Case Report

Eight on 80-Ruptured and Intact Multiple Site Aneurysms: Aorto-Bi-Common and External Iliac, Right Popliteal and Left Femoral and Popliteal Artery Aneurysms, Sequentially Repaired Successfully in an Octogenarian

Aggarwal Vivek, Shivanesan Pitchai1, Harishankar Ramachandran Nair1, Madathipat Unnikrishnan1

Department of Vascular Surgery, Army Hospital (R and R), New Delhi. 1Department of Cardiovascular and Thoracic Surgery, Division of Vascular Surgery, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala, India

Abstract

Degenerative aortic and peripheral aneurysms are well known to present in the elderly at multiple sites at varying time. Aneurysms occurring in the arteries of the lower limb are most common after aneurysms of the infrarenal aorta. A strong association exists between the presence of true aneurysms of the femoral or popliteal arteries and those of the contralateral extremity and more importantly aortoiliac domain. Consequently, the discovery of a lower extremity aneurysm mandates careful observation, evaluation, or both for associated aneurysms in the opposite limb and abdominal aorta. Traditional open surgery is used to be mandated in ruptured aneurysm in previous years, whereas endovascular therapeutic modality is a mainstay in the current practice, especially in elderly and frail patients with short life expectancy. Herein, we present a report of successful outcome following open and endovascular repair of eight aneurysms in an octogenarian at varying times under a decade.

Keywords: Abdominal aortic aneurysm, endovascular repair, multiple aneurysm, open surgical repair, popliteal artery aneurysm

Introduction

“Metachronous” multiple degenerative aneurysms in aortoiliac and peripheral arteries are well known to present in elderly patients at varying time.[1] Ubiquitous Abdominal aortic aneurysms (AAAs) primarily affect the population >60 years and are reported to occur 5–6 times more common in men. The prevalence of popliteal aneurysms in patients being evaluated for aortic aneurysms averages about 8% (range, 3%–12%).[2-4] Conversely, in patients being evaluated for popliteal aneurysms, the prevalence of aortic aneurysms averages 40% and it may be as high as 70% in patients with bilateral popliteal aneurysms.[5,6] In just over 50% of these patients, the second aneurysm was recognized at initial repair.

Case Report

First presentation (2007)

An 80-year-old obese gentleman had presented 10 years ago with acute onset of intractable lower abdominal pain of 2 days duration. Examination revealed elderly stable patient with a pulsatile and mildly painful lump in lower subumbilical region on the left side. Computed tomography (CT) angiogram showed a 6 cm infrarenal AAA and a 7 cm right common iliac artery (CIA) aneurysm and (contained) ruptured left CIA aneurysm of 10 cm dimension [Figure 1]. He underwent emergency aorto right femoral bypass with 16/8 mm and right to left femorofemoral crossover bypass with 8 mm coated polyester graft. Both common iliac ostia were closed off at aortic bifurcation, and iliofemoral arteries were ligated proximal to femoral anastomosis. His recovery was

Address for correspondence: Prof. Madathipat Unnikrishnan, E-mail: unni@scitomst.ac.in

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uneventful and was discharged in good condition. He was seen 3 months later in a stable and asymptomatic status.

**Second admission (2010)**
After 3 years, she presented with pulsatile mass in the right popliteal fossa with rest pain and absent distal pulses in edematous right lower limb. CT angiogram showed ruptured right popliteal artery aneurysm and 2.5 cm intact separate aneurysms in the left superficial femoral artery (SFA) and popliteal artery with patent aortofemoral and femorofemoral bypass graft [Figure 2]. In view of nonvisualized infragenicular outflow vessels then and fully thrombosed aneurysm, inflow occlusion alone (without bypass) was performed by division and suturing of right SFA preserving the large collateralizing deep genicular artery. He recovered well and was discharged with bipedal gait. He was advised to report after 3 months for intervention of contralateral femoral and popliteal aneurysms, but he failed to show up in view of asymptomatic status.

**Third admission (2013)**
In 2013, he presented with wide pulsatile mass in medial aspect of the lower third of left thigh. On evaluation, he had two aneurysms, one in left distal SFA and other in left supragenicular popliteal artery. Taking into account the extent, size of aneurysm, and increasing age of the patient, decision was taken for endovascular repair. Three Fluency® Plus (BARD Peripheral Vascular, Inc., USA) endovascular stent grafts (10 mm × 12 cm, 12 mm × 10 cm, and 12 mm × 6 cm) were deployed with appropriate overlap to successfully exclude aneurysm [Figure 3].

**Current status (2016)**
Follow-up CT angiogram showed patent vascular stents and nonfilling of the aneurysmal sacs. At present, this 89-year-old man is alive, healthy, and walking without support, with ankle brachial index of 0.4 on the right lower limb and 0.70 on the left lower limb, although home bound.

**DISCUSSION**
Aortic aneurysms, in particular at infrarenal domain, are known to coexist with peripheral artery aneurysms, especially of popliteal artery. Aortic aneurysms often coexist with iliac disease as well. The prevalence of popliteal aneurysms in patients being evaluated for aortic aneurysms averages about 8% (range, 3%–12%). Many times, these aneurysms are clinically undetectable and identified by imaging studies only and are preferentially known to appear more common in men.

Asymptomatic popliteal aneurysms <2 cm in diameter may be safely observed. Our approach is to offer elective repair for symptomatic and asymptomatic aneurysms >2.0 cm or larger unless we believe that the risks associated with treatment are excessive because of the health status of the patient, in which case an endovascular repair is preferred. Although a small subset of infrarenal AAA patients presents with rupture as the first symptom, iliac aneurysms are well known to present ruptured in view of its pelvic location, particularly in obese patients with protuberant abdomen like the index patient.

There are reports of endovascular stent graft repair of the ruptured iliac aneurysm; however, due to technical reasons of extensive coverage of bilateral common and external iliac
artery involvement and emergent status, we opted to do open repair of infrarenal and bilateral iliac artery aneurysm in our index case. The large retroperitoneal hematoma on the left side precluded tunneling, so left lower limb was revascularized through femorofemoral crossover bypass. Three years later, the patient presented with critical limb ischemia due to ruptured right popliteal artery aneurysm with poor runoff; hence, SFA interruption protecting the deep genicular artery was performed and the fully thrombosed aneurysm was left alone. Left SFA and popliteal artery aneurysm were electively treated endovascularly. Thus, our patient successfully came out of eight aneurysms in all (infrarenal aortic aneurysm, bilateral CIA aneurysm, bilateral external iliac artery aneurysm, right popliteal artery aneurysm, left SFA and popliteal artery aneurysms). First two presentations were for ruptured status; however, left SFA and popliteal artery aneurysms were treated endovascularly on elective basis.

For frail patients in poor health or with limited life expectancy, we observe even larger aneurysms, provided that the estimated risk for complications is low (minimal intraluminal thrombus, palpable distal pulses, and no evidence of continued expansion). When treatment is required in this subset of patients, endovascular repair remains our preferred method.

**Conclusion**

Bilateral popliteal artery aneurysms are known to have 50%–70% prevalence of AAA. In our patient along with these, he had bilateral common and external iliac artery aneurysms. The fact that this elderly patient, with eight aneurysms in all, did not suffer myocardial infarction, cerebrovascular accident, or intestinal ischemia, survived after two ruptured aneurysms (managed by open technique), and underwent endovascular repair is indeed extremely uncommon in our clinical experience. At present, the patient enjoys good quality of life ready to celebrate his 90th birthday.

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**Conflicts of interest**

There are no conflicts of interest.

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