Treatment of simultaneous common femoral and profunda femoris artery aneurysms

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We report the case of a 67-year-old man with separate simultaneous aneurysms of the common femoral and profunda femoris arteries. Treatment consisted of complete en bloc excision of both aneurysms, including the intervening segment of nonaneurysmal profunda femoris artery (PFA). Arterial reconstruction included the placement of a Dacron graft (DuPont, Wilmington, Del) from the external iliac artery to the superficial femoral artery and revascularization of the PFA with a segment of great saphenous vein. A review of the literature on presentation and treatment of PFA aneurysms is included. (J Vasc Surg Cases 2015;1:205-7.)

True aneurysms of the profunda femoris artery (PFA) occur rarely, in contrast to pseudoaneurysms, which are commonly iatrogenic or associated with trauma. Because of its location in the deep muscular planes of the thigh, PFA aneurysms frequently remain unnoticed and commonly present as incidental findings or secondary to rupture or embolization; therefore, these aneurysms may grow to be quite large before becoming noticeable. We present a patient with an aneurysm of the PFA and a simultaneous separate aneurysm of the common femoral artery (CFA) and review the reported literature regarding the presentation and treatment options for this condition. Patient consent was obtained for publication of this case report.

CASE REPORT

A 67-year-old man was found to have a pulsatile mass in the right groin during a routine physical examination. His past history was relevant for hypertension, smoking, and aortic root surgery. The patient had undergone a composite graft-bioprosthetic valve replacement 5 years before this presentation for a 6-cm aneurysm of the aortic root. He was not receiving any anticoagulation. The pathologic examination of the aortic wall was reported as calcific atherosclerosis.

The physical examination revealed a pulsatile mass at the level of the right groin crease without any obvious extension into the thigh. The contralateral CFA revealed a palpable pulse without distinct enlargement. There were distal palpable pulses in both lower extremities. The remainder of the physical examination was unremarkable.

A computed tomography scan of the abdomen with bilateral run-off revealed a 4.4-cm aneurysm of the right CFA and a 4.5-cm aneurysm of the PFA, both with calcific arterial walls and separated by a segment of nonaneurysmal PFA (Fig 1, *A*). There was evidence of intraluminal thrombus in both aneurysms; however, there was a patent lumen throughout the CFA and PFA. A 2-cm aneurysm of the left CFA was also identified; however, with a normal PFA. The remainder of the arterial tree did not show any significant abnormality.

Surgical repair included a right retroperitoneal approach to obtain proximal arterial control and a longitudinal groin incision with extension into the upper thigh to obtain distal control on the superficial femoral artery and the distal PFA. Circumferential dissection of both aneurysms was completed, and a feeding branch to the aneurysm of the PFA was ligated (Fig 1, *B*). Both aneurysms were excised in continuity, and surgical reconstruction involved the placement of a 10-mm Dacron graft (DuPont, Wilmington, Del) anastomosed end-to-end to the external iliac artery proximally and the superficial femoral artery distally, with a reversed great saphenous vein jump graft from the Dacron graft to two syndactylized distal PFA branches (Figs 1, *C* and 2).

The patient's postoperative recovery was uneventful, without signs of distal ischemia. Cultures of the surgical specimen were negative, and the pathologic evaluation was consistent with an atherosclerotic aneurysm.

DISCUSSION

Aneurysms of the PFA are rare occurrences that have been sparsely reported. We identified 67 cases in the available English language literature. The earliest report dates back to 1890 and describes a 26-year-old man with a postmortem diagnosis of a ruptured aneurysm of the PFA after failed treatment with sedatives and local application of extracts of belladonna leaves.[1] In the available studies, the reported age of presentation ranged from 8 to 87 years; with the most common ages reported between 59 and 87 years. Male gender was identified in 98% of the reports. The diameter of the aneurysms ranged from 2.9 to 15 cm.

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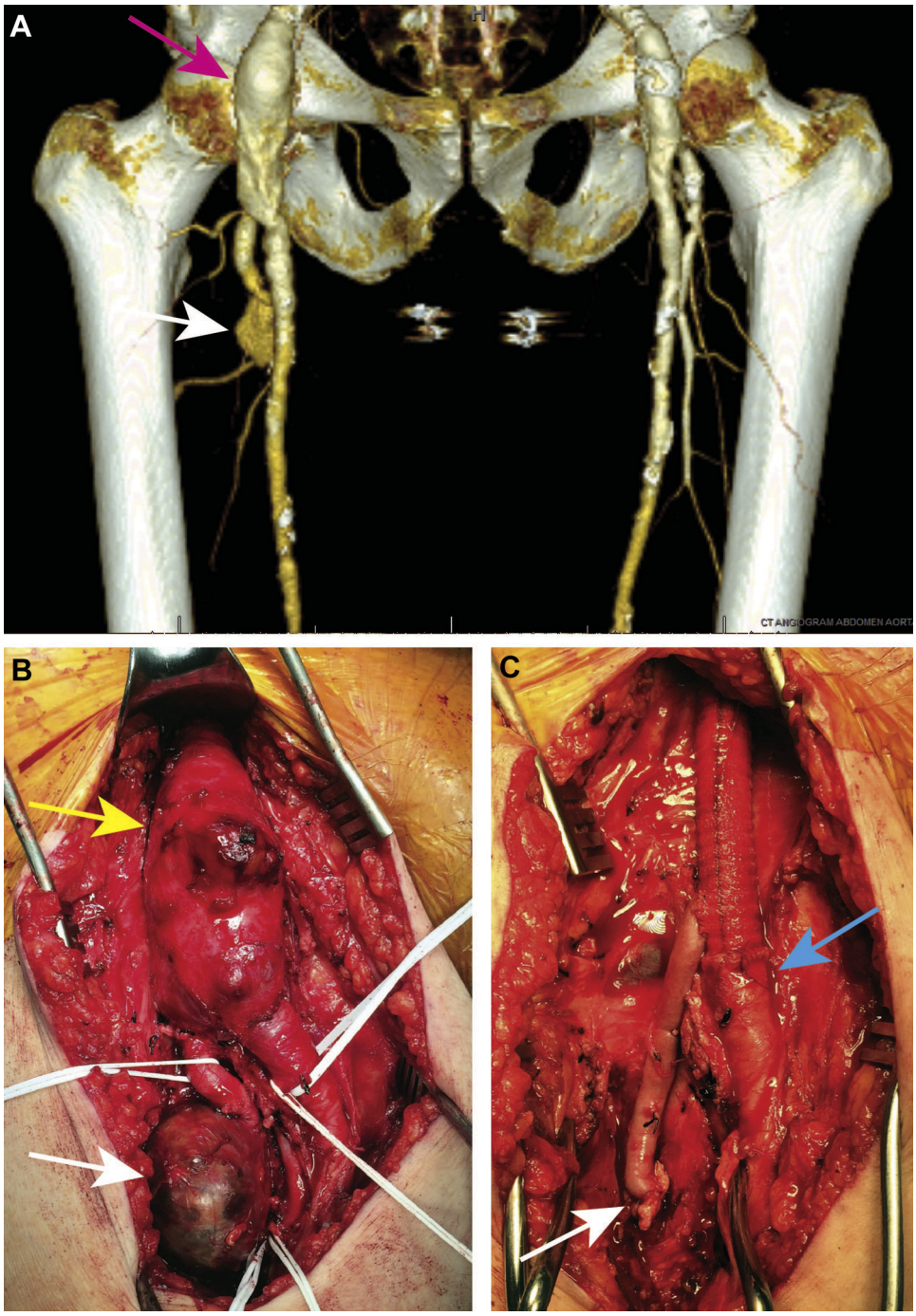

Fig 1. A, Three-dimensional reconstruction of a computed tomography scan illustrates a common femoral artery (CFA) aneurysm (*red arrow*) and a profunda femoris artery (PFA) aneurysm (*white arrow*). **B,** Intraoperative photograph of the CFA (*yellow arrow*) and PFA (*white arrow*), with vessel loops around the superficial femoral artery, proximal profunda, and distal profunda branches. **C,** Intraoperative photograph after aneurysm resection, with a 10-mm Dacron (DuPont, Wilmington, Del) graft bypass from the external iliac artery (not shown) to the superficial femoral artery (*blue arrow*) and an ipsilateral reversed great saphenous vein jump graft from the Dacron graft to the profunda branches (*white arrow*).

The initial presentation was an incidental finding in 42%, aneurysmal rupture in 22%, pulsatile mass in 19%, distal embolization in 10%, and various other presentations in the remaining patients such as adjacent deep venous thrombosis[2] and acute groin pain in a pediatric patient.[3] Aneurysms of the PFA were largely unilateral; however,

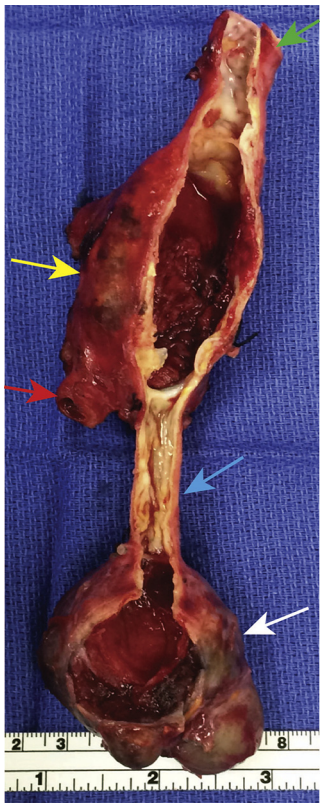

Fig 2. Aneurysms of the common femoral artery (CFA; *yellow arrow*) and profunda femoris artery (PFA; *white arrow*), as seen from the posterior aspect, with notable internal thrombus (*green arrow*, nonaneurysmal external iliac artery; *red arrow*, superficial femoral artery stump; *blue arrow*, nonaneurysmal intervening PFA between aneurysms).

four cases presented as bilateral aneurysms.[4-7] The etiologies reported were primarily atherosclerotic, as identified in 86% of cases, but there were other more unusual etiologies such as neurofibromatosis,[8] a nonatherosclerotic true aneurysm in a child,[3] and a mycotic aneurysm secondary to bacterial endocarditis.[9] The presence of concurrent aneurysms in other arterial distributions was a common finding; however, the presence of isolated aneurysms of the PFA occurred frequently, as reported in 43% of the cases.

The treatment of aneurysms of the PFA has primarily consisted of excision or incision of the aneurysm and revascularization of the PFA with a segment of saphenous vein. Other surgical interventions with successful results included proximal or proximal and distal ligation of the aneurysm with or without revascularization. Few reports describing an endovascular approach with coil embolization have resulted in successful exclusion of these aneurysms.[10,11]

CONCLUSIONS

The case described represents the classic presentation of an aneurysm of the PFA according to our review of the literature: an older man with an atherosclerotic aneurysm, presenting as an incidental finding, associated with aneurysms in other arterial distributions, but with a unilateral presentation. This patient was successfully treated with excision of the aneurysm and in-line revascularization of the PFA as supported by most of the reports in the literature; however, endovascular interventions have also reported favorable results and should be considered in selected patients.

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