

Percutaneous angioplasty with drug eluting balloon for infra-inguinal venous bypass stenosis

A. Kerzmann^{1,2}, E. Passelecq^{1,2}, J.O. Defraigne¹

¹Dept. of Cardiovascular and Thoracic Surgery, CHU Sart-Tilman, Liège, Belgium and ²Dept. of Vascular and Thoracic Surgery, Sankt Nikolaus-Hospital, Eupen, Belgium

No conflict of interest

Introduction

Infra-inguinal bypasses have better results with saphenous vein graft. There are 3 types of venous bypass failure: thrombosis, intimal hyperplasia and atherosclerosis. Intimal hyperplasia occurs between the third and the eighteenth month after the bypass operation. Open surgical repair is still today the best way to treat infra-inguinal venous bypass stenosis. Conventional percutaneous angioplasty doesn't show high primary patency rates at short-term.

The recent studies about paclitaxel coated balloons in peripheral arterial disease (PAD) are encouraging. We report our first experience about use of drug eluting balloons to treat infra-inguinal venous bypass stenosis.

Patients and methods

From November 2012 to October 2013, 3 patients with infra-inguinal venous bypass stenosis were treated with paclitaxel coated balloons IN.PACT Amphirion® from Medtronic. They were reviewed prospectively.

Case 1

- man, 57 years old
- arterial hypertension, smoking habit, dyslipidemia
- femoro-popliteal bypass below the knee with in situ saphenous vein for PAD Rutherford category three 14 months before
- conventional percutaneous angioplasty of the distal anastomosis after 3 and 4 months
- restenosis with ankle-brachial index (ABI) reduced at 0,57

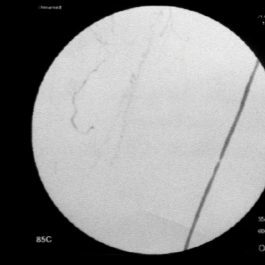
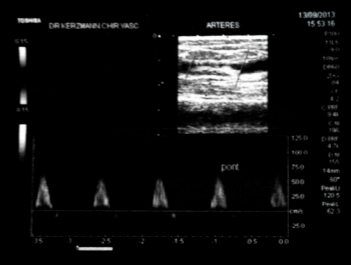
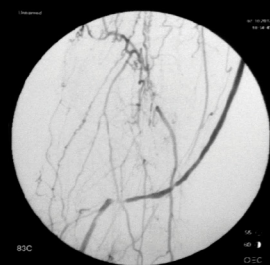
Case 2

- woman, 51 years old
- arterial hypertension, smoking habit, dyslipidemia
- femoro-popliteal bypass above the knee with in situ saphenous vein for PAD Rutherford category three 6 months before
- conventional percutaneous angioplasty of the distal anastomosis after 4 months
- restenosis with ABI reduced at 0,72

Case 3

- man, 63 years old
- arterial hypertension, former smoking
- femoro-posterior tibial bypass with in situ saphenous vein for PAD Rutherford category four (due to prosthetic femoro-popliteal bypass above the knee thrombosis) 4 months before
- conventional percutaneous angioplasty at the junction between the mid and the distal third of the bypass after 3 months
- restenosis with ABI reduced at 0,5

Results



- predilatation with low-pressure balloon 3mm-40mm
- dilatation with paclitaxel coated balloon 4mm-80mm
- no peroperative complication
- PAD Rutherford classification reduced to category 0
- ABI increased at 0,9
- no restenosis after 14 months follow-up

- predilatation with low-pressure balloon 4mm-40mm
- dilatation with paclitaxel coated balloon 4mm-120mm
- no peroperative complication
- PAD Rutherford classification reduced to category 0
- ABI increased at 0,93
- no restenosis after 14 months follow-up

- predilatation with low-pressure balloon 3mm-40mm
- dilatation with paclitaxel coated balloon 3,5mm-40mm
- no peroperative complication
- PAD Rutherford classification reduced to category 1
- ABI increased at 0,88
- no restenosis after 4 months follow-up

Conclusions

The use of drug eluting balloon to treat infra-inguinal venous bypass stenosis is minimal invasive and safe.

Randomized studies with large cohort of cases are mandatory to compare paclitaxel coated balloon with conventional balloon angioplasty and with open surgical repair for the treatment of infra-inguinal venous bypass stenosis.