corroding on face.



Fig. 8—Condition after flap transfer from subclavian region with pedicle on index finger.



4th patient : J. G. 19 years old.  
Fig. 9—Partial loss of nose after  
a hot dispute with jealous  
husband.



Fig. 10—Direct flat flap from hypo-  
gastrium with pedicle stit-  
ched to left forearm.



Fig. 11—Flap transfer.



Fig. 12—Condition after transfer.  
Treatment not yet comple-  
ted.



5th patient : J. D. 18 years old.  
Fig. 13—Condition after traumatic amputation of heel. The patient did not agree to cross-leg flap because he was afraid of his sound calf becoming scarred.



Fig. 14—Condition after direct flat flap transfer.



6th patient : S.P. 19 years of age.  
Fig. 15—Scar deformation of face after burns in a traffic accident.



Fig. 16—Transferred direct flat flap from the right hypogastrium.



Fig. 17—Condition immediately after flap transfer. Treatment yet not completed.