Chobanian & Avedisian School of Medicine
BOSTON UNIVERSITY

BOSTON MEDICAL CENTER

Outcomes of Lower Extremity Revascularization in Octogenarians and Nonagenarians with Intermittent Claudication

Jeffrey J Siracuse, MD, MBA, FACS
Professor of Surgery and Radiology
Chief of Vascular and Endovascular Surgery
Associate Chair of Surgery – Quality and Patient Safety
Boston University, Chobanian and Avedisian School of Medicine
Boston Medical Center

Disclosures

- Education grant from W.L. Gore and Becton Dickinson (paid to Boston University)

Background

- Treatment of intermittent claudication is variable, dependent on durability and expected benefit
- Interventions for claudication can put patients at risk of worsening functional status and limb loss
- Data on outcomes in octogenarians/nonagenarians with intermittent claudication is limited


Comparative Study > Ann Vasc Surg. 2015 Jan;29(1):34-41. doi: 10.1016/j.avsg.2014.07.028. Epub 2014 Sep 3.

Safety and effectiveness of endovascular therapy for claudication in octogenarians

Douglas W Jones [1], Jeffrey J Siracuse [2], Ashley Graham [2], Peter H Connolly [2], Art Sedrakyan [3], Darren B Schneider [2], Andrew J Meltzer [2]

- Retrospective review of a prospectively maintained institutional database
- Endovascular interventions
- 2007-2012
- 236 patients
- 30-day freedom from MALE/death was 100% in octogenarians and 99.6% in patients <80 years
- No differences in freedom from MALE, freedom from RAS, or overall survival at 1- and 3-years

Objective

To evaluate outcomes for intermittent claudication interventions in octogenarians and nonagenarians (age ≥ 80) vs. patients <80 years old

Methods

- Vascular Quality Initiative (VQI) queried from 2010-2020
  - 84,210 PVI (12.1% age ≥80, 87.9% age <80)
  - 10,980 IIB (7.4% age ≥80, 92.6% age <80)
- Peripheral Vascular Interventions (PVI) and infrainguinal bypasses (IIB) for intermittent claudication were included
- Demographics, comorbidities, procedural details, perioperative and 1-year outcomes analyzed
- Kaplan-Meier and Cox proportional hazard regression analysis to evaluate outcomes for age ≥ 80

Demographics & Comorbidities - PVI

Characteristic	Age ≥80 (N = 10,217)	Age <80 (N = 73,993)	P-value
Age, mean (± SD)	83.8±3.1	65.3±8.6	N/A
White Race	85.5%	82.2%	<.001
Black/African American Race	8.3%	12.4%	
Ambulatory	79.4%	91.5%	<.001
Ambulatory with Assistance	20.6%	8.5%	
Primary Medicare Insurance	78.2%	50%	<.001
Current Smoking	11%	43.8%	<.001
Hypertension	91.3%	86.3%	<.001
Diabetes	35%	40.9%	<.001
CAD	32.5%	32.2%	.59
CHF	17.5%	11.8%	<.001
Prior Inflow PVI	13%	15.6%	<.001
Prior Inflow Bypass	3.2%	4%	<.001
Prior Leg PVI	26%	21.5%	<.001
Prior Leg Bypass	8.3%	8.5%	.63

Demographics & Comorbidities - IIB

Demographics	Age ≥80 (N = 815)	Age <80 (N = 10,165)	P-value
Age, mean (± SD)	83±2.7	63.9±9	N/A
Male Sex	63.2%	71.2%	<.001
White Race	89.1%	82.7%	<.001
Black/African American Race	6.5%	13.3%	
Ambulatory	77.5%	88.3%	<.001
Ambulatory with Assistance	22.5%	11.7%	
Primary Medicare Insurance	74%	44.5%	<.001
Current Smoking	11.3%	44%	<.001
Hypertension	90.3%	84.6%	<.001
Diabetes	35.2%	39.1%	.03
CAD	28.9%	29.2%	.85
CHF	13.4%	10.3%	.006
Prior Inflow PVI	17.9%	20%	0.16
Prior Inflow Bypass	8%	8.6%	.53
Prior Leg PVI	38.3%	36.9%	.42
Prior Leg Bypass	20.1%	17.3%	.04

Procedural Characteristics - PVI

Characteristic	Age ≥80 (N = 10,217)	Age <80 (N = 73,993)	P-value
Iliac Intervention	32.1%	48%	<.001
Femoropopliteal Intervention	70.7%	58.1%	<.001
Infrapopliteal Intervention	19%	9.3%	<.001
Plain Balloon Angioplasty	71.4%	69.2%	<.001
Stent/Stent Graft	53.1%	63.2%	<.001
Mechanical Atherectomy	23.3%	17%	<.001
Technical Result			<.001
Successful (stenosis <=30%)	94.1%	95.1%	
Stenosis >30%	2.2%	1.9%	
Target Lesion Occlusion	.3%	.3%	
Unable to Cross Lesion	3.4%	2.8%	
Discharged on ASA	77.8%	82.6%	<.001
Discharged on Statin	70.4%	75.9%	<.001

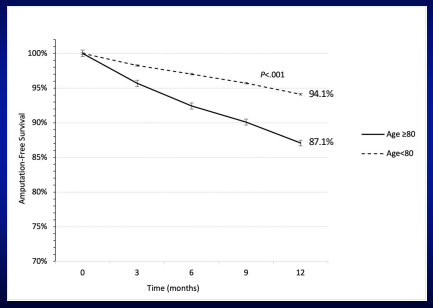
Perioperative Outcomes - PVI

Outcome	Age ≥80 (N = 10,217)	Age <80 (N = 73,993)	P-value
Access Site Hematoma	3.5%	2.4%	<.001
Access Site Stenosis/Occlusion	.2%	.2%	.89
30-Day Mortality	.9%	.4%	<.001

Perioperative Outcomes - IIB

Outcome	Age ≥80 (N = 815)	Age <80 (N = 10,165)	P-value
Post-operative LOS, mean (± SD)	4.3±3.5	3.7±3.7	<.001
30-Day Mortality	1.3%	.5%	.001
Wound Complication	1.1%	1.8%	.16
Change in Renal Function	4.1%	2.2%	<.001
Return to OR	3.8%	3.9%	.93
Major Ipsilateral Amputation	.5%	.2%	.10
Minor Ipsilateral Amputation	.9%	.9%	.98
Respiratory Complication	1.5%	.8%	.07
Cardiac Complication	5.4%	3.1%	<.001

1-year amputation-free survival - PVI

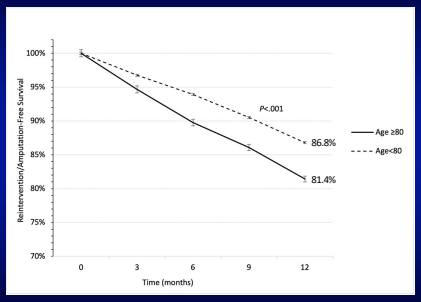


1-Year Outcomes - PVI

- Cox proportional hazard regression analysis: Age ≥80 vs. Age <80 (based on propensity matched samples)

Outcome	Adjusted Hazard Ratio	95% confidence interval	*P*-value
Death	1.92	1.66-2.23	<.001
Major Amputation or Death	1.85	1.61-2.13	<.001
Reintervention/Amputation/Death	1.22	1.1-1.35	<.001

1-year reintervention/amputation-free survival - PVI

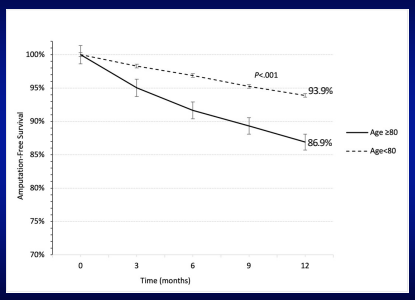


1-Year Outcomes - PVI

- Cox proportional hazard regression analysis: Age ≥80 vs. Age <80 (based on propensity matched samples)

Outcome	Adjusted Hazard Ratio	95% confidence interval	*P*-value
Death	1.92	1.66-2.23	<.001
Major Amputation or Death	1.85	1.61-2.13	<.001
Reintervention/Amputation/Death	1.22	1.1-1.35	<.001

1-year amputation-free survival - IIB

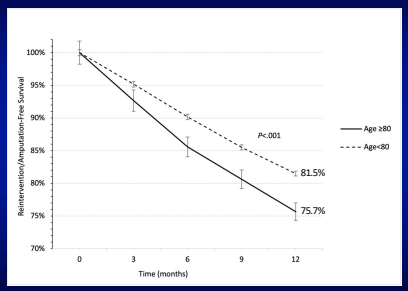


1-Year Outcomes - IIB

- Cox proportional hazard regression analysis: Age ≥80 vs. Age <80 (based on propensity matched samples)

Outcome	Adjusted Hazard Ratio	95% confidence interval	*P*-value
Death	1.85	1.16-2.93	.009
Major Amputation or Death	1.68	1.11-2.54	.015
Reintervention/Amputation/Death	1.10	0.85-1.44	.47

1-year reintervention/amputation-free survival - IIB



1-Year Outcomes - IIB

- Cox proportional hazard regression analysis: Age ≥80 vs. Age <80 (based on propensity matched samples)

Outcome	Adjusted Hazard Ratio	95% confidence interval	*P*-value
Death	1.85	1.16-2.93	.009
Major Amputation or Death	1.68	1.11-2.54	.015
Reintervention/Amputation/Death	1.10	0.85-1.44	.47

Conclusions

- Octogenarians and nonagenarians have greater risk of peri-operative morbidity and long-term limb loss, and mortality
- Risks of intervention on elderly patients with claudication should be carefully weighed against perceived benefits
- Medical and exercise therapy efforts should be maximized in this population

Thank You