Percutaneous stent graft treatment of an iatrogenic femoral arteriovenous fistula

Published on 13.10.2002

DOI: 10.1594/EURORAD/CASE.1579
ISSN: 1563-4086
Section: Interventional radiology
Imaging Technique: Digital radiography
Imaging Technique: Digital radiography
Case Type: Clinical Cases
Authors: K. Karaman, L. Onat, M. Sirvanci, C. Duran
Patient: 66 years, male

Clinical History:

The patient presented with right inguinal pain after cardiac catheterization. No claudication was present.

Imaging Findings:

The patient presented with right inguinal pain after cardiac catheterization. No claudication was present. Doppler US examination revealed a femoral arteriovenous fistula (AVF). Angiography showed the arteriovenous fistula to be of the superficial femoral artery (SFA). An attempt to close the fistula with US-guided compression therapy was unsuccessful. The patient had coronary disease and presented a high surgical risk. The surgeons referred for endovascular treatment. After contralateral femoral puncture a cross-over technique was performed. Also a 5F sheath was inserted into the left axillary artery for control angiograms. A stent graft (8mm Wallgraft, BSIC Inc.) covered in PET (polyethylene teraphthalate) was inserted into the proximal superficial femoral artery. The stentgraft did not cross the origin of the deep femoral artery. After stentgraft deployment, residual AVF was still visible because the stentgraft was of a smaller size than the proximal SFA and also was deployed more distally. After balloon angioplasty had failed to seal the leakage, a second stentgraft (12 mm Wallgraft) was placed within the proximal and distal portion of the first stentgraft and did not cross the origin of the deep femoral artery. After deployment of the 12 mm stentgraft the AVF was excluded. Color Doppler US examination of the covered stent 6 months after implantation shows that the AVF is totally occluded and the stent graft shows good patency.

Discussion:

Local complications after femoral arterial catheterization, such as haematomas, pseudoaneurysms and arteriovenous fistulas, are becoming more common with the growing number of complex invasive procedures. Risk factors include older age, low femoral puncture and large arterial sheath size. The natural history of stable pseudoaneurysms and arteriovenous fistulas is benign because of frequent spontaneous resolution. Many pseudoaneurysms and arteriovenous fistulas will respond to US-guided compression therapy. After failure to close the AVF with US-guided compression therapy, implantation of covered stents is an effective and safe alternative to surgical repair. For percutaneous exclusion of femoral arteriovenous fistulas, several different types of stentgrafts are available. The major contraindication for stentgraft implantation is the presence of lesions near the femoral arterial bifurcation, because of the danger of occlusion of the deep or superficial femoral artery after covered stent placement. And also this kind of procedures with a stentgraft at a mobile localization of the artery will have great risk for stent breaking, kinking, and occlusion. Surgical repair should be an alternative therapy at this region. The young patients who are good surgical candidates may warrant surgery rather than stent graft implantation. In lesions originating from the femoral bifurcation, surgical repair is necessary. The stentgraft could provide disadvantages for
younger patients, since the long-term consequences of implanting covered stents are not known for certain. It is technical possible to exclude the AVF with stentgraft at this localization but this procedure should be performed in patients which have a high surgical risk. The advantage of covered stent implantation compared with surgical repair is the patients’ rapid return to ambulatory activity. Endovascular exclusion of iatrogenic femoral arteriovenous fistulas can be performed with a high degree of technical success, low morbidity, and short hospital stay.

**Differential Diagnosis List:** Stent graft exclusion of an iatrogenic femoral arteriovenous fistula

**Final Diagnosis:** Stent graft exclusion of an iatrogenic femoral arteriovenous fistula

**References:**


**Figure 1**

Description: Anteroposterior angiogram shows an arteriovenous fistula of the superficial femoral artery.

Origin:
**Description:** Selective right SFA anteroposterior angiogram shows fistula localization. **Origin:**
**Figure 2**

*Description:* An 8mm wide Wallgraft is placed into the right superficial femoral artery. *Origin:*
Description: After deployment of the first stent graft, anteroposterior control angiogram shows residual AVF. Origin:
Figure 3

Description: A second stent graft is placed more proximally and distally within the first stent graft.

Origin:
Description: After additional placement of a 12mm wide Wallgraft, the AVF has been excluded. Origin: