Introduction

J.H.M.

Tordoir

Dr. J.H.M. Tordoir, Department of Surgery, University Hospital of Maastricht, PO Box 5800, NL-6202 AZ Maastricht (The Netherlands)

The creation and maintenance of adequately functioning access to the bloodstream and peritoneal cavity remains the lifeline of over 1 million patients on renal replacement therapy. Complications of hemodialysis access arteriovenous (AV) fistulas and peritoneal catheters for CAPD treatment are responsible for a high morbidity and mortality and result in a yearly hospital admission period of 1 month/patient.

Complications of graft AV fistulas, like puncture bleeding and infection, are usually caused by damage of the prosthetic material with bacterial invasion, while AV fistula occlusion develops secondary to vessel stenosis induced by hyperplasia of the intimal layer.

In the first contribution Dawidson discussed the results of a new polytetrafluoro-ethylene prosthesis with longitudinally stretch properties (stretch ePTFE; Gore-tex, Flagstaff, Ariz., USA). He compared patients who had early graft cannulation (< 2 weeks after implantation) with patients with late postoperative cannulation of this new stretch PTFE prosthesis. The overall failure rate was 21% for early cannulation and 8% for late cannulation. Failures were caused by infection and thrombosis. Hematoma, bleeding and swelling associated with first-time cannulation oc-

curred in 6% of the early-cannulation group versus 0.6% in the late-cannulation group. Graft survival after 3 years of follow-up was 73 and 91% for the early- and late-cannulation group, respectively. His conclusion is that the ability to safely cannulate grafts early may be related to the graft material, surgical and dialysis techniques.

Hofstra and coworkers investigated the relationship between hemodynamic parameters, like bloodstream velocity and shear rate with the development of stenotic intimal hyperplasia in graft AV fistulas. For this purpose, vessel wall Doppler tracking was used, which makes an accurate estimation of vessel diameter and compliance during the cardiac cycle in vivo possible. They found a significant relationship between a high initial velocity and shear rate at the venous anastomoses and the occurrence of intimal hyperplasia at that site during follow-up. In the construction of AV fistulas, one should aim to decrease initial peak systolic velocities at the venous anastomosis. This may be achieved with the use of 4- to 7-mm-tapered grafts.

Severe hand ischemia in diabetic patients, due to dialysis AV fistulas, can be treated by bypass grafting and ligation of the distal fistula artery. Haimov presented good results of this technique in 19 of the 23 patients, which were operated because of ischemia. All patients had AV fistulas at the elbow region with arterial blood steal from the forearm.

Hilton and coworkers compared two different techniques for the placement of Tenckhoff peritoneal catheters for CAPD treatment. Complications and failure rates of surgically and needlescope-placed catheters were not significantly different in both groups. Peritonitis and poor drainage were the most common problems.

Noninvasive surveillance of dialysis fistulas by means of duplex sonography was reported by Kathrein. Duplex scanning can be applied preoperatively to judge vein suitability for fistula creation and postoperatively to measure blood flow in the newly created vascular access. Also, malfunctioning fistulas and stenotic vessel segments can be examined accurately by duplex scanning. AV fistulas at risk for occlusion can be recognized with the use of specific duplex criteria. A last important topic is the treatment of complicated dialysis fistulas by means of percutaneous radiologic intervention. Zijlstra discussed the results of angioplasty of ste-nosed shunts and fistulas. Good results were obtained in external Scribner shunts with an increase in shunt patency. Less favorable results were achieved in Brescia/Cimino and graft AV fistulas. Stent placement for the correction of central vein stenosis has been very successful.

336

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Tordoir