

DONOR SITE MORBIDITY IN DORSALIS PEDIS FLAP

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SUMMARY

The present paper is based on a study of Eleven cases where Dorsalis pedis flap has been used. Donor site morbidity was observed in eight of them which required subsequent hospitalisation and medical care. The factors responsible for this have been highlighted.

Dorsalis Pedis axial pattern flap has been used widely since it was first described by McCraw and Furlow (1975). This flap, based on Dorsalis Pedis artery and Dorsal venous arch is used as a local transposition flap, to resurface the defects on the dorsum of foot, medial and lateral malleoli, and as a sensory flap for the defects of heel. As a free flap, it has been used mainly to cover the defects of the other leg.

Donor site, in all the cases, was covered primarily with thick split thickness skin graft. Initial take of the graft was hundred percent and patients were discharged within a few weeks. Later on, in follow up chronic donor site morbidity was noticed in some cases, in the form of chronic ulcer, persistent pain and oedema and inability to walk properly. Some of these problems are specific to Indian people and people of other third world countries, where due to poverty people either wear no shoes or wear simply CHAPPALS. In our case we did not find such donor site problem with the people those who were wearing good quality shoes with socks. The compression effect of socks and shoes was the preventive factor in them.

Material and Methods

This study is based on patients admitted in the Deptt. of Burns, Plastic and Maxillofacial Surgery, Safdarjang Hospital, New Delhi,

from January, 1983 to December, 1984. All patients were males of age group between 14 to 45 years. In a total of 11 cases, Dorsalis Pedis flap was attempted (Table 1). Donor site was primarily skin grafted. All the patients were reviewed every fortnightly. Donor site was particularly examined for symptoms of pain, itching, inability to walk properly, oedema and ulceration.

Observation and Discussion

In all the 11 cases, Dorsalis Pedis flap survived completely, including the two cases of Microvascular free flap (Fig. 1). Initial take of skin graft at Dorsalis Pedis flap donor site was hundred percent in all the cases (Fig. 2). Between 3-4 weeks they were all discharged with the following advice—

- (a) Daily cleaning of donor site with soap and water.
- (b) Wearing of shoes with good dorsal padding of a sponge.
- (c) Application of crepe bandage while walking.
- (d) Avoid use of Chappals and Sandals.

Regular follow-up at fortnightly intervals revealed that eight (72.5%) of them were having donor site problem in one form or the other (Table 1). Seven cases (63.5%) developed recurrent ulcerations, requiring hospitalisation for the proper management (Fig. 3 & 4). Ulcers were mostly epidermal and deep dermal and

Table 1. Showing types of cases and donor site morbidity

| Sr. No. | Site of defect to be covered | Type of flap | Post-operative morbidity at donor site |
|---------|------------------------------|--|--|
| 1. | Heel | Local Transposition | Ulceration + Pain. |
| 2. | Medial Malleoli | Local Transposition | Oedema + Ulceration + Itching. |
| 3. | Lower leg | Free Microvascular flap from opposite foot | Ulceration + Pain + Itching + Limp in walking. |
| 4. | Sole | Free Microvascular sensory flap from opposite foot | Pain + Itching + Limp in walking |
| 5. | Heel | Transposition flap | None. |
| 6. | Lateral Malleoli | Transposition flap | Ulceration. |
| 7. | Lateral Malleoli | Transposition flap | Ulceration. |
| 8. | Medial Malleoli | Transposition flap | Ulceration. |
| 9. | Dorsum of foot laterally | Transposition flap | None. |
| 10. | Dorsum of foot laterally | Transposition flap | None. |
| 11. | Lateral Malleoli | Transposition flap | Ulceration + Pain + Itching. |

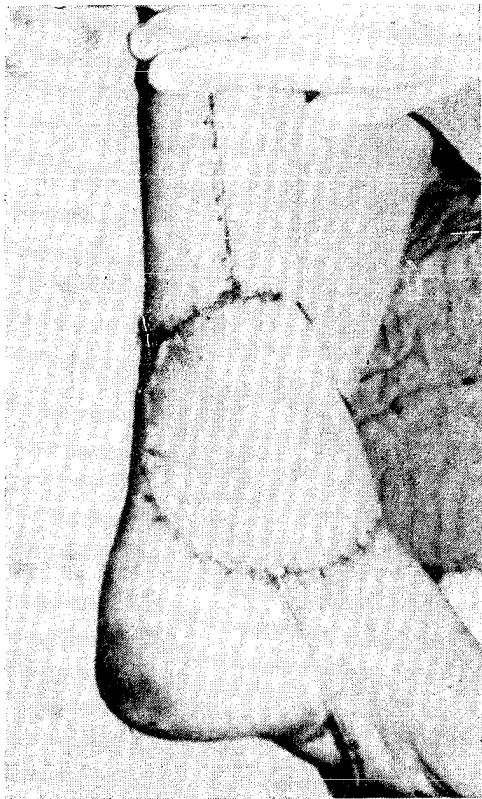


Fig. 1. Dorsalis Pedis Free Flap in position.



Fig. 2. Donor site with thick split skin graft.

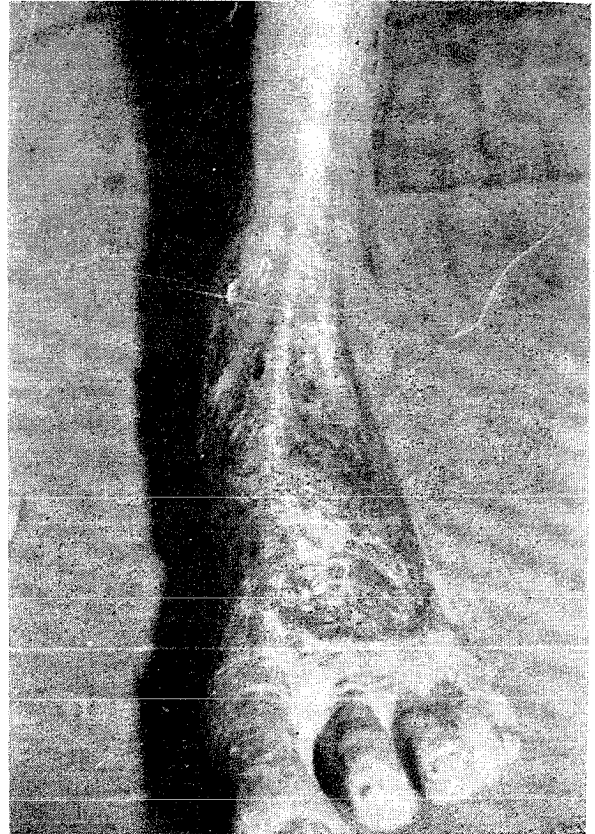
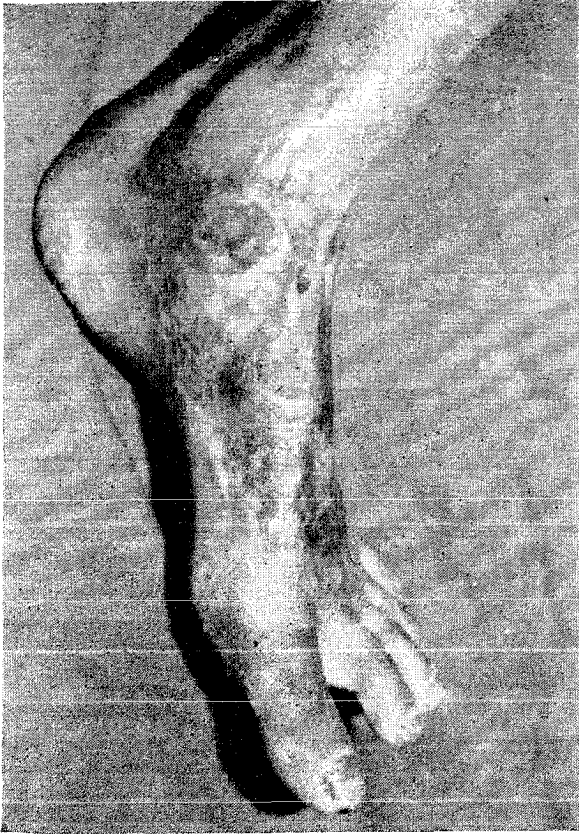


Fig. 3. & 4. Donor site ulceration near the bony points below the medial malleolus and at the point of maximum stretch of the tendons—the points crossed by Sandal and Chappal straps.

healed spontaneously with proper care in hospital. In two cases the ulcers were deep at places but areas were small, which healed spontaneously without much scarring. Culture of discharge from the ulcers was positive in five cases. Organism in all the cases was pseudomonas. Five cases (40.5%) were having itching pain and limp in gait for quite a long period (5 to 6 months).

Patients of low socio-economic group and labour class (4 cases) had to rest for a minimum of six months before they could go back to their respective jobs, which caused considerable amount of hardship to them and to their families. Again they were the people who came most frequently with recurrent ulcerations at donor site. Investigations revealed that those, who suffered from

donor site problem, were using chappals and sandals. Some of them were poor enough to afford even chappals and use to remain bare-foot. Site of ulcer on dorsum of foot coincided with the straps of chappals and sandals. Labour class cases, who use to walk bare-foot, were having diffuse ulceration at the donor site.

All of these cases were advised proper local hygiene with wearing of shoes having dorsal padding. Chappals and sandals were strictly prohibited at least for six months. Use of crepe bandage while walking and elevation of the leg at night improved them considerably. Four cases (35.5%) were absolutely symptom free post-operatively. They were using shoes while walking with proper hygiene of local area.

Physio-pathology

Dorsalis Pedis flap is based on Dorsalis Pedis artery and Dorsal venous arch and along-with this good amount of lymphatic system is also taken up with the flap, specially at the site of penetration of Dorsalis Pedis artery into the first metatarsal space, to form the Planter vessels. After raising a Dorsalis Pedis flap, donor area is comparatively devoid of both lymphatic and venous system. In people, who are wearing shoes, the relative deficiency of venous and lymphatic net work is compensated by external pressure provided by shoes to work as propelling force. In people who walk bare-foot or use chappals, this propelling force is not available. Because of this, there is first slight oedema of distal skin and toes, gradually leading to blistering of the skin, followed by break down from minor trauma. Once the breach in continuity of epithelium is established, poor local hygiene further aids in the spread of the infection into the layers of skin, leading to wide spread erosion. Exudation of fluid and development of vicious cycle leads to further infection and damage.

If seen early, this vicious cycle is checked by immobilisation and elevation of the leg,

suitable antibiotics and external pressure by blue line bandage.

Conclusion

Considering the marked morbidity at donor site, Dorsalis Pedis axial pattern flap should not be used too frequently, specially in Indians and Asians. Climate being hot, usual foot wears in practice are chappals. Labour class and other poor fellows work with bare-foot, as they can't afford even chappals. If this flap has been used, donor site protection is must, atleast for six months. Patients have to wear shoes for pressure and support at grafted site. Chappals and sandals are to be strictly prohibited.

Post-operative care of donor site and local hygiene of donor area is quite essential. Slightest trauma at donor site triggers the infective process, leading to epidermal loss of the graft. If immediate care is not taken this can lead to full thickness skin loss. Still neglected, gradual damage can lead to exposed tendons on the dorsum of foot, which may require another flap cover. Though none of our patient had this problem, as those having ulcerations were immediately hospitalised and kept under supervision till they completely healed.

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