

CASE REPORT

Inferior Vena Cava Reconstruction Using Internal Jugular Vein

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Introduction

The need for inferior vena cava (IVC) reconstruction may occur as a result of planned resection (due to involvement with tumour), iatrogenic injury or trauma. We report the use of internal jugular vein for this purpose.

Case Report

A 43-year-old woman underwent an elective right nephrectomy. She had a previous renal injury occurring as a result of a horse-riding accident, leading to uncontrollable hypertension and renal atrophy. At operation, considerable fibrosis and scarring was encountered. During removal of the kidney, the IVC, encased in scar tissue, was inadvertently transected. The torn ends were temporarily ligated once control was established. A blood loss of 17 units was noted. Assistance from a vascular surgeon was sought.

On arrival of the vascular surgeon, inspection revealed that the ends of the IVC had retracted considerably, and consequently primary repair was not feasible. Concerns regarding the use of prosthetic material in the venous system led the search for an autograft. The right internal jugular vein was harvested and anastomosed to the proximal and distal ends of the IVC using interrupted 4-0 polypropylene. Good Doppler flow through the graft was demonstrated at the end of the procedure.

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Postoperatively, the patient was warfarinised. A trans-femoral inferior vena cavagram was performed 1 week after the operation which confirmed graft patency, though the graft was 25–30% of the diameter of the native vena cava. The patient was discharged home 17 days postoperatively with a plan to remain anticoagulated for 3 months. Histology unexpectedly revealed transitional cell carcinoma of the renal pelvis. She remains well 3 months after discharge from hospital.

Discussion

Various methods of reconstructing the IVC have been previously described including the use of PTFE,^{1,2} or PET³ (Dacron) prosthetic grafts and venous autografts (superficial femoral vein,⁴ external iliac vein⁵ and spiral saphenous vein.² We have not, however, been able to find any reports on Medline of internal jugular vein being used for this purpose. The concern with using prosthetic grafts in the venous circulation lies in their tendency to thrombose or become infected.⁵ Autogenous vein was therefore our preferred graft material.

The obvious problem of IVC grafting is that the diameter of the IVC is greater than that of most commonly used graft vessels. Superficial femoral vein has been described for use as a replacement after removal of infected grafts and for IVC reconstruction⁴ but in many cases this leads to local complications in the lower leg. Spiral saphenous vein grafts have also been used² but these result in long suture lines which increase tendency to thrombosis and are time consuming. Use of external iliac vein for IVC replacement

has also been described.⁵ The internal jugular vein appeared to us to be the ideal conduit. Not only was it the correct diameter, but healing in the neck is such that its harvest is virtually without complication.

We have illustrated how internal jugular vein provides an alternative to previously described methods for reconstructing the IVC.

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