We describe a patient with a medial malleolar skin defect exposing an internal fixation device. This was successfully treated with a local extensor hallucis brevis muscle flap based on the dorsalis pedis vessels. The flap is well vascularised, easy to raise, thin and leaves an acceptable secondary defect. It can be extended to include the rest of extensor digitorum brevis if a larger flap is required.

**Case report.** A 36-year-old woman sustained a closed fracture of the distal third of the left tibia and fibula in a caving accident. Open reduction and internal fixation with primary bone grafting was performed at another institution. Upon removal of the plaster at three months skin necrosis had occurred, exposing the distal plate and screws. Doppler ultrasound indicated antegrade flow in the posterior tibial and dorsalis pedis vessels. It was decided that a local flap should be used and, after debridement the extensor hallucis brevis flap was applied as described below. The wound healed uneventfully and the patient was mobilised without plaster. After six months the flap remains stable and well healed, with an acceptable donor site.

**Operative technique.** A longitudinal dorsal incision is made over the course of the dorsalis pedis vessels. Skin flaps are raised, medially and laterally, preserving the superficial peroneal nerve. The first dorsal metatarsal artery is then identified in the first web space and the proximal deep perforating branch, which is ligated. The EHB tendon is divided distally and the musculotendinous unit raised together with the dorsalis pedis vessels. As much adjacent EDB as required can also be raised to increase the size of the flap. Its origin is then sharply dissected from the calcaneum and the dorsalis pedis and its venae comitantes dissected to a level that allows a comfortable arc of rotation. The extensor retinaculum may need to be partly released to allow tension-free positioning. The flap may then be tunnelled to the defect and inset. A split skin graft is then applied primarily. The secondary defect is closed directly over a small suction drain.

**Discussion.** The extensor digitorum brevis (EDB) consists of four slips (Fig. 1), the most medial of which is often termed the extensor hallucis brevis (EHB). The blood supply to these muscles is the dorsalis pedis artery via its lateral tarsal branch. This, together with its venae comitantes and motor branch of the deep peroneal nerve, supplies two branches that enter the posterior aspect of the muscle belly from its medial side. The muscle is dispensable functionally, as extension of the toes can be maintained by the long extensors.

It is generally accepted that muscle flaps are preferable to fasciocutaneous flaps for defects with exposed internal fixation devices. The extensor digitorum brevis has been previously used as a microvascular free flap in facial re-animation and has been described previously as a local muscle flap (Leitner, Gordon and Buncke 1985; Landi, Soragni and Monteleone 1985). Mathes and Nahai (1979) state that is too small for muscle transposition and has a small arc of rotation. Our technique allows a much larger arc and we suggest that it is suitable for defects of the malleoli up to 5 cm in diameter; the flap will also reach the lateral malleolar region without difficulty. It may perhaps be raised even higher after splitting the extensor retinaculum and repairing it. The secondary defect consists of a longitudinal scar (which is an advantage over the conventional dorsalis pedis flap) and there is no functional deficit.

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**REFERENCES**

