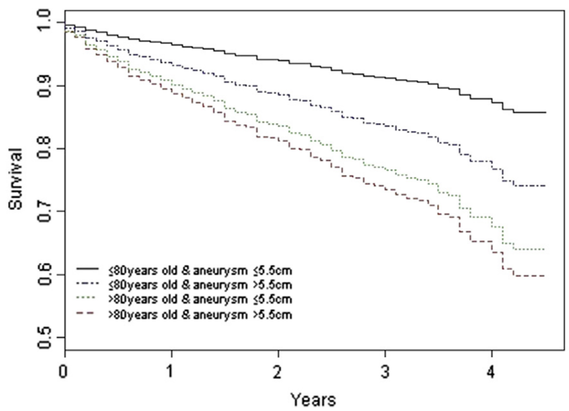

*Fit with Cox proportional hazards regression model with propensity score weights using one missing imputation dataset

Fig. Modeled kaplan-meier survival curve of all-cause mortality after endovascular aneurysm repair by patient age and preoperative AAA size.

Table. Postoperation death hazard ratio by patient age (cut off value 80 years old) and aneurysm size (cut off value 5.5cm)

Model 1[a]	*Estimate*	*SE*	*HR*	*LCL*	*UCL*	P *value*
Fixed effect						
≤80 years old & AAA≤5.5cm			(Reference)			
≤80 years old & AAA>5.5cm	0.66	0.20	1.94	1.32	2.86	<.001
>80 years old & AAA≤5.5cm	1.09	0.25	2.98	1.82	4.90	<.001
>80 years old & AAA>5.5cm	1.35	0.23	3.87	2.47	6.08	<.001
Random effect:	*SD*					
Surgeon (Intercept)	0.37					
Hospital (Intercept)	0.18					
Calculation from model 1	*Estimate*	*SE*	*HR*	*LCL*	*UCL*	P *value*
Age & AAA interaction	−0.40	0.39	0.67	0.31	1.45	.309
AAA main effect	0.56	0.17	1.75	1.26	2.45	.001
Age main effect	0.93	0.19	2.53	1.73	3.70	<.001
Among > 80 years old patients						
AAA>5.5cm vs AAA≤5.5cm	0.26	0.34	1.30	0.66	2.54	.445

AAA, Abdominal artery aneurysm; *HR,* hazard ratio; *LCL,* 95% lower confidence limit; *SD,* standard deviation; *SE,* standard error; *UCL,* 95% upper confidence limit.

[a]Fit with between-within mixed effects Cox models with propensity score weights.

whereas AAAs >5.5 cm were associated with 1.75-fold higher risk (HR, 1.75; 95% CI, 1.26-2.45; $P = .001$; Table). For reintervention risk, there were no significant interactions or main effects of age or AAA diameter.

Conclusions: When controlling for other comorbidities, patient age >80 years and AAA diameter >5.5 cm are independently predictive of decreased survival after EVAR. Nevertheless, overall survival of 63.6% at 4 years in these high-risk patients is acceptable and should not preclude repair of AAA on the basis of age or diameter alone.

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Distance to the Base of Skull: A New Predictor of Complications in Carotid Body Tumor Resection

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Objective: We conducted a large, multi-institutional study to assess the complications in patients undergoing carotid body tumor (CBT) excision. Comparisons of outcomes were made based on a traditional measure, Shamblin classification, and a new measure, distance to the base of skull (BOS).

Methods: A standardized database by a consortium of 14 institutions was used to assess patients who underwent surgical excision of CBT after cross-sectional imaging and subsequent assignment of Shamblin classification during a 10-year period (2004 to 2014). All CBT measurements were made using computed tomography/magnetic resonance imaging or ultrasound imaging, or both. Distance to BOS was the measurement on imaging from the top of the CBT to the BOS. CBT volume was calculated by ellipsoid approximation using two diameters measured from imaging.

Results: A total of 302 CBTs were excised in 293 patients (73% female; mean age, 52 years); 34% were Shamblin I, 42% Shamblin II, and 24% Shamblin III. The mean diameter was 3.8 cm (range, 1-11.3 cm), and mean volume was 25 cm^3 (range, 0.1-205 cm^3). Twenty-three percent had cranial nerve (CN) injuries. Patients with higher Shamblin class had more bleeding, temporary CN injuries, and vascular reconstruction (Table). Shorter distance to BOS was associated with increased bleeding ($P = .02$) and permanent CN injury ($P = .002$). Patients with and without embolization (EMB), 22% and 78%, respectively, had no difference in CBT size, but EMB patients had significantly shorter distance to BOS (2.3 vs 3.7 cm; $P = .001$). After adjusting for tumor size and distance to BOS, EMB was not associated with decreased bleeding (mean estimated blood loss, 209 vs 257 mL; $P = .78$); however, it was associated with increased operative time (192 vs 141 minutes; $P = .01$) and CN injuries (22% vs 13%; $P = .003$).

Table. Comparison of Shamblin I, II, and III carotid body tumors (*CBTs*)

Variables	*All CBTs (n = 295), mean (SD, range)*	*Shamblin I (n = 101), mean (SD, range)*	*Shamblin II (n = 125), mean (SD, range)*	*Shamblin III (n = 69), mean (SD, range)*	P
Maximal diameter, cm	3.90 (1.77, 1-15)	2.69 (1.03, 1-8)	4.10 (1.40, 1.75-11.3)	4.99 (1.48, 1.4-8)	<.001
Volume, cm^3	30.8 (97.0, 0.131-1539)	8.98 (14.6, 0.131-106)	26.4 (28.3, 1.43-160)	44.9 (42.5, 1.06-205)	<.001
Distance to BOS	3.41 (2.08, 0-10)	3.38 (1.65, 0-10)	3.70 (2.20, 0-10)	3.07 (2.32, 0-9)	.588
EBL, mL	248 (430, 0-3500)	149 (247, 0-2300)	237 (386, 10-2400)	436 (436, 0-3500)	<.001
	No. (%)	*No. (%)*	*No. (%)*	*No. (%)*	
Preoperative EMB	64 (22)	7 (7)	36 (29)	21 (30)	<.001
Vascular reconstruction	13 (4)	1 (1)	4 (3)	11 (16)	<.001
ECA ligation	33 (11)	4 (4)	10 (8)	18 (26)	<.001
CN injury	69 (23)	8 (8)	30 (24)	29 (42)	<.001
Temporary	44 (15)	6 (6)	18 (14)	19 (28)	<.001
Permanent	25 (8)	2 (2)	12 (10)	10 (14)	.003

BOS, Base of skull; *CN,* cranial nerve; *EBL,* estimated blood loss; *ECA,* external carotid artery; *EMB,* embolization.

Conclusions: This large study of CBTs demonstrates the importance of determining the CBT's distance to the BOS as well as the Shamblin classification. Shamblin classification predicts the need for vascular reconstruction and the risk of bleeding and temporary nerve injury, and distance to BOS predicts bleeding risk and permanent nerve injury. Preoperative EMB is more often performed for CBTs located higher in the neck but may not reduce bleeding in CBTs that are located lower in the neck. Distance to BOS should be calculated in all patients with CBTs to provide precise preoperative counseling of risks.

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Renal Function Changes Following Fenestrated EVAR

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Contemporary Outcomes Following Imaging-Guided Treatment of Patients With May-Thurner Syndrome

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Objective: Patients with May-Thurner syndrome present with a spectrum of findings ranging from mild left leg edema to extensive iliofemoral deep venous thrombosis (DVT). Although asymptomatic left common iliac vein (LCIV) compression can be seen in a high proportion of normal individuals on axial imaging, the percentage with symptomatic compression is quite small, and debate exists regarding the optimal clinical and diagnostic criteria to treat these lesions in patients with symptomatic venous disease. We evaluated our approach to image-guided therapy for individuals with symptomatic LCIV compression and report the outcomes.

Methods: All patients with suspected May-Thurner compression of the LCIV between 2008 and 2015 were analyzed retrospectively. Patients with chronic iliocaval lesions not associated with compression of the LCIV were excluded from analysis. Criteria for intervention included LCIV compression in the setting of (1) leg swelling/venous claudication with associated venographic findings (collateralization, iliac contrast stagnation, and contralateral cross cross-filling) or (2) left leg DVT. Presenting CEAP score, postintervention CEAP score, primary and secondary patency, and intravascular ultrasound data were reviewed.

Results: Of the 55 patients evaluated, 22 (40%) had nonthrombotic symptomatic compression of the LCIV, and 33 (60%) had thrombotic May-Thurner syndrome with LCIV compression and acute or chronic DVT. Symptoms included pain/swelling (100%), venous claudication (58.1%), or CEAP class 3 (89%). Forty-seven patients underwent successful intervention with angioplasty (6%), angioplasty and stent (59%), or lysis, and angioplasty and stenting (27%). Clinical improvement occurred in 97.9% and a decrease in CEAP score in 76.6%. Complete symptom resolution was achieved in 54.5%. Complications included two early reocclusions. Primary and secondary 1-year patency was 94% and 98% (mean follow-up, 20.3 months).

Conclusions: Image-guided treatment of May-Thurner syndrome is associated with excellent 1-year patency rates and a significant reduction in symptoms and CEAP score. Treating symptomatic May-Thurner patients based on physiologically relevant venographic findings may lead to superior long-term patency and clinical outcomes than intravascular ultrasound-guided decision making.

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A Comparison of Brachial Artery-Brachial Vein Arteriovenous Fistulas With AV Grafts in Patients With Poor Superficial Venous Anatomy

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Objective: The autogenous arteriovenous fistula (AVF) has been shown to be superior to the arteriovenous graft (AVG) with respect to cost, complications, and primary patency. Therefore, the National Kidney Foundation-Kidney Disease Outcomes Quality Initiative guidelines recommend reserving AVGs for patients who do not have adequate superficial venous anatomy to support AVF placement. The brachial artery-brachial vein AVF (BVAVF) has emerged as an alternative. However, there are limited data comparing BVAVF and AVG in patients who are otherwise not candidates for a traditional AVF.

Methods: A retrospective review of all patients who received BVAVF from July 2009 to July 2014 was performed. Patients who received an AVG and matched for age, gender, diabetes, and superficial venous anatomy were compared with the BVAVF group. Patient demographic data, operative details, and subsequent follow-up were collected. BVAVFs were performed with a two-stage approach with an initial arteriovenous anastomosis, followed by delayed superficialization or transposition. Comparisons were performed using the Student *t*-test and χ^2 test as appropriate. Our primary outcome measure was patency at 1 year.

Results: Thirty-one patients underwent BVAVF during the study period. There were 40 patients in our matched AVG group. There was no difference in age, gender, diabetes, prior hemodialysis access, or absence of usable superficial vein between the two groups. The median days to cannulation from the initial operation was 141 in the BVAVF group and 30 in the AVG group ($P < .001$). More patients required interventions to maintain or re-establish patency in the AVG group than in the BVAVF group (35.0% vs 9.7%; $P = .013$). Assisted primary patency at 1 year was superior in the BVAVF group (65.5% vs 40.6%; $P = .018$). Functional assisted primary patency at 1 year was also superior in the BVAVF group (48.1% vs 21.6%; $P = .040$). Functional secondary patency at 1 year was similar (BVAVF, 55.5% vs AVG, 48.6%; $P = .62$).

Conclusions: BVAVFs had higher primary patency than AVGs, whereas secondary patency was similar. These findings support the use of BVAVFs as a viable alternative to AVGs in patients with inadequate superficial venous anatomy. The decision to perform a BVAVF must be weighed against the delay in functional maturation expected compared with an AVG.

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Arterial Cut-Down Reduces Complications Following Brachial Access for Peripheral Vascular Interventions

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SPY Technology as a Valuable Measure for Lower Extremity Interventions: A Prospective Evaluation

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The Impact of Exposure Technique on Perioperative Complications in Patients Undergoing Open Abdominal Aortic Aneurysm Repair

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Aortic Outflow Occlusion Predicts Rupture of Abdominal Aortic Aneurysm

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A Comparison of RUDI and DRIL for the Management of Severe Access-Related Hand Ischemia

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