

Comparison of Outcomes in Lower Limb Amputations between General and Vascular Surgeons in the Veterans Population Using VASQIP Database

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Introduction: The surgical specialty of those undertaking lower extremity amputation seems to impact patient outcomes.¹ Lower extremity amputations are commonly performed by general surgeons (GSs), and vascular surgeons (VSs); however, a paucity of data exists examining the effect of specialty on postoperative outcomes in lower limb amputations. The Veterans Affairs Surgical Quality Improvement Program (VASQIP) follows patient outcomes and has yet to be examined for outcomes of specialty and lower extremity amputations.

Methods: Retrospective review of the VASQIP national database for all patients who underwent lower limb amputations between 1999 and 2018 were identified. Data collected included patient demographics, comorbid conditions, and indication. Univariate and multivariate forward logistic regression models were employed to evaluate the associations between various outcomes and surgical specialty. Univariate variables with $p < 0.10$ were used as covariates in the forward logistic regression model.

Results: Over the twenty-year period there were 43,240 major lower extremity amputations performed by GSs ($n=14,006$) and VSs ($n=29,234$). The mean age of patients was 67 ± 10 years and 99.0% were male. Patients that underwent amputations by VSs had higher rates of renal failure requiring dialysis (13.8 vs 8.9%, $p < 0.001$), smoking history (42.5 vs 37.7, $p < 0.001$), steroid use (3.2 vs 2.8%, $p = 0.02$), CHF (14.1 vs 11.6%, $p < 0.001$), and COPD (21.2 vs 18.0, $p < 0.001$). The overall rate of post-operative complications between GSs and VSs was 19.8 vs 19.0%, $p = 0.047$ respectively. GSs had a higher overall rate of wound complications (7.1 vs 6.3%, $p = 0.002$) and death (13.3 vs 11.2%, $p < 0.001$). When risk adjusted, patients who had their amputations performed by GSs were also at higher risk for the following complications: wound complications (OR = 1.19, 95% CI: 1.09-1.30, $p < 0.001$), cardiac arrest (OR = 1.20, 95% CI: 1.03- 1.40, $p = 0.021$), pneumonia (OR = 1.14, 95% CI: 1.01-1.29, $p = 0.037$), and death (OR = 1.17, 95% CI: 1.09-1.25, $p < 0.001$).

Discussion: There are statistically less number of postoperative complications when VSs performed amputations than GSs even though VSs performed amputations on sicker patients. Our examination of this large national outcomes databases did not consider if patients underwent previous revascularization procedures and individual/local practice patterns. Referring clinicians should consider vascular consultation for patients who may be candidate for lower limb amputations.

	VSs (n=29234) (%)	GSs (n=14006) (%)	p-value
Wound complication	1849 (6.3)	996 (7.1)	0.002
Cardiac arrest	548 (1.9)	299 (2.1)	0.068
Pneumonia	821 (2.8)	482 (3.4)	<0.001
Death	3272 (11.2)	1869 (13.3)	<0.001
	VSs (95% CI)	GSs (95% CI)	p-value
Wound complication	Ref	1.19 (1.09-1.30)*	<0.001
Cardiac arrest	Ref	1.20 (1.03-1.40)*	0.021
Pneumonia	Ref	1.14 (1.01-1.29)*	0.037
Death	Ref	1.17 (1.09-1.25)*	<0.001

Table I: Comparison of outcomes between vascular and general surgeons.

References

1. Pei KY, Zhang Y, Sarac T, Davis KA. Comparison of Outcomes in Below-Knee Amputation between Vascular and General Surgeons. *Annals of Vascular Surgery*. 2018;50:259–68.