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Cost of Amputation Following Lower Extremity Endovascular Revascularization in Peripheral Artery Disease

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BACKGROUND

- Peripheral artery disease (PAD) is a prevalent and progressive atherosclerotic disease associated with significant morbidity, including limb loss.
- Lower extremity (LE) endovascular revascularization is a primary treatment strategy for PAD; however, despite procedural intervention, a subset of patients progress to amputation.
- The hospital cost burden of amputation following revascularization procedures remains poorly characterized in the literature.

OBJECTIVE

To evaluate hospital costs of LE amputation following endovascular revascularization in patients with PAD, including differences by comorbid conditions.

METHODS

- **Study Design:** Retrospective cost analysis.
- **Data Source:** Premier PINC AI™ Healthcare Database.
- **Population:** Adults aged 18+ with a PAD diagnosis from January 1, 2017 to December 31, 2022 who had an initial LE endovascular procedure (angioplasty, stenting, or atherectomy) and subsequently had an amputation procedure.
- **Excluded:** Patients with amputations likely performed for non-PAD conditions, including trauma or LE malignancy.
- **Amputation Classifications:** Major (ankle or above) and minor (foot or toes).
- **Outcome:** Direct hospital costs during the amputation encounter, inflation-adjusted to 2024 United States (U.S.) dollars.
- **Comorbid Condition Subgroups:** Patients with diabetes, chronic kidney disease (CKD), or chronic limb-threatening ischemia (CLTI).

RESULTS

Table 1. Baseline Characteristics of the Study Population

Study Population N=38,627	
Age in years, mean ± SD	65.0 ± 11.4
Female sex, %	32.4
CCI Score, mean ± SD	0.97 ± 1.68
Diabetes, %	34.9
CKD, %	19.7
CLTI, %	85.4

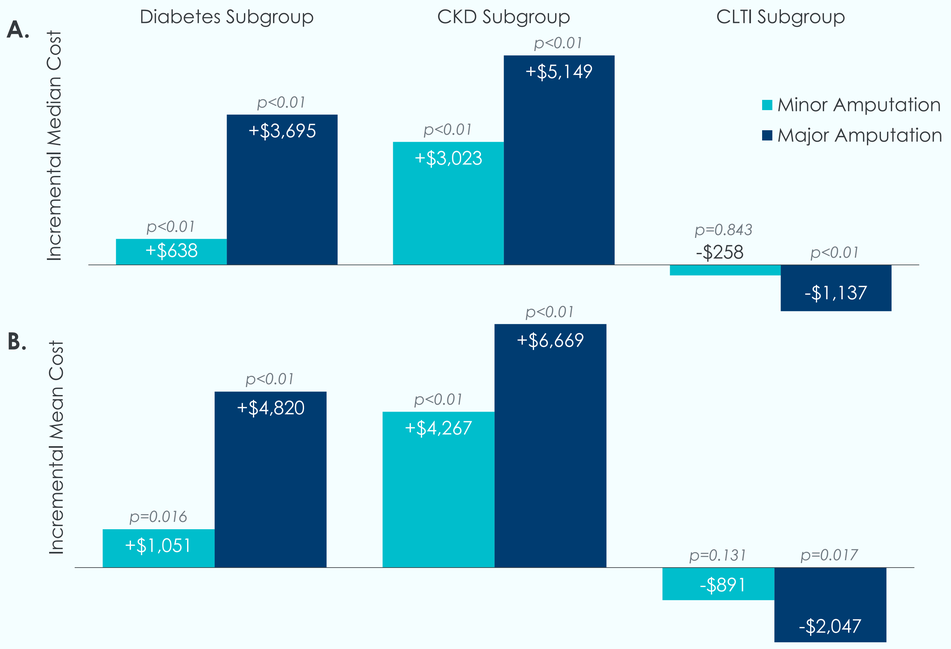
Abbreviations: SD = standard deviation; CCI = Charlson Comorbidity Index; CKD = chronic kidney disease; CLTI = chronic limb-threatening ischemia

Table 2. Hospital Costs of Minor and Major Amputation Encounters Following Endovascular Revascularization

	Minor Amputation	Major Amputation
Median	**$16,750** IQR: $6,935-$32,818	**$26,831** IQR: $15,695-$46,969
Mean	**$25,142** SD: $34,198	**$38,060** SD: $39,934

Abbreviations: IQR = interquartile range; SD = standard deviation

Figure 1. Incremental (A) Median and (B) Mean Hospital Costs by Comorbidity Status (Patients With vs. Without Condition)



CONCLUSIONS

- Hospital costs of LE amputations following endovascular PAD intervention are substantial, particularly among patients with diabetes or CKD.
- CLTI patients showed lower major amputation costs, which may reflect differences in clinical presentation or length of stay and warrants further investigation.
- These findings support the value of preventing progression to amputation through early and durable endovascular intervention, optimized medical management, and effective wound and foot care.

LIMITATIONS

- This study used administrative claims data, which are subject to inherent limitations, including limited clinical granularity and potential coding errors.
- Costs reflect hospital costs for the amputation encounter only and do not capture longitudinal costs, such as rehabilitation, outpatient care, or prosthetics.
- Although the Premier PINC AI Healthcare Database is broadly representative of U.S. hospitals, the results of this study do not reflect healthcare encounters that occurred at hospitals outside of the database.

DISCLOSURES

This study was funded by Boston Scientific. AMM, NA, AOW, and MRJ are full-time employees of, and shareholders in, Boston Scientific. VJ was a paid Intern at Boston Scientific at the time of this research.