Symptomatic and Asymptomatic Peripheral Artery Disease and the Risk of Abdominal Aortic Aneurysm: The Atherosclerosis Risk in Communities (ARIC) Study


Study design: A prospective cohort study was performed at visit 1 (1987-1989) and a cross-sectional cohort study was performed at visit 5 (2011-2013) from four U.S. communities (Washington County, Md; suburban Minneapolis, Minn; Jackson, Miss; Forsyth County, NC) in the Atherosclerosis Risk in Communities (ARIC) study.

Key findings: Of 14,148 participants (55% female, 26% black, 1% with symptomatic peripheral arterial disease), after a median follow-up of 23 years, 3.7% had developed incident abdominal aortic aneurysms (AAAs). The presence of symptomatic peripheral arterial disease (PAD) resulted in a higher hazard ratio (HR) of incident AAA (HR: 4.9), as did asymptomatic PAD with an ankle brachial index (ABI) of ≤0.9 (HR: 2.33) compared with the reference ABI of >1.1. The crude 15-year cumulative incidence of AAAs was 12% in the symptomatic PAD group, 4% in the asymptomatic PAD group with an ABI of <0.9, and 2% in the asymptomatic PAD group with an ABI of >1.1. The cross-sectional analysis demonstrated similar patterns for ultrasound-based AAAs, with odds ratio for AAAs of 2.5 for symptomatic PAD and 4.0 for asymptomatic PAD in a demographically adjusted model.

Conclusions: These prospective and cross-sectional data showed an elevated risk of AAAs in patients with symptomatic and asymptomatic PAD. These data support the current recommendation of AAA screening for symptomatic PAD patients and suggest the potential extension to asymptomatic PAD patients as well.

Commentary: AAAs affect 4% to 7% of men and ~1% of women according to population-based studies. In the largest randomized trial to date, AAA screening of men aged 65 to 74 years reduced AAA-related death by 42% over 13 years. The U.S. Preventive Services Task Force has recommended one-time duplex ultrasound screening for AAAs for men aged 65 to 75 years who have a history of smoking, because men with a smoking history have an estimated AAA prevalence of 6% to 7% compared with a prevalence of only 2% for men who have never smoked. In a meta-analysis investigating the risk factors associated with AAAs detected by screening, PAD was associated with a 2.5-times greater odds of AAAs than no PAD. The American Heart Association guidelines recommend screening for symptomatic and asymptomatic PAD (ie, ABI of ≤0.9) with AAAs in both prospective and cross-sectional analyses. Perhaps the SVS should revisit this issue?

References


Percutaneous Femoropopliteal Bypass: 2-Year Results of the DETOUR System


Study design: A multicenter, international PQ Bypass DETOUR study was performed between 2015 and 2017.

Key findings: Seventy-eight patients with 82 femoropopliteal (FP) arterial occlusions were treated with Torus stent grafts (PQ Bypass, Milpitas, Calif) through a transvenous route (chronic total arterial occlusion, 96%; average occlusion length, 16 cm, average lesion length, 37 cm). The technical success rate was 96%. After 2 years of follow-up, major amputations had occurred in 1% of patients and deep vein thrombosis in 3%. The 2-year Kaplan-Meier primary and secondary patency rates were 80% and 86%, respectively.

Conclusions: The PQ Bypass DETOUR system is a safe and effective percutaneous alternative to treat long, calcified, occlusive FP lesions, with favorable 2-year results.

Commentary: The PQ Bypass DETOUR system achieves arterial access with a contralateral common femoral artery 8F sheath. Using the PQ crossing device, the femoral vein was accessed through the ipsilateral superficial femoral artery 4 cm distal to its origin. Distal venous access was generally achieved through an ipsilateral posterior tibial vein. Entry to the popliteal artery from the popliteal vein was just beyond the distal aspect of the arterial obstruction. Torus stent grafts are self-expanding nitinol stents encapsulated in expanded polytetrafluoroethylene, which are deployed from distally to proximally. The first Torus stent graft bridges the popliteal artery to the vein. Stent grafts are serially deployed, reentering the superficial femoral artery, with the proximal uncovered metal struts of the stent graft extending into the distal common femoral artery. The deep vein thrombosis rate was not significantly greater in this series than after open surgical bypass and no symptoms of venous outflow obstruction occurred, despite the presence of stent grafts in the deep venous system.

There are two potential advantages of stent grafts coursing through the venous system, other than at the proximal and distal ends that terminate in the arterial system, to treat FP arterial occlusive lesions. First, this technique could prove advantageous for patients when the FP arterial occlusive lesion cannot be crossed percutaneously and transarterially. The second advantage might be that dense, calcified lesions will not compress the stent grafts during follow-up because, essentially, most of the stent grafts will be in the venous system. The greatest potential disadvantage could be the occurrence of venous thrombosis or symptoms of venous obstruction during long-term follow-up, which was not found after 2 years. The DETOUR II trial involving the United States should report the 12-month results before the end of 2021 and provide more data.

References

Study design: A retrospective, single-center study was performed in Berlin between January 2012 and December 2019.

Key findings: A total of 179 patients with atherosclerotic disease (51% with unilateral internal carotid artery [ICA] occlusion, 49% with multivessel disease) had undergone extracranial to intracranial bypass for symptomatic carotid occlusion surgery. A new randomized controlled trial appears warranted, considering the poor prognosis of patients with an occluded ICA and associated severe multivessel atherosclerotic cerebrovascular disease.

Commentary: The COSS, reported in 2011, suggested that external carotid artery (ECA)—ICA bypass surgery (superficial temporal artery to middle cerebral artery) was not superior to medical management for the treatment of symptomatic ICA occlusion. The COSS was prematurely terminated owing to a high periprocedural stroke rate (13%), which was later attributed to a lack of experience, the large number of contributing low-volume bypass centers, and the lower-than-expected ischemic event rate in the medically managed patients. In this study, patients with atherosclerotic cerebrovascular disease and severe hemodynamic failure continued to be referred for flow augmentation surgery. This population has continued to experience severe ischemic symptoms and hemodynamic failure despite intensive medical therapy. The patients in this series differed significantly from the population reported in COSS. In the setting of a specialized, high-volume bypass center, the authors suggested that ECA—ICA bypass surgery for atherosclerotic cerebrovascular disease was associated with acceptable risk and should remain a treatment option for carefully selected patients. I inform patients with a chronically occluded ICA that there is nothing to do other than medical management. However, if they develop ipsilateral ischemic neurologic symptoms, further studies might show that ECA—ICA bypass is worthwhile (although they might have to fly to Germany for treatment).

REFERENCE

Baseline Cognitive Impairment in Patients With Asymptomatic Carotid Stenosis in the CREST-2 Trial


Study design: A review was performed of CREST-2 (carotid revascularization and medical management for asymptomatic carotid stenosis trial) with randomization beginning in December 2014.

Key findings: Of 786 patients with ≥70% asymptomatic carotid stenosis without a history of stroke, the upper percentiles of distribution of the overall cognitive score were significantly lower than expected for the general population. The lower performance was attributed largely to the word list recall and word list learning scores. The scores for left vs right carotid disease were similar.

Conclusions: This cohort represents the largest group to date to demonstrate that poorer cognition, especially memory, is present in patients with severe carotid stenosis.

Commentary: When I was a vascular fellow, I seem to remember learning that carotid endarterectomy (CEA) does not improve cognitive function. Even now, I am occasionally asked by a patient whether their memory or confusion will improve after surgery. I tell them "no," but I will take credit if they start playing the piano better.

More recent studies have suggested that my earlier learning might be wrong. A secondary outcome in the CREST-2 was the effect of surgery on changes in cognitive function. The patients were evaluated at baseline and yearly thereafter. However, individuals with advanced carotid disease...