

Giant Popliteal Artery Aneurysm in a Teenager: An Unusual Occurrence

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Giant popliteal artery aneurysm is an uncommon entity. If untreated, it results in life-threatening complications. It is usually seen in older patients (over 60 years of age), and atherosclerotic disease is its main cause. Few cases have been reported in young adults, and its incidence in teenagers is exceptionally rare, with scarce case reports in the literature. We report a case of left popliteal artery aneurysm in a 16-year-old and its successful surgical treatment through resection and repair with a synthetic interposition graft.

Key words: 1. Popliteal artery
2. Aneurysm
3. Teenager
4. Polytetrafluoroethylene graft

Case report

Popliteal artery aneurysm (PAA) is the second most common type of peripheral arterial aneurysm, after aortoiliac segment aneurysm [1]. Atherosclerosis is its most common cause, while less common causes include trauma, congenital popliteal aneurysm, mycotic aneurysm, and inflammatory arteritis. Left untreated, PAA leads to many dreadful complications. In the words of Guvendik et al. [2], PAAs are “sinister harbingers of sudden catastrophe.”

A 16-year-old male presented with pain and swelling on the posterior aspect of the left knee. It was insidious in onset and had gradually progressed in size over 2 months. The patient had no history of trauma, diabetes mellitus, or any arterial aneurysm.

Upon clinical examination, a pulsatile mass on the posterior aspect of the left popliteal fossa measuring

5×5 cm was observed. All peripheral pulses were well felt. On the left side, he had good femoral pulsations, but weak dorsalis pedis pulsations in comparison to the right side. However, no ischemic changes were present in the left distal limb. Computed tomography angiography of the left lower limb revealed a huge, well-defined, hyperdense lesion posterior to the lower third of the femur measuring 6.1 cm anteroposteriorly, 9.2 cm transversely, and 7.7 cm craniocaudally. The popliteal artery was seen to be communicating with the lesion. On contrast enhancement, a lesion measuring 4.3×3.7×6.6 cm (anteroposterior, transverse, craniocaudal) was seen, suggestive of a patent lumen and partially thrombosed large fusiform dilatation of the left popliteal artery (Fig. 1). Based on a multidisciplinary consultation, open surgical repair was preferred over endovascular treatment due to the giant size of the aneurysm, the

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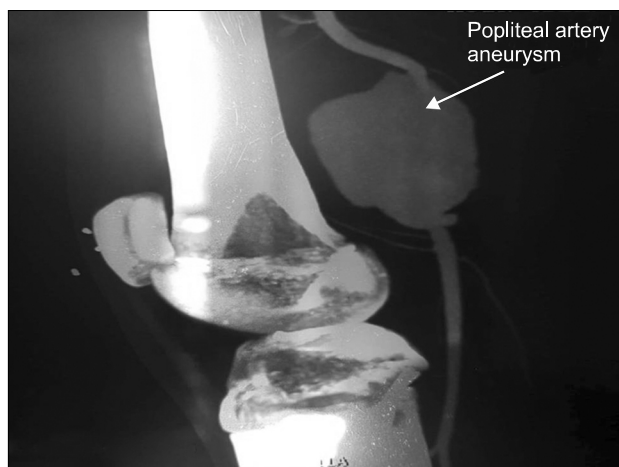


Fig. 1. Computed tomography angiogram showing the left popliteal artery aneurysm.

acute angulation of the proximal artery at the neck, and the age of the patient. Written informed consents were obtained from the patient. Under general anesthesia, the patient was placed in the supine position with an externally rotated left leg and partial flexion at the knee. Left popliteal artery exploration was performed through a longitudinal incision on the medial aspect of the knee. The aneurysm sac was separated from its surrounding adhesions. Vascular control was secured proximal and distal to the aneurysm through a vascular loop. The aneurysm sac was opened, and the thrombus was removed, along with its wall. Vascular repair with a ringed polytetrafluoroethylene (PTFE) interposition graft was performed between both ends of the popliteal artery using an end-to-end anastomosis technique (Fig. 2). The patient's postoperative course was uneventful and he was discharged on the fifth postoperative day with good left dorsalis pedis pulsations. He is receiving regular follow-up, and was placed on warfarin anticoagulation postoperatively, with an international normalized ratio of 2.0–3.0 along with 75 mg of aspirin. Computed tomography angiography at a 1-year follow-up visit revealed a patent graft with good distal flow (Fig. 3).

Discussion

PAAAs are usually seen in older patients due to atherosclerosis and degenerative changes. Our patient had no familial background of connective tissue dis-

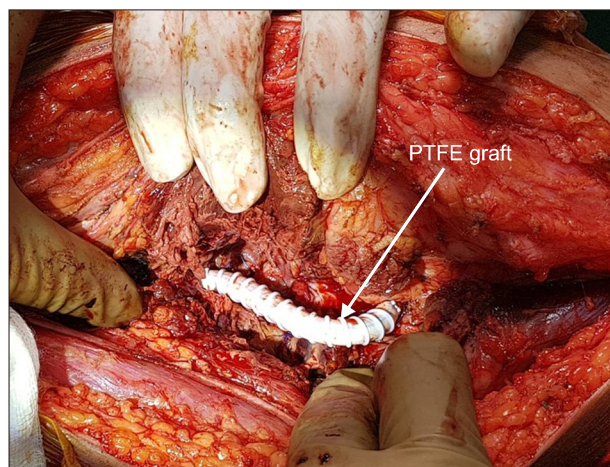


Fig. 2. End-to-end repair with a PTFE interposition graft. PTFE, polytetrafluoroethylene.

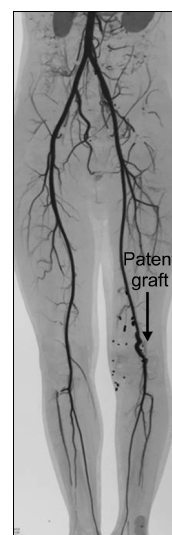


Fig. 3. Computed tomography angiogram after 1 year showing a patent graft.

eases such as Marfan syndrome, Ehlers-Danlos syndrome, or any other autoimmune vascular disease. He had no history of trauma, rheumatic fever, or Kawasaki disease, suggesting that the aneurysm was idiopathic. Studies of the natural history of PAAAs have demonstrated that thromboembolic complications occur frequently (42% to 77%), and that these complications are associated with amputation rates up to 20% [3]. Huge PAAAs pose a therapeutic challenge for the vascular surgeon because of their anatomical position, size, and common complications. The traditional gold-standard treatment has been the

open surgical approach, but the endovascular approach is utilized with increasing frequency. However, the current data show higher re-intervention rates and 30-day graft thrombosis rates with the endovascular approach [4]. In the literature, 6 cases in which a giant PAA was treated have been reported [1]. In our case, a synthetic PTFE graft was used as the conduit instead of the long saphenous vein because of its equally good reported patency in aneurysms located in the popliteal region [5] and the theoretical risk of aneurysmal degeneration of vein grafts in the future. As a teenager, the patient refused a skin incision for saphenous vein harvest due to cosmetic reasons.

In conclusion, giant PAA is a rare entity with very limited number of cases published so far. Its incidence in teenagers is extremely rare. A definitive diagnosis followed by intraoperative surgical expertise led to a successful surgical outcome. Open surgical repair is preferable to endovascular repair for giant PAAs.

Conflict of interest

No potential conflict of interest relevant to this ar-

ticle was reported.

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