



Factors associated with limb occlusion in the long-term after endovascular aortic repair

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Introduction

- Graft limb occlusion is a common complication after EVAR repair, studies citing 4%- 7.6%
- Limb occlusions may be incidentally found on surveillance imaging, asymptomatic in patients or present with signs of limb ischemia requiring urgent treatment with risk of lower extremity amputation.
- Limb occlusion may present in the perioperative period but more likely occur in long-term followup

Methods

Aim: to investigate rates of EVAR limb occlusion in the long-term followup

- We examined the procedure and long-term followup dataset of the Endovascular AAA registry in the Vascular Quality Initiative from 2014-2023.
- Sociodemographic, comorbidities before the index surgery, along with index operative factors were analyzed and compared between limbs that occluded in long-term followup versus non occluded limbs.
- Bivariate log-rank test and stepwise multivariable cox analysis were used.

Long-term limb occlusion was defined by the VQI as occluded graft limb found on followup imaging.

Log rank graphs of different factors association with long term limb occlusion

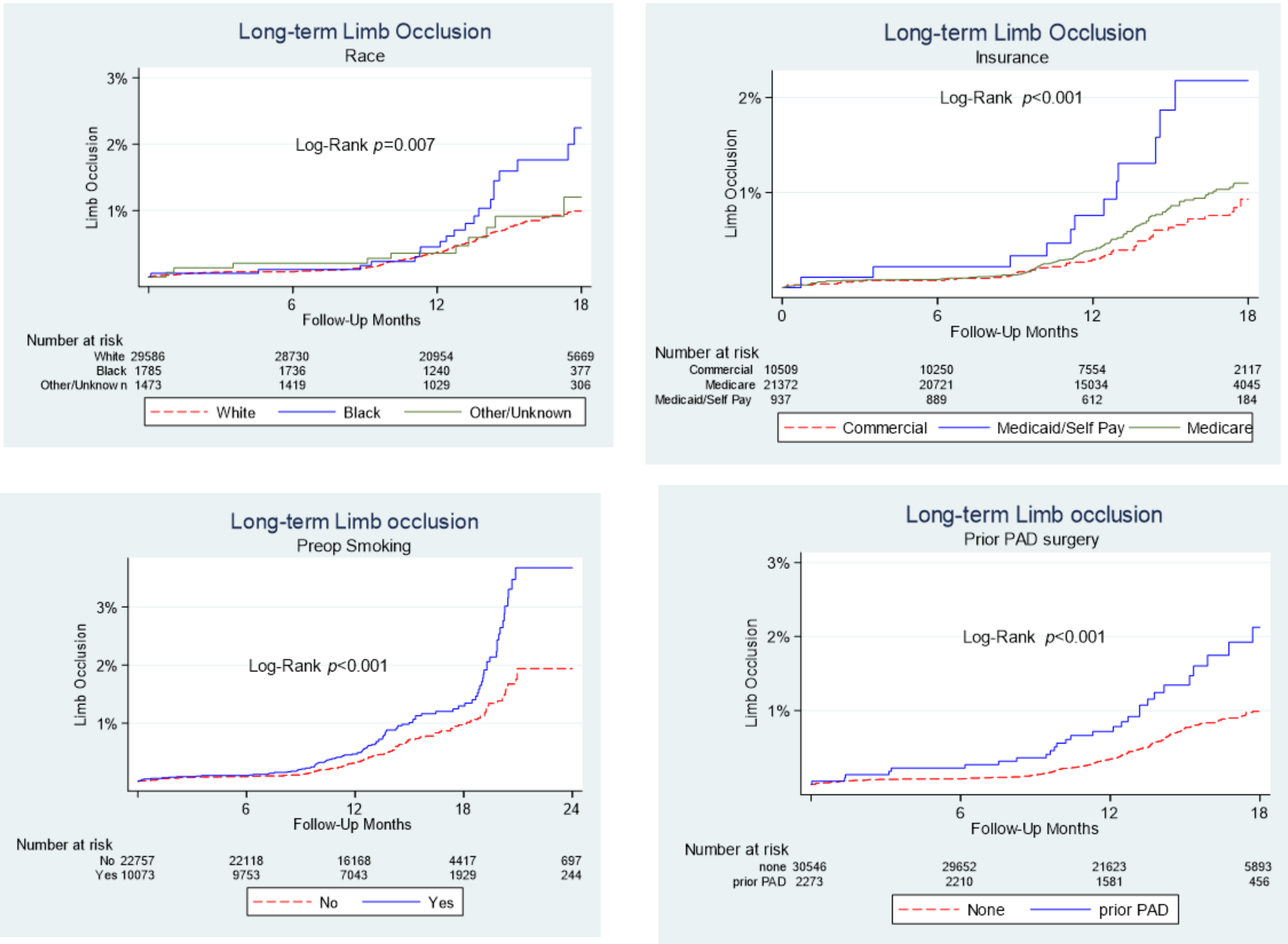


Table 1: Stepwise multivariable Cox regression for factors associated with limb occlusion in the long-term

Variable	HR [95% CI]	P value
Age	0.98 [0.96-0.99]	<0.001
Female sex	0.79 [0.60-1.05]	0.109
Internal iliac coiled/covered	2.29 [1.69-3.12]	<0.001
Multiple iliac grafts/extensions	1.58[1.22-2.03]	<0.001
Medicare/Medicaid/self-pay	1.1 [0.99-1.24]	0.064
Currently smoking	1.47 [1.18-1.82]	0.001
Treatment for occlusion in perioperative period	3.98 [0.56-23.50]	0.168
Diabetes	0.62 [0.32-1.22]	0.169
Open access	1.27 [1.02-1.58]	0.032
Prior PAD surgery	1.70[1.26-2.27]	<0.001
Suprarenal aortic fixation graft	1.36[1.08-1.71]	<0.008
Current ASA/statin	1.20 [0.97-1.48]	0.079
Urgent repair	1.61[1.07-2.43]	0.023
Total procedure time	1.00[1.001-1.004]	<0.001
C-Index	0.687	

Results

- 33,064 EVARs performed with 65,421 limbs evaluated
- 498 (0.79%) limbs occlusions in the long-term followup
- Mean followup was 453 days for the dataset, and there was a mean of 390 days till the first occlusion for limb occlusion patients.
- Black patients, patients on Medicaid, patient who smoked preoperatively or on dialysis had higher rates of limb occlusion in the long term
- Patients with prior PAD surgery and prior EVAR surgery had higher rates of limb occlusion
- Multivariable analysis found internal iliac being covered or coiled the higher association of limb occlusion, followed by prior PAD surgery, urgent repair, multiple iliac grafts, preoperative smoking, open access, and suprarenal aortic fixation grafts

Conclusion

- Our analysis of a national multicenter dataset found patient factors such as smoking status, prior PAD surgery were associated with limb occlusion in the long-term
- Operative and anatomical factors such as coiling and coverage of the internal iliac artery and extension devices being use may lead to higher rates of limb occlusion
- Ultimately patients with these risk factors after EVAR may benefit from more frequent surveillance, earlier intervention to maintain assisted primary patency, along with patient education of symptoms to be aware of, such as new onset claudication, before more limb threatening events occurs