Acquired vein stenosis of renal allograft—percutaneous treatment with self-expanding metallic stent

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Introduction

Renal vein stenoses are uncommon. These stenoses are practically always caused by malpositioning of the vein or an extrinsic compression [1]. They do not usually have a serious haemodynamic or functional effect. We report a case of a tight, acquired stenosis managed by percutaneous insertion of metallic self-expanding vascular endoprosthesis.

Case report

A 55-year-old man suffering from congenital renal dysplasia received a cadaveric renal transplant in November 1992. The donor’s kidney had one artery and one vein, each of which was procured with patch, thereby allowing anastomosis on the recipient’s iliac (terminolateral) vessels without surgical difficulty. Diuresis was restored on the operating table and renal function was rapidly normalized (serum creatinine level at day 8 = 88 µmol/l–10 mg/l). There was no proteinuria and the urinary sediment was normal. Conventional treatment was administered with thymoglobulins (18 days), azathioprine (2 mg/kg/day), and low corticosteroid doses. The morphological and functional tests were normal at day 20: colour US Doppler (ATL UM 9, Bothell, USA), Mag 3 ⁹⁹ᵐTc scintigraphy, and angiography. There was no sign of either lymphocele or perirenal haematoma. At day 30, the patient presented a CMV infection successfully treated by pancidoviv (Cymevan*). Renal function remained normal.

In the course of the 4th month after transplantation, the patient was admitted again with an acute rejection episode including fever, kidney enlargement, proteinuria 1.10 g/24 h. Colour and duplex US Doppler revealed an increase in graft size from 107 to 125 mm and in the cortical resistance index from 0.70 to 0.81. There were no parenchymal abnormalities nor was there obstructive uropathy or stenosis of the graft artery. On the other hand, the vein was stenosed, with speeds exceeding 2 m/s and extremely turbulent flows. Phlebography confirmed the existence of a short and concentric tight stenosis (80%) (Figure 1) of the median part of the renal vein. A venous dilatation

Fig. 1. Venogram before angioplasty. Concentric and short stenosis in the median part of the renal vein. The distal part of the vein is heterogeneous because of turbulent flow.
using a 10 mm diameter balloon was performed. At the same time, biopsy-proven acute interstitial rejection was treated and cured by strong doses of corticosteroids.

Four days after angioplasty, colour and duplex US Doppler detected signs of early restenosis. The patient then underwent stent placement (wallstent, 9 × 45 mm) without gradient pressure on controls (Figure 2). Three days after stent installation, US Doppler revealed a reduction in the size of the kidney (107 mm) and a fall in the resistance index to 0.75. The patient did not receive anticoagulants or platelet aggregants at any time. There was a new rejection episode at the 10th month, marked by severe (S-creatinine = 618 µmol/l–70 mg/l) and only partially reversible worsening of renal function, treated by OKT3. Biopsy revealed the existence of chronic allograft rejection. Two and a half years after implantation of the venous prosthesis, renal function is stable (S-creatinine = 265 µmol/l–30 mg/l) without proteinuria. The kidney measures 110 mm at ultrasonography; Doppler reveals no venous stenosis, and resistance indices at 0.76. The cortex is homogeneous.

**Discussion**

Duplex and colour Doppler imaging are of major importance to the haemodynamic monitoring of transplants and reliable means of recognizing venous anomalies. Venous pathology is rare (5%) [2,3], but can reveal itself precociously in the form of immediate or recurring thromboses intricated with rejections [4,5]. Venous stenoses occur generally at the initial stage of the transplantation and represent the result of a surgical problem [1].

In this case, neither perirenal haematoma nor lymphocele was observed, but the venous clamping during surgery might have induced an intimal wound, leading to a fibrous scar. This is manifestly an acquired case of vein stenosis.

There have been no previous reports in the literature of treatment with metallic endoprostheses in this kind of situation. It seems to us that percutaneous treatment is less invasive and easier to carry out than surgery [6,7]. The haemodynamic results are proven after insertion of the wallstent by gradient pressure controls and the modifications of the duplex and colour Doppler. It is more difficult to interpret mean reduction in kidney size and decreases in resistance index because of the corticotherapy treatment, which can play a part in improving these parameters [8].

Stent placement was followed by a significant haemodynamic improvement in the cortical even when connected with a histologically proven and secondarily treated cellular rejection.

The morphological and haemodynamic results of the endoprosthesis persist over a long period without necessitating the potential hazards of antiagregant or anticoagulant therapy. However, other cases with long-term follow-up will need to be studied before conclusions can be drawn as to the usefulness and the reliability of this therapeutic management.

**References**


*Fig. 2. Control after stent placement. The endoprosthesis is visible (arrows) and the lumen of the vessel is large, without stenosis.*

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