Is Common Femoral Artery Stenosis Still a Surgical Disease?

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KEYWORDS

• Common femoral artery • Atherosclerosis • Endovascular • Claudication • Critical limb ischemia • Endarterectomy

KEY POINTS

- The morbidity of common femoral artery endarterectomy is often understated.
- Endovascular treatment for common femoral artery stenosis may be a viable treatment alternative to traditional surgical revascularization.

INTRODUCTION

The external iliac artery becomes the common femoral artery (CFA) as it passes below the inguinal ligament. The CFA is approximately 4 to 6 cm in length and 5 to 8 mm in diameter, located in the femoral triangle between the femoral vein and nerve. The CFA and its branches supply most of the thigh as well as the entirety of the leg and foot. The CFA gives rise to the largest branch of the femoral triangle, the profunda femoris, and then becomes the superficial femoral artery (SFA), which traverses along the anteromedial thigh. When atherosclerosis develops in the CFA, it can be extensive, eccentric, and heavily calcified (Fig. 1). In most patients, atherosclerosis involves the posterior wall of the CFA, whereas the anterior wall is relatively spared due to the differential wall stress along its circumference. Isolated atherosclerotic involvement of the CFA is uncommon. CFA disease can be asymptomatic, cause lifestyle-limiting claudication, and/or lead to critical limb ischemia (CLI). The CFA also may be an important site for collateral blood supply to the to the lower limb via the SFA in patients who have aorto-iliac disease and to the profunda femoris when there is SFA occlusion.

Common femoral endarterectomy with patch angioplasty had long been considered the gold standard for treating CFA disease because it was viewed as a low-risk operation requiring a small incision with excellent long-term patency rates; however, recent data suggest that morbidity after endarterectomy may be as high as 31%.[1] With evolution in technology, endovascular therapy is increasingly considered as an alternative treatment for CFA disease. Both forms of revascularization appear superior to medical therapy alone for limb-related outcomes,[2–4] but their relative safety and efficacy are less clear.

SURGICAL TREATMENT OPTIONS

Common femoral endarterectomy has been the standard approach for treating CFA stenosis for more than 60 years. Its major advantage is the associated long-term patency, which approaches 95% at 5 years. Ballotta and colleagues[5] performed an 8-year single-center prospective study of 117 patients who underwent 121 CFA endarterectomies performed under regional anesthesia. All of the arteriotomies were routinely closed with a vein patch. Postoperatively, 71% and 39% of patients

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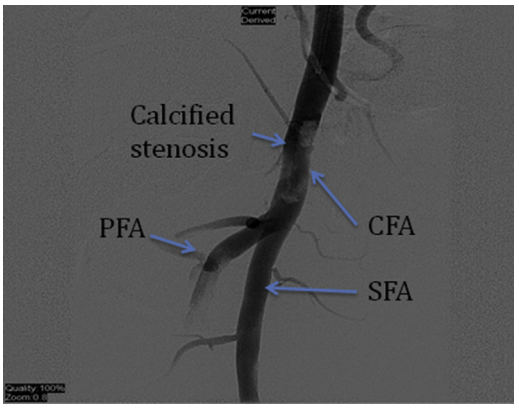

Fig. 1. Heavily calcified right CFA. PFA, profunda femoris artery.

experienced marked or moderate clinical improvement, respectively. The 5-year primary patency rate was 96% ± 3%, and the 5-year freedom from ipsilateral arterial intervention was 82% ± 7% (Fig. 2).[5,6]

Kuma and colleagues[7] also demonstrated the long-term patency of CFA endarterectomy in a retrospective examination of 118 limbs in 111 patients with claudication and CLI. The 1-year and 5-year patency for claudication and CLI were 100% and 95%, respectively.

Although CFA endarterectomy has excellent patency at 5 years, it is not a benign procedure. In a retrospective study of 1843 common femoral endarterectomies performed between 2005 and 2010 using the American College of Surgeons National Surgical Quality Improvement Program® dataset, 10% of patients returned to the operating room. Mortality and wound complications occurred in 3.4% and 8.0%, respectively. Of these, 30% and 86% occurred after hospital discharge, respectively (Fig. 3). Overall, the risk of mortality/morbidity was 15%, and more than 60% of all events occurred after discharge (Fig. 4).[8]

ENDOVASCULAR TREATMENT OPTIONS

The CFA has long been considered a suboptimal location for endovascular therapy. Heavily calcified stenosis, when present, may not respond well to balloon angioplasty, resulting in suboptimal angiographic outcomes and the need for stent placement. Balloon angioplasty also carries the risk of vessel dissection, which may require stenting. Because the CFA is located where hip flexion and extension occur, stent fracture and resultant in-stent restenosis may be more likely, resulting in poor outcomes.[9–11] In addition, stents located in the CFA may limit future surgical (ie,

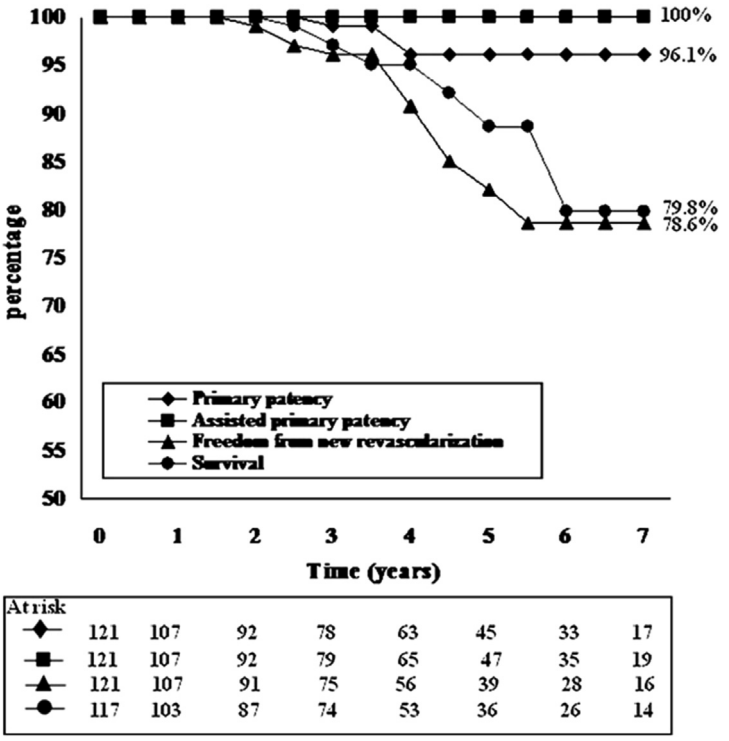

Fig. 2. Kaplan-Meier life table analysis of primary patency (diamonds), "assisted" primary patency (squares), freedom from new revascularization (triangles), and survival (circles) rates after common femoral endarterectomy. (*From* Ballotta E, Gruppo M, Mazzalai F, et al. Common femoral artery endarterectomy for occlusive disease: an 8 year single center prospective study. Surgery 2010;147(2):272; with permission.)