

## **EXTENSIVE LOWER LIMB ULCERATION CAUSED BY IATROGENIC ARTERIOVENOUS FISTULA AND PERIPHERAL ARTERIAL DISEASE: USE OF VEINOPLUS CALF MUSCLE STIMULATION**

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**Abstract:** We report the case of a gentleman with extensive arteriovenous ulceration of the right leg and foot secondary to an iatrogenic arteriovenous groin fistula in addition to occlusive disease at the level of the popliteal artery. The gentleman underwent an attempt at angioplasty of the popliteal artery which failed. He subsequently underwent surgical repair of the arteriovenous fistula as well as a popliteal to peroneal bypass graft using ipsilateral long saphenous vein. Postoperatively he was treated with Veinoplus electrical calf muscle stimulation twice a day for 20 days. The ulcer showed steady improvement and within 4 months had practically healed.

**Case Report:** An 84 year old gentleman presented with a 6 month history of extensive ulceration of the right leg and foot (Fig 1). The ulceration in the foot affected the dorsal aspect and measured about 8cm in diameter. The ulceration in the leg was almost circumferential and extended from just above the ankle to the mid leg with large amounts of necrotic fat and slough. The foot and leg were very markedly swollen compared to the contralateral limb. He also had a fissure at the base of the 2nd and 3rd toes. There was also ulceration over the lateral malleolus and over the Achilles tendon. The patient was diabetic on insulin and oral hypoglycaemics. He also suffered from hypertension, renal impairment secondary to diabetic nephropathy, hyperlipidaemia and ischaemic heart disease. Several years previously he had undergone percutaneous coronary intervention through the right groin. Clinical examination revealed palpable femoral pulses with a palpable thrill over the right groin. The popliteal pulse was palpable above the knee but no distal pulses were present. The waveforms at the ankle on the right were monophasic continuous. Ankle brachial pressure indices were not performed in view of the extensive ulceration over the leg. An ultrasound scan revealed the presence of an arteriovenous fistula between the profunda femoris artery and the common femoral vein with high flow through it. The duplex scan also showed that there was a short popliteal artery occlusion. The gentleman was referred for right popliteal artery angioplasty through an antegrade approach. Unfortunately it proved impossible to cross the lesion. In view of this the gentleman was taken to theatre where he underwent repair of the arteriovenous fistula between the profunda femoris artery and the common femoral vein. At the same procedure he also underwent right popliteal to peroneal artery bypass grafting using ipsilateral reversed long saphenous vein. The extensive ulceration of the right leg and foot was debrided (Fig 2).

Postoperatively he was treated with twice daily application of Veinoplus calf muscle electrical stimulation for 20 days. The ulcers made rapid progress and the marked swelling in the right lower limb improved dramatically (Fig 3). He was well enough to be discharged after 20 days (Fig 4). His bypass graft continued to be scanned at 1 week, 6 weeks and 3 months post operatively. At the 3 month scan a stenosis was identified in the bypass graft and the patient underwent bypass graft angioplasty with a good technical result (Fig 6). The patient continues to be followed up with bypass graft surveillance. At 4 months post op the ulcers are practically healed and the initial swelling in the limb has improved dramatically (fig 5).

## Conclusion:

We report a case of extensive ulceration of the right lower limb secondary to arterial and venous disease treated successfully with bypass surgery, repair of an arteriovenous fistula and surgical debridement of the ulcers. VEINOPLUS® electrical calf muscle stimulation was used in the postoperative period to enhance healing and reduce swelling.

Fig 1:  
Extensive ulceration of the right leg and foot with necrotic fat and extensive skin loss



Fig 2:  
Right foot and leg ulcer immediately after surgical debridement



Fig 3:  
Right leg and foot 12 days after surgical intervention



Fig 4:  
Right leg and foot 20 days after surgical intervention



Fig 5:  
Right leg and foot 20 days after surgical intervention (full epithelialization)

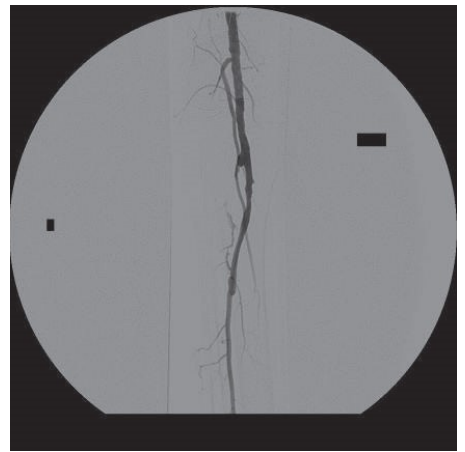
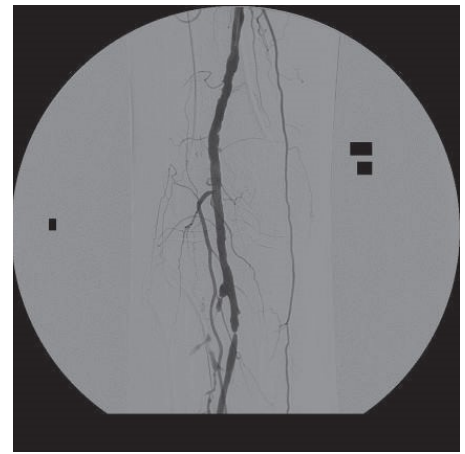


Fig 6: Right popliteal to peroneal vein bypass graft before and after angioplasty of graft stenosis