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Late rupture of a saphenous vein aortorenal graft

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It is well known[1] that aortorenal venous grafts can dilate, whereas actual rupture has not been reported. However, rupture of aortocoronary vein grafts has been reported.[2,3] Dilations at this site are relatively less common, but such bypass grafting procedures are much more commonly performed, so the potential for rupture of dilated vein grafts is apparent. We report the first known rupture of a dilated aortorenal vein graft.

CASE REPORT

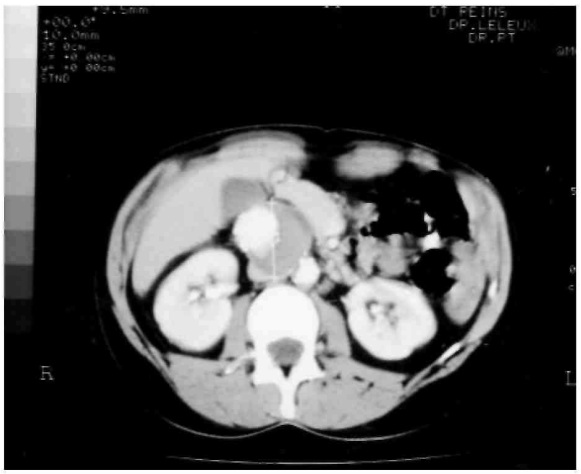
A 42-year-old woman was admitted to the outpatient clinic of a community hospital with complaints of epigastric pain of recent onset.

At the age of 23 years, the patient had undergone saphenous vein aortorenal bypass grafting because of severe renovascular hypertension caused by fibromuscular dysplasia. At surgery the saphenous vein had been harvested from the right thigh, gently dilated with the patient's own heparinized blood, and placed in a blood-filled recipient. Distal renal anastomosis had been completed before the aortic suture, with the saphenous vein graft crossing the inferior vena cava anteriorly.

At age 30 years, the patient had an uneventful pregnancy and delivery of an infant. She was subsequently lost to follow-up, until the admission for epigastric pain.

A 6-cm aneurysm of the saphenous vein graft was demonstrated by means of an abdominal computed tomography scan (Fig 1). To delineate the distal renal artery and the distal anastomosis, selective angiography was performed (Fig 2). The patient was scheduled for elective surgery, with a plan for polytetrafluoroethylene aortorenal bypass grafting and ligation of the aneurysmal saphenous graft. The patient had been discharged for 48 hours when she experienced severe abdominal pain, prompting her to go to the emergency department. Diagnosis of aortorenal saphenous graft rupture was made, and the patient was rapidly brought to the operating room.

Fig 1. *Abdominal computed tomography scan. The graft is enlarged to a maximal transverse diameter of 6 cm; the patent lumen is close to the right border of the graft, with the thrombosed portion overlying the abdominal aorta.*



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A large xiphopubic midline incision was made to ensure optimal exposure. A large retroperitoneal hematoma, extending behind the ascending colon, had developed. The aorta was cross-clamped above the renal arteries and, because of significant hemodynamic instability, a right nephrectomy was performed. Postoperatively, the patient experienced transient elevation of serum urea nitrogen and creatinine levels; she was discharged on postoperative day 7, after complete recovery of renal function. It was shown by means of pathological examination that the rupture had occurred in the midportion of the saphenous graft, away from the anastomosis. The saphenous vein graft wall was thin.

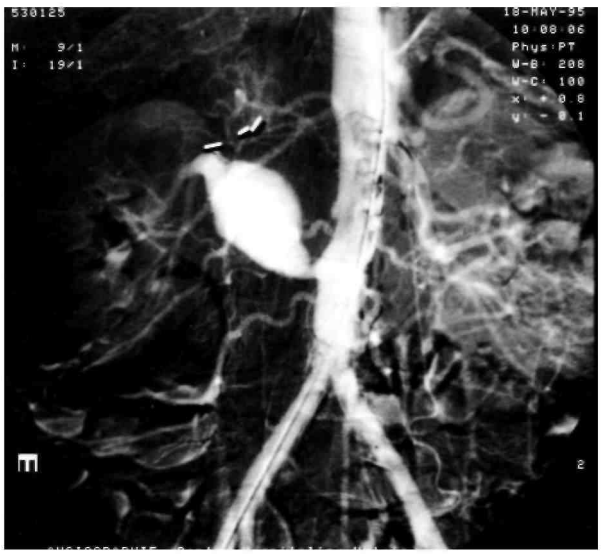
DISCUSSION

Stanley et al[1] were first to caution about possible aneurysmal degeneration of autologous vein grafts used to treat renovascular hypertension, particularly in pediatric patients. They recommended preferential use of arterial conduits or direct aortic reimplantation of the renal arteries. The University of Michigan group published a survey of 57 pediatric patients who had undergone surgery for renovascular hypertension between 1963 and 1993.[2] It reported that 11 of 33 autologous saphenous vein grafts showed marked aneurysmal dilatation; five of those dilated grafts were repaired by surgical plication; in two children additional nephrectomy was performed.[2] Surgery is recommended to avoid renal atheroembolic complications associated with graft aneurysmal degeneration, even though, in most cases, the aneurysm size remains stable after initial dilation. By comparison, aneurysmal degeneration of aortocoronary saphenous vein grafts is less frequent. According to Robicsek et al,[3] only 12 true aneurysms of aortocoronary saphenous vein grafts have been reported, occurring as late as 21 years after surgery. These authors reported two cases of acute spontaneous rupture of such aortocoronary vein grafts,[3] and additional cases have been published since then.[4] Nevertheless, despite the high number of saphenous veins implanted for aortocoronary bypass, such reports have been remarkably rare.

Our report presents a unique case of evident dilatation progressing to spontaneous rupture. However, the possibility that rupture may have been precipitated by elective angiography 2 days earlier cannot be overlooked.

The eventuality of rupture points to the necessity of follow-up for patients who have undergone aortorenal bypass grafting procedures with saphenous veins, particularly if such surgery occurred when the patient was young. We suggest ultrasonic examination be performed every 5 years, and more frequently when the vein graft appears dilated.

Fig 2. *Angiography of an abdominal aorta and aortorenal graft. There is no anastomotic stenosis.*



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