SHORT REPORT

Endovascular Conversion – the Possible Solution of Intersegmental Endoleak in Patient with AAA Treated by Bifurcated Type of Stentgraft

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Introduction

The increasing use of CT and ultrasound in the diagnosis of intra-abdominal pathology has resulted in the increased frequency of diagnosis of abdominal aortic aneurysms. Endoluminal AAA repair is a less invasive alternative to open surgery for patients with a high operative risk or in whom surgery is contraindicated. The successful treatment of an aneurysm depends on completely excluding it from the circulation. Therefore, the risk of rupture still exists with incomplete exclusion of the AAA from the circulation and with persistent flow within the aneurysmal sac. In 1998 Tibballs et al.1 published their experience with endovascular conversion procedures for failed primary endovascular aortic stent-grafts. The aim of this report is to describe the endoluminal treatment of a massive intersegmental endoleak caused by incorrect deployment of the contralateral iliac limb of a bifurcated stent-graft.

Technique

A 58-year-old man with an asymptomatic AAA of atherosclerotic etiology was referred to our hospital for treatment. His ASA grading on his medical history (myocardial infarction, chronic heart failure, hypertension) was class III, so an endovascular repair was chosen. CT scanning confirmed the diagnosis of a grade IIb AAA according to Schumacher2 (grade C in the EUROSTAR protocol) (clinical stage I, size M, neck grade I, angle grade I, iliac A, N according to SVS/ISCVS classification). From the morphological point of view the aneurysm was found suitable for endovascular treatment using a bifurcated composite Ella stent-graft (Ella-CS, Hradec Kralove, Czech Republic). During implantation the contralateral iliac limb was incorrectly placed. Consequently a massive intersegmental endoleak was seen on control angiography and CT (Fig. 1). This situation was treated by endovascular conversion 1 month later because we had

Fig. 1. Incorrect placement of contralateral iliac limb of bifurcated type of stent-graft. Axial CT scan with clearly visible incorrect position of contralateral iliac limb and massive intersegmental endoleak.
emanating from blood diffusion across the pores of a highly porous graft fabric or perhaps through the small holes in the graft fabric caused by sutures or stent struts. Leaks can be sealed by additional percutaneous or surgical intervention, or may seal spontaneously.

Endoleaks of type I and III are usually caused by technical mistakes or bad preprocedural assessment of all factors which can influence the successful implantation of the stent-graft. These types of failed aneurysmal sac exclusion (endoleaks) can be solved by additional endovascular procedures during the initial procedure. We routinely stock a range of funnel-shaped stent-grafts and extension pieces to correct or convert any failed procedure immediately.

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In conclusion, endovascular conversion is a simple and effective method for the treatment of inter-segmental or perigraft endoleak. To have back-up stent-grafts available routinely is necessary for completion of AAA exclusion in one session.

Discussion

The successful treatment of an aneurysm depends on completely excluding it from the circulation. Persistent flow within the aneurysmal sac is called an endoleak. Perigraft endoleaks (type I endoleak) can occur because of incomplete fixation at the proximal or distal ends of the stent-graft. Retrograde endoleak (type II endoleak) occurs when there is persistent retrograde collateral blood flow into the aneurysmal sac from patent lumbar arteries, the inferior mesenteric artery or the other collateral vessels. Type III endoleak is the endoleak at the mid-graft region and may be due to a defect in the graft fabric or between the segments of a modular, multi-segment graft. Type IV endoleak is any minor blush of contrast on completion angiogram or on subsequent contrast studies, which is presumed to be emanating from blood diffusion across the pores of a highly porous graft fabric or perhaps through the small holes in the graft fabric caused by sutures or stent struts. Leaks can be sealed by additional percutaneous or surgical intervention, or may seal spontaneously.

References