Does type 1 endoleak always need to be treated?
Published on 26.11.2010

DOI: 10.1594/EURORAD/CASE.8902
ISSN: 1563-4086
Section: Interventional radiology
Area of Interest: Arteries / Aorta Interventional vascular Cardiovascular system
Procedure: Diagnostic procedure
Procedure: Intraoperative
Imaging Technique: CT-Angiography
Imaging Technique: Image manipulation / Reconstruction
Case Type: Clinical Cases
Patient: 80 years, female

Clinical History:
This elderly lady underwent endovascular abdominal aortic aneurysm repair (EVAR) treatment for an abdominal aortic aneurysm (AAA). A type one endoleak (EL1) was detected at the end of the procedure but no further manoeuvres to solve the problem were attempted.

Imaging Findings:
This 80-year-old female patient was scheduled for an EVAR for a 5.5 cm AAA. The case was quite challenging due to angulated neck (Fig.1a,b). However, it was decided to treat it with the Endurant stent-graft (Medtronic). The procedure was carried out without any significant problems, but the final angiogram showed an evident type EL1 despite repeated inflations with a conforming balloon and the addition of a proximal cuff. No extra large stents were available to increase graft apposition to the aortic neck and for this reason the procedure was stopped. The day after CT confirmed the EL1 (Fig.2a,b) and a catheter angiography, performed to enter the leak and fill it with coils, confirmed the finding (Fig.2c,d). After 5 days the patient was operated again for extra large bare stent deployment on the neck but preliminary intraoperative angiography showed complete resolution of type EL1 (Fig.3 a,b). One year CT-follow-up confirmed the absence of any EL (Fig 4).

Discussion:
Endoleaks are a not unusual complication after EVAR. Type 1 EL is one of the more severe because it means a direct communication between the aortic lumen and the excluded sac with the risk of increased intrasac pressure and rupture. The incidence of type 1 EL is reported to be about 15% in a recent paper by Metha et al. The cause of type 1 EL is related to an incomplete sealing of the graft to the proximal or distal neck generally caused by rich calcium or thrombus apposition in the neck. Other causes of type 1 EL are a too low stent-graft deployment or an angulated neck as in this case. Nevertheless, based on previous cases of angulated neck in our experience, we decided to treat a challenging case as this one. There is general agreement that type 1 EL requires urgent treatment (Cao et al) because of the increased risk of rupture due to high intrasac pressure. However, in this case another proximal cuff was not considered an option because of the high risk to cover the origin of the renal arteries. An extra-
large bare stent to increase graft sealing to the neck was not available at the moment and for this reason it was
decided to wait and check. Type 3 or 4 EL were excluded due to the early filling around the main body of the graft
before graft-limbs opacification. Furthermore clotting parameters were normal (INR 1.12, APTT 26.1). Take home
messages of this case are:
if the stent-graft deployment is correct and an EL1 persists a strategy to wait and see could be suggested because
after 5 days a spontaneous resolution of the leak was observed;
a strict follow-up with CT or color-Doppler ultrasound is needed and if after a few days the leak does not disappear,
re-intervention is mandatory;
always consider to have extra large balloon expandable bare stents in own stock.

**Differential Diagnosis List:** Spontaneous resolution of a type 1 endoleak after EVAR, Type 3 endoleak, Type 2
endoleak, Type 4 endoleak

**Final Diagnosis:** Spontaneous resolution of a type 1 endoleak after EVAR

**References:**

Mehta M, Sternbach Y, Taggart JB, Kreienberg PB, Roddy SP, Paty PS, Ozsvath KJ, Darling RC 3rd (2010) Long-
doi:10.1016/j.jvs.2010.06.110 (PMID: 20724099)
(PMID: [20081762](PMID:20081762))
Figure 1

Description: AAA with a very angulated neck. Origin:
**Description:** Volume rendering clearly shows the angulated neck. **Origin:**
Description: Axial scan (24 hours after EVAR) shows a huge type 1 endoleak. Origin:
Description: MIP coronal view shows proximal type 1 endoleak Origin:
Description: Catheter angiography: the early phase shows the type 1 endoleak. Origin:
**Description:** Catheter angiography shows the correct position of the stent-graft with markers just below the origin of the renal arteries; type 1 endoleak is clearly visible on the left of the stent-graft.
Description: Intraoperative angiography: the endoleak is no longer detectable. Origin:
Description: Intraoperative angiography: later phase. Origin:
Description: One year follow-up CT: type 1 endoleak is no longer visible. Unfortunately in the meantime left renal artery stenosis evolved in occlusion. Origin: