Extrinsic Band as an Unusual Cause of an Intermittent Graft Obstruction

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Abstract
Graft failure is a common complication of vascular bypass. Most grafts failures are secondary to neo-intimal hyperplasia at anastomotic sites, progression of the atherosclerotic disease in distal arteries or mechanical failure of the conduit itself, mainly manifested at the early postoperative period. Late arterial-bypass obstruction by an external fibrotic band has not been previously described, according to our knowledge.

Recently, we have encountered an arterial bypass (reversed saphenous vein graft) obstructed by an extrinsic band causing intermittent flow obstruction, manifested as typical intermittent claudication at short distance.

Case Presentation
A 65-year-old male patient was admitted to the vascular surgery department, suffering from 20 m claudication of his right leg. The patient had a femoropopliteal, below-knee (BK), reversed saphenous vein-graft (RSVG) bypass, placed in the anatomical position of the vein, 10 years prior to his current admission. His medical history consists of heavy smoking, uncontrolled type 2 diabetes mellitus, hypertension, dyslipidaemia and mild renal failure. Clinical presentation began 4 months prior to his admission, when the patient noticed pain on walking a short distance. An orthopaedic examination was normal. On physical examination, the pedal pulses were absent when the leg was straight but were easily palpable when the knee was flexed. Lower extremities’ duplex scan revealed an occlusion of flow at the knee level, when the knee was in a straight position and a normal flow when the knee was flexed. The ankle–brachial index (ABI) on his right leg was 0.95 when the knee was flexed and 0 when it was straight; the left-leg ABI was 0.78 (Fig. 1). On angiography, the inflow and the outflow arteries were normal. There were two vessels that outflowed to the popliteal artery, the peroneal and the posterior tibial arteries, while the anterior tibial artery was occluded near its takeoff. The peroneal artery was the dominant artery in the calf, sending an anterior branch to
a reconstituted dorsalis pedis artery. Flow obstruction was demonstrated on knee flexion, while the flow restored when the leg was straightened, with an external shadow crossing the graft at knee level (Fig. 2). On surgical exploration, an obstructing fibrotic band was found, at the knee level, surrounding the RSVG bypass nearly occluding the venous conduit. The band was released, and the patient was discharged home symptomatically. Postoperative ABI of the right leg has risen to 0.97, both on flexion and straight positions.

Discussion

Vein-graft failure is part of the natural history of all bypasses. Most studies focussed on the early causes of graft failure, which is due either to technical error by the operating surgeon or to the intermediate time frame in which myointimal hyperplasia plays the major role.1–3 Although the peak incidence of vein-graft failure occurs within the first year, delayed progression of intrinsic lesions, as well as progression of the primary atherosclerotic disease in the outflow arteries, leads to a 4% annual loss of graft patency in the 2- to 10-year time frame.4 Degeneration of the vein-graft wall with intramural thrombus formation, characteristic of ruptured atherosclerotic plaque, is also frequently observed.5

The patient we presented had ordinary complaints of short, intermittent claudication, which were thought to be related to the progression of his atherosclerotic disease in face of persistent tobacco abuse, for which he had undergone the bypass operation 10 years previously. The finding of an obstructing band, by the duplex scan and the angiography, came as a complete surprise, given the time span after the
operation and the recent onset of the complaint. Simple release of the band eliminated the symptoms completely. This unusual cause of obstruction is probably the result of recurrent mini trauma to the bypass which was placed in either a subcutaneous or a subfascial position and not the intracondylar route, causing local fibrosis. The band might also be the result of a normal healing process of the primary operation.

This, we believe, might be a very rare complication of in situ or non-anatomical position of RSVG bypass. Yet, whenever the flow via the conduit is related to the leg position, in a patient having undergone venous bypass operation, this type of obstruction must be kept in mind.

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None declared.

**References**