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Case report

Surgical resection of occluded abdominal stent graft followed by aorto-bi-iliac vascular reconstruction with Intergard Synergy vascular prosthesis

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ABSTRACT

Introduction: We are presenting a case report of an 82 years old polymorbid patient treated with Aortofix AAA Flexible Stent Graft System for symptomatic 51 mm subrenal aortic aneurysm complicated with an early closure of the right stent graft branch resulting in a severe right lower extremity ischemia.

Method: Stent graft dissection and resection were performed through midline laparotomy. Due to the severe calcifications of the supra- and sub-renal aorta, a Nucleus 25 mm balloon was inserted into the abdominal aorta instead of using an aortal cross-clamp. After the resection, aorto-bi-iliac revascularisation was performed with the use of Intergard Synergy 18/9 mm vascular prosthesis.

Result: Following the stent graft resection and surgical revascularisation, normal blood flow was restored into the affected lower extremity with no residual signs and symptoms of limb ischemia. The patient recovered without any further complications and was discharged on the fifth postoperative day.

Conclusion: When endovascular treatments of stent grafts' branch occlusion fail, surgical treatment, despite its higher perioperative risks and technical challenges, remains the only treatment option.

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Introduction

Abdominal aortic aneurysm (AAA) is associated with common iliac arteries aneurysm (CIAA) in up to 20–30% of patients [1]. In

some cases, the implantation of extension into the external iliac artery (EIA) must be combined with a bifurcated aortal stent graft. Deployment of stent graft extension into the EIA increases the risk of graft occlusion. Stent graft occlusion in this localisation is a serious complication that results in a severe limb ischemia with amputation range between 0.7%

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and 6.4% [2,3]. Due to the lower calibre of EIA, the occlusion of graft in this region is much more frequent when compared to the CIAA (15% vs 3%) [3]. Occlusion of a modular aortic bifurcated stent graft is an egregious complication occurring roughly in 10% of implanted grafts [4]. Some studies suggest that the main point of implanting a stent into the EIA as a stent grafts extension acts as a transition zone between the stiff stent-graft and the flexible native artery using radial force, thus decreasing the chance of graft occlusion. Conventional surgical thrombectomy is an extremely risky treatment option for the occluded stent graft as it may cause graft dislodgment or component separation, therefore anatomical or extra-anatomical revascularisation is the only suitable treatment of choice [4].

Case presentation

82-Year-old polymorbid patient was presented with three days lasting abdominal pain. The patient underwent a complex examination that included computer tomography angiography (CTAG). CTAG revealed a 51 mm subrenal aneurysm that also affected the left and right CIAA. Due to the patients' age and comorbidities, aneurysm anatomical position and angulation, the patient was treated with impanation of abdominal stent graft Aortofix AAA Flexible Stent Graft System (Lombard Medical Inc.) (Fig. 1). Three days after the procedure, the patient was presented with a severe limb ischemia of the right lower extremity (SVS IIb). CTAG examination revealed a complete occlusion of the right branch of the stent graft. Endovascular procedures to restore perfusion were unsuccessful; therefore patient was indicated for surgery. Since the iliac arteries were of a smaller diameter with severe calcifications and angulations, the patient was at high risk of left branch occlusion also. Under general anaesthesia, a midline laparotomy was performed. Sub-renal abdominal aorta with renal arteries were dissected in a standard manner (Fig. 2). Once the proximal position of Aortofix stent graft was localised, Nucleus 25 mm (NuMED, Canada) balloon was inserted (through the left common femoral artery) above the proximal stent graft landing zone as the use of aortic cross-clamp was contraindicated due to severe aortic calcifications

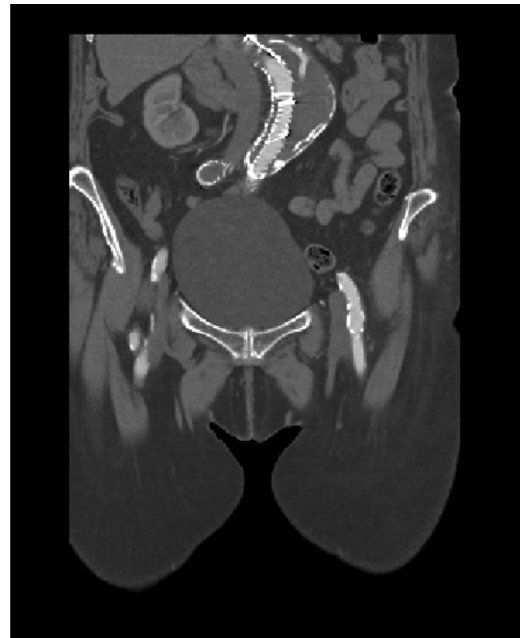


Fig. 1 – CTAG of angulated sub-renal aneurysm with implanted Aortofix stent graft.

(Fig. 3). Due to the localisation of the proximal stent graft landing zone, Nucleus 25 mm (NuMED, Canada) balloon was inflated in place of branching of renal arteries, restricting the blood flow to the kidneys. Balloon manoeuvres were performed under continuous X-ray control. After the balloon was placed in the correct position and inflated, stent graft's proximal part was resected and explanted carefully in a manner that would not damage the aortal intima (Fig. 4). Once the resection was completed, Intergard Synergy 18/9 mm (Maquet Cardiovascular LLC) vascular prosthesis was chosen as an optimal graft for aorto-bi-iliac vascular bypass (Fig. 5). Proximal anastomosis was performed distally, just below the renal arteries. After the anastomosis was completed, the vascular graft was clamped. Nucleus 25 mm (NuMED, Canada) balloon was deflated, and blood flow into the renal arteries was restored (kidney ischemia: 19 min). Distal anastomoses were

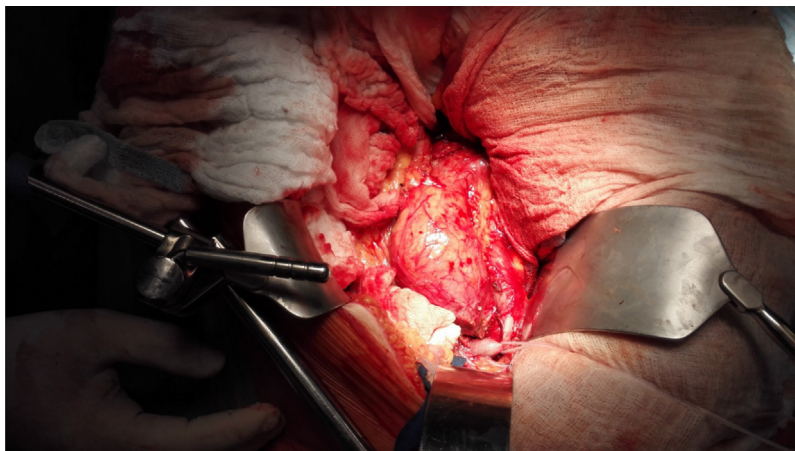


Fig. 2 – Sac of the abdominal sub-renal aneurysm.

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