rupture and aneurysm diameter relative to body size for men and women with the goal of testing a novel method of rupture risk stratification that is more appropriate for women.

Methods: We reviewed all patients in the Vascular Surgery Group of New England database who underwent endovascular or open AAA repair. We evaluated height, weight, body mass index (BMI), and body surface area (BSA) as well as each of these values indexed to the aortic diameter (eg, BSA index = aneurysm diameter (cm)/BSA [m^2]). Along with other relevant clinical variables, we constructed multivariable-adjusted logistic regression models using forward selection to determine predictors of rupture repair vs elective repair. Models for men and women were developed separately, and different models were compared using the area under the curve (AUC).

Results: We identified 4045 patients who underwent AAA repair (11% ruptured, 53% EVAR, 78% men). Women had significantly smaller diameter aneurysms, lower BSA, and higher BSA indices than men (Table). For men, the primary determinant of rupture was aneurysm diameter (AUC, 0.82): <55 mm (referent); 55-64 mm (OR, 0.9; 95% CI, 0.5-1.7; *P* = .771); 65-74 mm (OR, 3.9; 95% CI, 1.9-1.0; *P* < .001); and ≥75 mm (OR, 11.3; 95% CI, 4.9-25.8; *P* < .001). In contrast, BSA index was most predictive of rupture for women (AUC, 0.81), with higher odds of rupture at higher BSA indices: <25 (OR, 3.9; 95% CI, 0.5-28.2; *P* = .175); 25-29 (OR, 3.3; 95% CI, 0.8-14.5; *P* = .111); 30-34 (referent); 35-39 (OR, 6.4; 95% CI, 1.7-24.1; *P* = .006); and ≥40 (OR, 9.5; 95% CI, 2.3-39.4; *P* = .002). For women, aneurysm diameter alone was not a significant predictor of rupture after adjusting for BSA index.

Conclusions: Aneurysm diameter indexed to body size is the most important determinant of rupture for women, whereas aneurysm diameter alone is most predictive of rupture for men. Women with the largest diameter aneurysms and the smallest body sizes are at the greatest risk of rupture.

Table. Demographics and multivariable predictors of ruptured repair

Variables	*Men (n = 3138)*	*Women (n = 907)*	P
Demographics			
Age, mean (SD) years	71.9 (8.7)	74.3 (7.7)	<.001
Aneurysm diameter, mm			<.001
20-54, No. (%)	1032 (32.9)	368 (40.6)	
55-64, No. (%)	1170 (37.3)	350 (38.6)	
65-74, No. (%)	452 (14.4)	111 (12.2)	
≥75, No. (%)	483 (15.4)	78 (8.6)	
BSA, m^2 [a]			<.001
<1.8, No. (%)	405 (12.9)	551 (60.7)	
1.8-1.9, No. (%)	1073 (34.2)	258 (28.5)	
≥2.0, No. (%)	1660 (52.9)	98 (10.8)	
BSA index, cm/m^2 [b]			<.001
<25, No. (%)	668 (21.3)	77 (8.5)	
25-29, No. (%)	1136 (36.2)	231 (25.5)	
30-34, No. (%)	678 (21.6)	297 (32.7)	
35-39, No. (%)	342 (10.9)	171 (18.8)	
≥40, No. (%)	314 (10.0)	132 (14.5)	

Predictors of ruptured repair	*OR (95% CI)*[c]	P	*OR (95% CI)*[d]	P
Aneurysm diameter, mm				
20-54, %	1.0		1.0	
55-64, %	0.9 (0.5-1.7)	.8	1.1 (0.3-3.7)	.85
65-74, %	3.9 (1.9-8.0)	<.01	3.3 (0.8-12.7)	.09
≥75, %	11.3 (4.9-25.8)	<.01	3.2 (0.7-14.5)	.13
BSA Index, cm/m^2 [b]				
<25, %	0.6 (0.3-1.4)	.23	3.9 (0.5-28.2)	.18
25-29, %	0.8 (0.5-1.5)	.53	3.3 (0.8-14.5)	.11
30-34, %	1.0		1.0	
35-39, %	0.8 (0.5-1.4)	.52	6.4 (1.7-24.1)	<.01
≥40, %	1.4 (0.8-2.6)	.2	9.5 (2.3-39.4)	<.01

[a]BSA = BSA (m^2) = $0.20247 \times$ Height $(m)^{0.725} \times$ Weight $(kg)^{0.425}$.
[b]BSA index = aneurysm diameter (cm)/BSA (m^2).
[c]Area under the curve = 0.82.
[d]Area under the curve = 0.81.

A 20-Year Experience With Endovascular Repair of Abdominal Aortic Aneurysms: A Record of the Development and Evolution of Techniques, Devices, and Strategies

Rami O. Tadros, MD, Peter L. Faries, MD, Hannah L. Lowe, MD, Rachel Schrier, MD, Robert A. Lookstein, MD, Sung yup P. Kim, MD, Jamie Kim, MD, Ageliki G. Vouyouka, MD, Sharif H. Ellozy, MD, Michael L. Marin, MD. The Mount Sinai School of Medicine, New York, NY

Objectives: Endovascular repair of abdominal aortic aneurysms (EVAR) has become the first-line treatment of abdominal aortic aneurysms (AAA) worldwide. Since the first successful EVAR in North America, the authors have maintained a continuous, prospective database recording the details of each procedure.

Methods: Between 1992 and 2012, 1268 patients (mean age, 75 years; 85% men) underwent EVAR for repair of AAA. Fifteen different types of stent grafts were used (Table). Eighty-one percent of patients exhibited high-risk characteristics that would preclude participation in Food and Drug Administration-mandated, industry sponsored-IDE pivotal trials. Ninety-three percent of patients had at least one severe comorbid medical condition, with an average of 2.2 conditions per patient. During EVAR, 38% had concomitant treatment of associated common iliac artery aneurysms. Mean follow-up was 38.2 months.

Results: Major perioperative complications occurred in 7.5%, with a perioperative mortality rate of 2.5%. Aneurysm size remained stable or decreased (>5 mm) in 86.5% of patients and increased (>5 mm) in 13.5%; median time to aneurysm expansion was 8.2 years. During follow-up, type I endoleak occurred in 2.1% of patients and type III in 0.2%. Reintervention was required in 21% of patients. Mean time to reintervention was 26 months. Freedom from aneurysm-related mortality was 91.1% at 12 years. Median survival for all-cause mortality was 5.6 years.

Conclusions: Progressive advances in EVAR allow safe, effective, and durable repair of AAA, extending the instructions for use parameters of commercially available devices.

Table 1. Operative data

	Mean ± SD
Anesthesia time (hours)	5.05 ± 1.51
Surgery time (hours)	3.70 ± 1.47
Estimated blood loss (mL)	367.8 ± 515.3
Transfusion volume (mL)	645.3 ± 647.4
Length of hospitalization (days)	2.75 ± 5.96
Initial aneurysm size (cm)	5.9 ± 1.2
Aneurysm size at latest F/U (cm)	5.5 ± 1.6

	No. of patients	*%*
Pre-operative adjunctive procedure(s)	438	34.6%
Patients receiving transfusion	181	14.3%
General anesthesia	75	5.9%
Spinal or epidural anesthesia	1085	85.8%
Tube graft	59	4.7%
Bifurcated graft	992	78.2%
Aorto-uni-iliac graft	207	16.3%
Physician-made EVSGs	109	8.6%
Industry-made EVSGs	1159	91.4%
Discharge on postoperative day 0 or 1	802	63.4%
Major perioperative complications	95	7.5%
Perioperative mortality	32	2.5%

The Incidence of Contralateral Iliac Venous Thrombosis After Stenting Across the Iliocaval Confluence in Patients With Acute or Chronic Venous Outflow Obstruction

Xzabia A. Caliste, MD, Amanda L. Clark, BS, John P. Cullen, PhD, Craig Narins, MD, Ankur Chandra, MD, Jennifer Ellis, MD, Jason Kim, MD, Michael Singh, MD, David L. Gillespie, MD. University of Rochester Medical Center, Division of Vascular Surgery, Rochester, NY

Objectives: Percutaneous transluminal angioplasty and stenting of the iliac veins is becoming a more common method of treating patients with symptomatic lower extremity venous outflow obstruction. Several questions about the conformation of these stents remain to be answered. One, in particular, is whether these venous stents should extend into the vena cava or stop short of this in fear of causing further harm to the patient's contralateral leg.

Methods: We retrospectively reviewed prospectively collected data from 2008 to 2012 in patients with symptomatic iliocaval venous thrombosis who underwent percutaneous angioplasty and stenting. Data were collected using the AVF venous stent database variables. Most patients were maintained on full anticoagulation using warfarin (international normalized ratio 2-3) or low-molecular-weight heparin (weight-based daily or b.i.d. dosing). Patients with first time deep venous thrombosis were anticoagulated for 6 months on average, and those with repeat deep venous thrombosis were maintained on lifelong anticoagulation. Intraoperative anticoagulation was performed using intravenous heparin. Contralateral thrombosis and patency rates were recorded.

Results: A total of 183 iliocaval stents were placed in 66 patients (median age, 43; range 15-80 years), of which 63 patients experienced thrombosis causing the venous outflow obstruction. Thirty patients experienced acute venous thrombosis, 25 chronic, and nine acute on chronic. Forty-eight of 66 patients (72.7%) had patent stents noted on duplex