

Type III Endoleak Endovascular Repair via Fabric Defect: Case Report

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Abstract

In discussed case endoleak type III was caused by fabric defect in stentgraft wall, slow aneurysmal sac enlargement was seen in angio-CT. Standard lumbar artery and inferior mesenteric artery embolisation would be insufficient in this case. The attempt of aneurysmal sac embolisation through lumbar and mesenteric arteries with coils and polymer was hazardous in the opinion of authors. To dock the catheter via fabric defect in stentgraft wall was the shortest way and the least risky. The coils were implanted in the first step of endovascular procedure. The second step was aneurysmal sac embolisation with Glubran and Lipiodol mixture. No endoleak and no aneurysmal sac enlargement was seen in CT angiography performed two months after the procedure.

Keywords: Endoleak type III treatment; Aneurysm sac embolisation; Endovascular Repair

Introduction

Endoleak is the most common complication after endovascular aneurysm repair procedure (20% year after the procedure) [1].

There are five types of endoleaks:

Type I: Leak at graft ends (inadequate seal)- most common after thoracic aortic aneurysm, type Ia: proximal, type Ib: distal, type Ic: iliac occlude [2].

Type II: Sac filling via branch vessel (e.g. lumbar or inferior mesenteric artery), most common after repair of abdominal aortic aneurysms 80% [3]. Sometimes referred to as a “retrobleak”. Most spontaneously resolve and require no treatment. type IIa: single vessel, type IIb; two vessels or more.

Type III: Leak through a defect in graft fabric, type IIIa: junctional separation, type IIIb: holes and fractures involving the graft. Type III endoleak is rare complications after EVAR procedure - 3,2% of cases [2].

Type IV: Generally porous graft.

Type V: Endotension.

Type III endoleak management consists of aorto-bi-iliac replacement with removal of the stentgraft [4] - (this procedure is rare, cost consuming and limited patient safety) [5,6].

Endovascular management include: insertion of an aorto-uni-iliac endograft [7], extension stentgraft deploying [5], placement of a covered stent [7], insertion of a proximal aortic cuff [7] or retrograde catheterisation through the distal stentgraft Landing Zone [6]. In discussed case type III endoleak was seen during EVAR procedure and was result of stentgraft fabric defect.

Case Presentation

64 year patient undergone the placement of an endovascular aneurysm repair stentgraft for an abdominal aortic aneurysm (axial dimensions 49 × 46 mm). Arteriography made shortly after EVAR procedure revealed right- sided aneurysm sac endoleak. CT angiography made two months later showed right- sided aneurysm sac endoleak at fourth lumbar vertebra level with two lumbar arteries and inferior mesenteric artery enhancement. Aneurysm sac same dimensions in comparison with first CT before EVAR. Two months later the attempt to repair endoleak using wallgraft implantation was made. The next CT angiography made two months later showed no improvement and the same image of the endoleak. CT angiography made 6 months later revealed slow aneurysm expansion (axial dimensions 51 × 46 mm). One month later endovascular procedure was made. 4 coils were implanted via fabric defect in stentgraft wall without endoleak restraint (Figure 1).

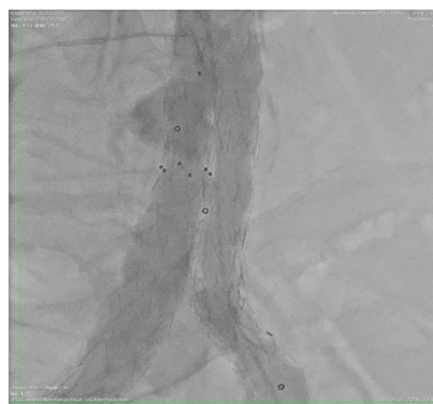


Figure 1: Arteriography after EVAR procedure, right sided aneurysm sac endoleak is seen.

5 months later patient was admitted to our hospital. Endovascular procedure was made by left femoral common artery puncture. Pigtail catheter was inserted to aorta above the stentgraft. arteriography revealed right- sided aneurysm sac endoleak. Vert catheter via fabric defect in stentgraft wall was inserted to aneurysm sac. Control arteriography showed right- sided aneurysm sac endoleak at fourth lumbar vertebra level with two lumbar arteries and inferior mesenteric artery filling. Progreat 2,7F microcatheter was inserted through Vert Glide Cath 4F in sac to the trunk of inferior mesenteric artery which was closed with two Ruby coil (Soft) 6 × 20 mm and 6 × 30 mm microcoils. In next step 20 Nester coils (8 × 140 mm, 14 × 200 mm, 14 × 140 mm, 12 × 140 mm) and 1 Tornado coil (3/4 × 40 mm) were implanted to aneurysm sac. Selective angiography revealed endoleak downturn and two lumbar arteries slow blood filing. Another coil placement was migration threatening (Figure 2).

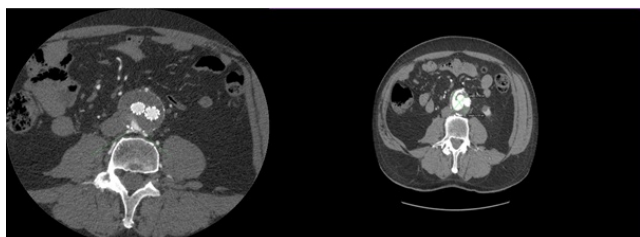


Figure 2: Angio CT after EVAR with two lumbar arteries enhancement (arrows) and aneurysm sac dimensions.

Selective embolisation of two lumbar arteries and aneurysm sac endoleak was performed by 2,7F Progreat with the use of 2 ml mixture of 50% Glubran and Lipiodol. Postoperative angiography made with Pigtail catheter placed in aorta showed patent stentgraft and iliac arteries without aneurysm sac endoleak, neither lumbar nor inferior mesenteric artery blood filing (Figure 3).

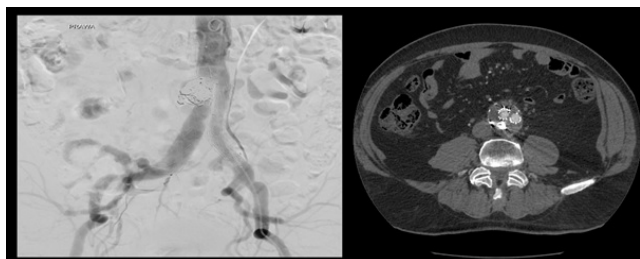


Figure 3: Angiography and angio-CT made after embolisation, no aneurysmal sac enhancement is seen.

Patient was discharged the day after operation in good condition. No endoleak and no aneurysmal sac enlargement was seen in CT angiography made two months after aneurysmal sac embolisation.

Discussion

Type II endoleak is the most common after EVAR. Although type III endoleak is relatively uncommon it causes systemic pressure within aneurysm sac that increases the risk of sac rupture. In discussed case endoleak type III was caused by fabric defect in stentgraft wall, slow aneurysmal sac enlargement was seen in angio-CT. Standard lumbar artery and inferior mesenteric artery embolisation would be insufficient in this case. The attempt of aneurysmal sac embolisation through lumbar and mesenteric arteries with coils and polymer was hazardous in the opinion of authors. To dock the catheter via fabric defect in stentgraft wall was the shortest way and the least risky. To slow down the blood flow in aneurysmal sac the coils where implanted in the first step of endovascular procedure. Second step was aneurysmal sac embolisation with Glubran and Lipiodol.

Conclusion

The overall conclusion is that aneurysmal sac embolisation with coils and glue is safe and effective in type III endoleaks treatment in experienced physicians hands.

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