Varicose Peroneal Veins in Fibula Free Flaps

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Evaluation of the entire venous system before free fibula harvest is not routinely performed unless there is a suspicion for preexisting venous disorders such as deep venous thrombosis. We present two cases of varicose comitant peroneal veins that were encountered intraoperatively following fibula harvest and the postoperative sequelae.

Case 1—Tibial Reconstruction

Both comitant peroneal veins were varicose (0.7 and 1.5 cm) and there was a significant size mismatch with the great saphenous vein (0.7 cm) and the vena comitans of the posterior tibial artery (0.5 cm). As there were no adequately sized recipients, the peroneal vein (1.5 cm) was "funneled"[1] down to allow for end-to-end anastomosis with the great saphenous vein (0.7 cm) (►**Fig. 1**); the remaining vessels were anastomosed uneventfully. After 16 hours, the entire venous system thrombosed but the arterial anastomosis remained intact and patent. In view of the lack of suitably sized recipients, streptokinase was not given and the skin paddle and subcutaneous tissue were discarded, leaving behind a nonvascularized fibula bone graft that was "muscle-wrapped"[2] and fixed rigidly.

Case 2—Mandibular Reconstruction

Building on our previous experience, preoperative duplex assessment of the lower limbs was performed after physical examination revealed superficial varicosities bilaterally. Duplex revealed incompetent but patent deep and superficial veins bilaterally with no evidence of reflux or thrombosis; varicosities were noted in the tributaries of both saphenous veins at the calf region but not in the deep veins. However, the comitant peroneal veins were found to be bulging (1.2 and 1.5 cm) after incising the interosseous membrane. For flap salvage, one of the varicose veins (1.2 cm) was closed as a blind-ending stump while the other (1.5 cm) was anastomosed end-to-side to the internal jugular vein (1 cm) (►**Fig. 2**). The fibula construct was also dismantled and made more convex to avoid pedicle compression.

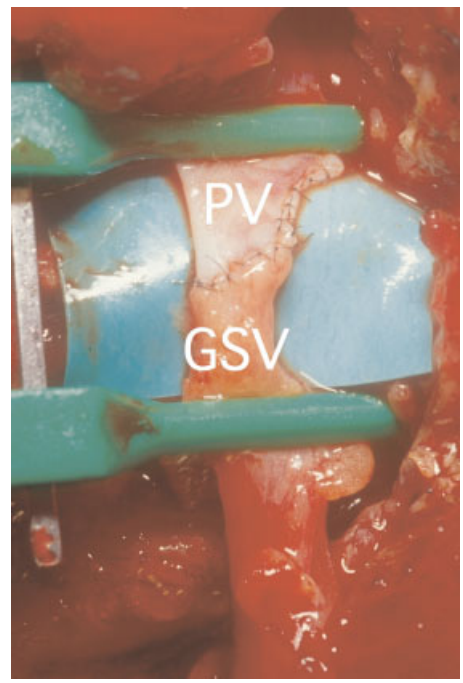

Fig. 1 Intraoperative view of case 1 showing an end-to-end anastomosis between the "funneled" peroneal vein and the great saphenous vein. GSV, great saphenous vein; PV, comitant peroneal vein.

Varicose veins are contraindicated in free flap surgery due to the attendant risks of turbulent flow and thrombosis. Duplex assessment is considered the standard norm although limitations of its field of view may result in deep varicosities being missed. Moreover, Verneuli concluded from dissection studies that deep varicosities were more common and that whenever spontaneous superficial varicose veins exist, the corresponding deep system (intra- or intermuscular) must also be involved.[3]

Therefore, in patients planned for free fibular reconstruction, we strongly advocate initial evaluation by physical examination for the presence of superficial varicosities and if present, duplex assessment is warranted. However, should

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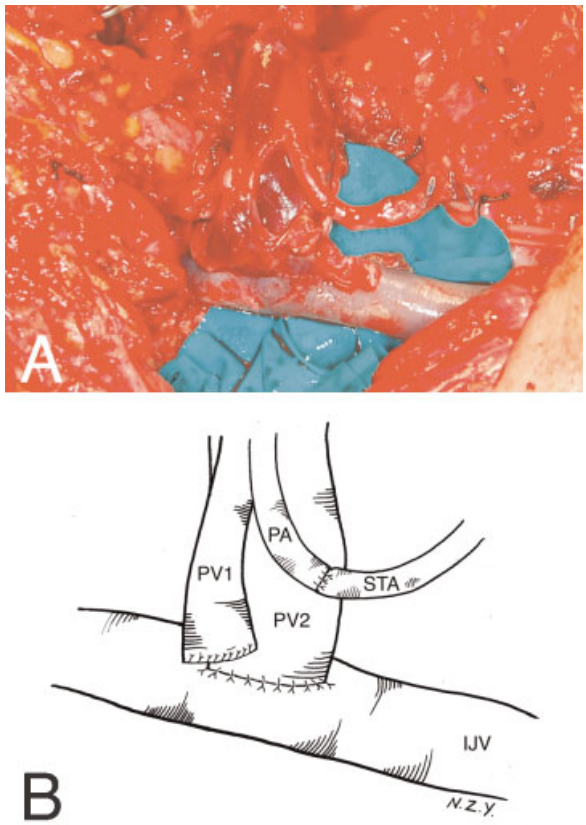

Fig. 2 Intraoperative view of case 2. (A) One of the comitant peroneal veins was closed as a blind ending stump while the other was anastomosed end-to-side to the internal jugular vein; the peroneal artery was anastomosed end-to-end to the superior thyroid artery. (B) Schematic diagram of microsurgical anastomosis and revascularization of free fibula reconstruction. IJV, internal jugular vein; PA, peroneal artery; PV, comitant peroneal vein; STA, superior thyroid artery.

results remain ambiguous, as illustrated in case 2, there are two options—one might consider harvesting a different flap altogether to avoid this potential pitfall of varicose deep veins; alternatively, one can proceed, but at the risk of encountering varicose veins and thus flap failure. In the latter scenario, a decision of whether or not to abandon the flap has to be made intraoperatively because it is near impossible to find a vein of corresponding diameter in the leg and thus, the flap would ultimately be destined to fail; in the head and neck region however, end-to-side anastomosis to the internal jugular vein can overcome the problem of vessel size discrepancy and flow can also be maintained through the respiratory venous pump effect generated by the pressure gradient with the heart.[4] The situation of intraoperatively encountered varicose peroneal veins may potentially be circumvented by computed tomography venography[5] which can measure vein sizes although it lacks the functional assessment that duplex affords. Both modalities can complement each other and perhaps, be utilized in tandem for equivocal situations such as those highlighted in this article.

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