Endovascular stenting of large popliteal artery aneurysm is feasible!

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ABSTRACT

Introduction: Endovascular stenting has been successfully employed in management of aortic aneurysms; however, its utility in managing popliteal aneurysms remains questionable. This is because of the non-availability of long term data about graft patency rates.

Case presentation: We report a case of large popliteal artery aneurysm stenting in a patient with significant co-morbidities and high risk for open surgical repair. He underwent successful endovascular stenting of a popliteal artery aneurysm measuring 6.4×9.7 cm extending for approximately 11.0 cm in length with Hemobahn grafts. The graft was patent at 12 months of follow up with complete exclusion of the aneurysm.

Conclusions: Popliteal stents can be successfully used in treating large popliteal artery aneurysms in patients unfit for open repair.

Key words: popliteal artery aneurysm, popliteal stents, endovascular stenting

INTRODUCTION

Endovascular stenting has changed the management of different vascular conditions like aneurysms, pseudoaneurysms, arterial occlusive disease etc. However, this technique is still evolving and situations in which it can be employed continue to increase gradually. Popliteal artery aneurysms, which are the most common peripheral arterial aneurysms, have been conventionally managed by open repair. However, endovascular stenting is proving to be a feasible option in managing them. We report successful endovascular management of a large popliteal artery aneurysm.

CASE PRESENTATION

An 86-year-old patient presented as an emergency with a large pulsatile swelling behind his right knee, which had developed rapidly and prevented him from walking and extending the knee fully. His past medical history included previous coronary artery bypass grafting (CABG); redo CABG with aortic valve replacement, paroxysmal atrial fibrillation and haemophilia. Furthermore he suffered from severe emphysema. Duplex ultrasonography revealed a distal superficial femoral artery (SFA) and popliteal artery aneurysm, which was confirmed with CT and digital subtraction angiography. It had an hourglass shape measuring 6.4 x 9.7cm extending for approximately 11.0cm in length (Fig. 1). The diameter at the distal landing site was 7.7 mm approximately. It also showed thrombosed aneurysmal proximal left SFA (2.0cm x 1.8cm) and 4.3 cm abdominal aortic aneurysm. He underwent successful endovascular stenting of his right distal SFA aneurysm. Three Hemobahn Gore grafts (W.L. Gore & Associates, USA) were deployed with at least 1.5cm overlap. A 9mm x 10cm graft was used for distal aspect of the aneurysm and 2 10mm x 10cm grafts were used for mid and proximal aspects. Complete exclusion of the aneurysm was achieved at the end of the procedure with no endoleak (Fig. 2). Patient's symptoms improved presumably due to the reduction in pressure in the aneurysm sac and he was able to straighten the leg and walk. Follow up at one year showed patent graft with complete exclusion of the aneurysm and no endoleak (Fig. 3).

Figure 1. CT- angiogram showing hour glass shaped aneurysm.

Figure 3. Reconstruction CT-angiogram at one year follow up visit showing patent stent.



Figure 2. Hemobahn stent deployed in the aneurysm with successful exclusion of the aneurysm.



DISCUSSION

Endovascular stenting is being increasingly used in management of aortic aneurysms both in elective setting with several large case series and randomized controlled trials supporting it. However, in case of popliteal artery aneurysms, only one randomized controlled trial has been reported demonstrating comparable long-term results for endovascular repair compared with open repair [1]. Though different case series suggest its utility but long term patency rates are still awaited.

The position of the endograft behind the knee also makes the situation more complex. The flexion at the knee joint may possibly lead to kinking of the stent, predisposing to stent blockage/fracture [2,3]. But careful endograft designing and placement can help overcome this problem to an extent. We have already reported the successful utilization of this technique in managing popliteal artery aneurysm in "hostile leg" [4]. Here we report its efficacy in treating a 10cm popliteal aneurysm. Though open surgery was an option in a fit and young patient, but with significant co morbidities present, endovascular stenting was done.

CONCLUSIONS

Endovascular repair of peripheral artery aneurysms is a feasible option in patients with significant risk factors as in our case. Further studies are warranted before it can be adopted as a treatment of first choice.

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