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to 18 years. Their weights ranged from 34 to 178 kg. Motor vehicle accidents were the predominant injury mechanism in low-grade and high-grade groups (94.7% vs 82.19%; $P = .28$). Pediatric patients with low-grade injuries were more likely to undergo an elective repair (>24 hours), as opposed to an urgent or emergent repair, compared to patients with high-grade injuries (15.7% vs 1.3%, respectively; $P < .05$). They were also more likely to be extubated in the operating room (63.2% vs 35.6%; $P = .05$). The distal disease zone did not extend past zone 5 in all pediatric TEVAR patients. The left subclavian artery was involved in 36% of patients in the low-grade injury group and 45% of patients in the high-grade group; it was subsequently covered in a majority of cases. The overall complication rate was 10.5% in the low-grade group and 19.1% in the high-grade group. There were no mortalities in the low-grade aortic injury cohort. The high-grade injury cohort had a mortality rate of 5.5%, all of which were aortic-related mortalities. Compared to the adult cohort, the pediatric cohort had a significantly decreased mortality risk for high-grade BAI that underwent TEVAR (odds ratio, 0.21; $P < .05$).

Conclusions: BAI is rare in pediatric patients, but it can be life-threatening when it occurs. Pediatric patients with BAI can be safely treated with TEVAR. However, further research is needed to study the long-term effects of TEVAR on pediatric patients.

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IP179



Comparison of Bypass and Endovascular Treatment of Isolated Popliteal Artery Occlusive Disease in Patients With Chronic Limb-threatening Ischemia: An Analysis of Vascular Quality Initiative Data

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Objectives: Popliteal artery (PA) occlusive disease is common in patients with chronic limb-threatening ischemia (CLTI), and the results of endovascular therapy (ET) are less well-defined in this segment. This study compares the outcomes of bypass with a single-segment great saphenous vein (SSGSV), balloon angioplasty (BA), stenting, and atherectomy for advanced PA disease in patients with CLTI using a national database.

Methods: We used Vascular Quality Initiative data for infrainguinal CLTI (2016-2023). We queried four cohorts: bypass with SSGSV, BA, stenting, and atherectomy. Bypasses included those with inflow of superficial femoral artery or above-knee PA and outflow of below-knee PA or tibioperoneal trunk. ET cohorts included TransAtlantic Inter-Society Consensus class C and D isolated PA interventions. BA and stenting groups included respective plain and drug-eluting devices. The primary outcomes were amputation-free survival (AFS) and freedom from major adverse limb events (MALE) or death. MALE was defined as any major amputation (MA) and/or reintervention.

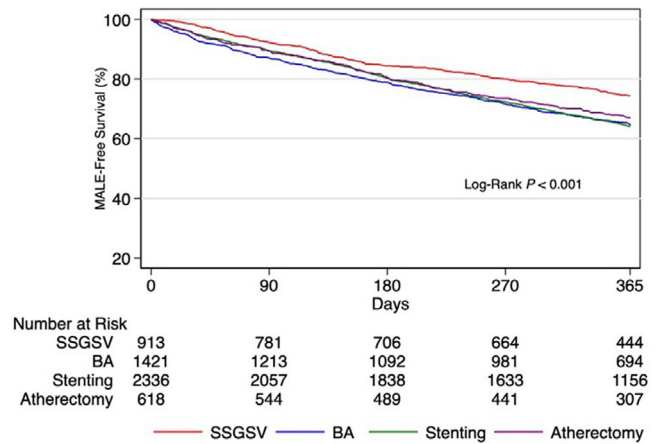


Fig. MALE-free survival in SSGSV, BA, stenting, and atherectomy cohorts. BA, balloon angioplasty; MALE, major adverse limb event; SSGSV, single-segment great saphenous vein.

Table I. Multivariate analysis of the 1-year outcomes

Outcomes	BA vs SSGSV ^a		Stenting vs SSGSV ^a		Atherectomy vs SSGSV ^a	
	aHR (95% CI)	P value	aHR (95% CI)	P value	aHR (95% CI)	P value
Death	1.54 (1.15-2.05)	.004	1.65 (1.24-2.20)	.001	1.45 (1.07-1.96)	.017
MA	1.30 (0.81-2.08)	.282	1.18 (0.76-1.84)	.460	0.98 (0.55-1.75)	.953
MA/death	1.42 (1.09-1.85)	.010	1.47 (1.14-1.88)	.003	1.26 (0.95-1.68)	.107
Reintervention	0.99 (0.77-1.28)	.943	1.22 (0.97-1.54)	.093	1.19 (0.87-1.64)	.267
MALE	1.10 (0.87-1.38)	.433	1.27 (1.03-1.56)	.022	1.21 (0.92-1.59)	.180
Death/MALE	1.19 (0.99-1.44)	.067	1.34 (1.13-1.60)	.001	1.22 (0.99-1.50)	.055
Outcomes	Stenting vs BA ^b		Atherectomy vs BA ^b		Atherectomy vs Stenting ^b	
	aHR (95% CI)	P value	aHR (95% CI)	P value	aHR (95% CI)	P value
Death	1.06 (0.88-1.29)	.539	0.86 (0.67-1.12)	.262	0.81 (0.64-1.03)	.082
MA	0.87 (0.61-1.23)	.424	0.76 (0.46-1.24)	.269	0.87 (0.53-1.44)	.589
MA/death	1.00 (0.85-1.19)	.977	0.84 (0.66-1.06)	.147	0.84 (0.67-1.05)	.129
Reintervention	1.17 (0.96-1.42)	.130	1.18 (0.89-1.58)	.256	1.01 (0.75-1.37)	.928
MALE	1.08 (0.91-1.28)	.391	1.06 (0.83-1.36)	.636	0.99 (0.75-1.30)	.920
Death/MALE	1.06 (0.94-1.21)	.338	0.97 (0.81-1.16)	.753	0.91 (0.76-1.10)	.332

aHR, Adjusted hazard ratio; BA, balloon angioplasty; CI, confidence interval; MA, major amputation; MALE, major adverse limb event; SSGSV, single-segment great saphenous vein.
^aAdjusted for demographics, insurance, smoking, comorbidities, prior procedures, urgency, indication, and medications.
^bAdjusted for demographics, insurance, smoking, comorbidities, prior procedures, urgency, indication, medications, lesion length, treatment length, TransAtlantic Inter-Society Consensus class C vs D, and calcification degree.

Secondary outcomes included overall survival, limb salvage, freedom from reintervention, and freedom from MALE. All outcomes were analyzed within 1 year. Kaplan-Meier estimates and Cox regression were used for the analysis.

Results: There were 5290 limbs from 4870 patients: 913 bypasses with SSGSV (17.3%), 1423 BA (26.9%), 2336 stenting (44.2%), and 618 atherectomy (11.7%). One-year AFS was 87.4%, 76.1%, 78.5%, and 81.0%, and MALE-free survival was 74.2%, 64.4%, 64.1%, and 66.8% in SSGSV, BA, stenting, and atherectomy cohorts, respectively ($P < .001$) (Fig). After adjusting for confounders, BA and stenting were associated with increased hazards of MA/death compared to SSGSV (adjusted hazard ratio [aHR], 1.42; 95% CI, 1.09-1.85; $P = .010$ and aHR, 1.47; 95% CI, 1.14-1.88; $P = .003$, respectively). Additionally, stenting was associated with increased hazards of MALE and MALE/death compared to SSGSV (aHR, 1.27; 95% CI, 1.03-1.56; $P = .022$ and aHR, 1.34; 95% CI, 1.13-1.60; $P = .001$, respectively) but BA and atherectomy were not (Table). Analyses among ET cohorts were further adjusted for the lesion length, treatment length, TransAtlantic Inter-Society Consensus class C vs D, and calcification degree. However, there were no significant differences observed across the ET subgroups (Table).

Conclusions: In this real-world analysis, angioplasty, atherectomy, and stenting were associated with increased risk of death, MA, or MALE compared to SSGSV bypass. We conclude that bypass with vein should be considered the first-line of treatment in fit patients with CLTI due to isolated advanced popliteal artery disease. Further prospective studies are necessary to better clarify the optimal approaches to popliteal artery disease especially in poor surgical candidates.

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Poster Competition PC052



Open Surgical Management of Abdominal Aortic Aneurysm With Congenital Duplicate Right Common Iliac Artery

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Objectives: A 69-year-old man with a history of tobacco use and hypertension was referred for evaluation of an enlarging abdominal aortic aneurysm (AAA). He had undergone computed tomography angiography (CTA) demonstrating a 5.7-cm infrarenal AAA, calcified but patent right common iliac artery (CIA), and a duplicate right CIA emerging from the posterior aorta, coursing over the pelvic brim, eventually joining the external iliac artery (Fig 1). Imaging also showed absence of bilateral internal iliac arteries (IIAs). With patient consent obtained, this report aims to describe an open surgical approach to AAA repair in the context of aberrant iliac artery anatomy.

Methods: A standard endovascular aortic repair was considered; however, two factors redirected our methodology to open surgical repair. First, the patient was robust with few comorbid conditions. Second, the patient is without IIAs and has robust collateralization through the IMA indicating a high risk of pelvic/colorectal ischemia with standard endovascular repair. In our midline, open approach, we placed an infrarenal aortic clamp allowing visualization of the aortic sac and iliac anatomy (Fig 2). After performing a local endarterectomy of the infrarenal aorta, a 16 × 8 mm bifurcated graft was anastomosed with the left CIA and the duplicate right CIA. The native CIA being small and heavily calcified was tied. After unclamping, our repair was hemostatic and the patient had palpable femoral and DP pulses.

Results: Following the procedure, the patient's lower right extremity perfusion via the duplicate CIA was closely monitored. He had no complaints of claudication, abdominal pain, or other postoperative complications. The postoperative day 30 CTA demonstrated an intact bifurcated

aortic graft, patent duplicate right CIA, and the ligated native right CIA was thrombosed. Duplex ultrasound demonstrated normal, multiphasic flow throughout the lower extremities.

Conclusions: Several case reports in the existing literature describe congenital absence of unilateral or bilateral CIAs; however, this is the first documented case of a duplicate CIA. Previously documented CIA anomalies were similarly discovered incidentally to other vascular problems like lower

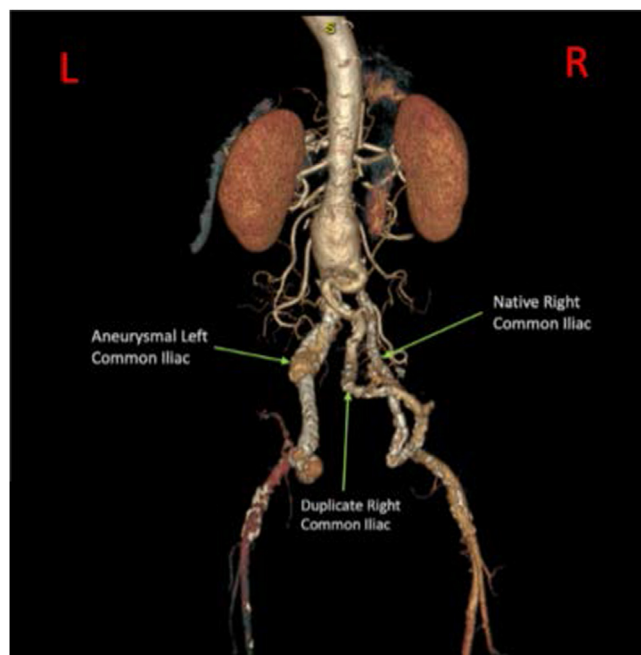


Fig 1. Preoperative CTA showing abnormal iliac artery anatomy, posteroanterior view.

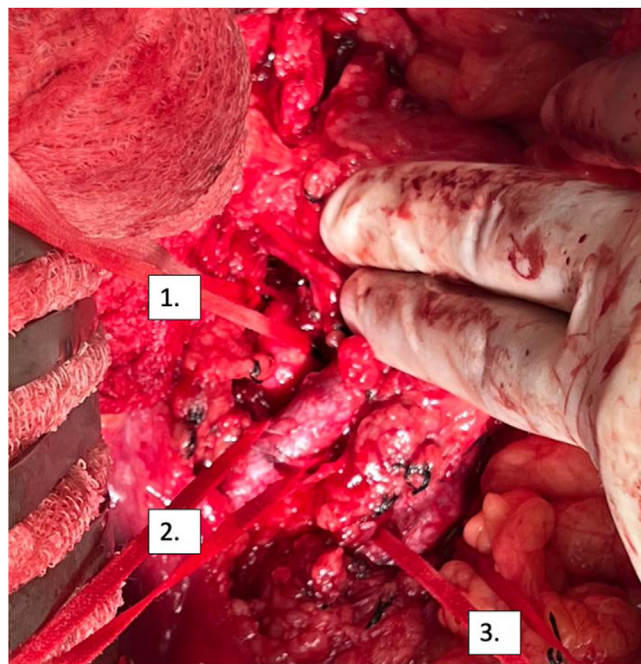


Fig 2. XXX.