**Medial Plantar Flap**

The medial plantar flap is a fasciocutaneous flap (Mathes and Nahai Type B) overlying the foot’s instep area between the first metatarsophalangeal joint (MTPJ) and the calcaneus (midline of heel), and the midline and the navicular tuberosity as lateral and medial limits respectively (Fig 1). It is an excellent choice for the weightbearing heel but dissection can be difficult and the donor site morbidity increases with the size of the flap.

**Anatomy**

This flap is supplied by perforators from the medial plantar artery (1-1.5 mm) with associated venae comitantes that tend to be narrow. It is the smaller of the two terminal branches of the posterior tibial artery, the other being the lateral plantar artery. The flap (12 x 6 cm maximum) can be islanded and pedicled on these vessels to cover defects on the heel.

**Flap elevation (Standard)**

The perforator(s) are usually found 1/3 along the axis (between the sustentaculum talus and the first MTPJ) over the plantar surface of the medial cuneiform bone near the midpoint, and may be preoperatively located by a Doppler probe (palpate DP and PT pulse also). The sustentaculum talus aka talus shelf is the medial bony shelf below the medial malleolus under which the FHL tendon moves.

The surgery should be performed under tourniquet control.

* The skin island should be centered over the axis. The distal border should be kept 2 cm behind the metatarsals heads in order to avoid the weight-bearing area (Fig 2).
* Dissection should proceed from the distal and medial aspects. Extend incisions through plantar fascia in order to expose flexor digitorum brevis (FDB) muscle laterally and abductor hallucis (AbH) muscle medially..
	+ The latter may be quite small at this level; perforator may appearance to lie directly on bone.
	+ Superficial veins may be included for drainage.
* Retract both muscles in opposite directions, and the vascular pedicle should now be exposed along with the medial plantar nerve.
* Divide the distal end of the vascular pedicle, and dissect proximally in a subfascial manner until the calcaneal tuberosity is reached. The AbH is divided to release the pedicle (Fig 3).
	+ During the dissection, you should attempt to preserve the sensory fibers penetrating the overlying plantar fascia by splitting it from the main trunk of the medial plantar nerve ie intraneural dissection (Fig 4). Sacrificing the main trunk will result in sensory loss over the distal foot.
	+ The flap can also be harvested in a suprafascial plane.
* The pedicle is usually around 3cm long. Further pedicle length can be obtained by dividing the lateral plantar artery at the proximal bifurcation that allows mobilization of the posterior tibial vessels.
* Flap may then be mobilized to the required area. Other variations include transposition/ rotation/ VY advancement, a reverse flap or free flap
	+ The donor site is usually skin grafted over the exposed muscles.

**References**

Shanahan RE, Gingrass RP. Medial plantar sensory flap for coverage of heel defects. *Plast Reconstr Surg* 1979; 64(3): 295—298

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