

To Amputate or Not Amputate? A Retrospective Cohort Study Evaluating Complications following Amputation for Chronic Tibial and Fibular Osteomyelitis

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Introduction

- Chronic tibial and fibular osteomyelitis can be difficult to treat and may ultimately require amputation.
- Limited data exist comparing postoperative complications and long-term outcomes between patients managed with limb preservation versus amputation.
- Aim:** To compare postoperative complications and five-year outcomes among patients with chronic tibial or fibular osteomyelitis who underwent amputation versus limb preservation.

Results

- 27,750 patients** were initially identified, with **2,944 patients** included after propensity matching.
- Amputation was associated with higher rates of delayed wound healing, sepsis, bacteremia, and mortality (HR=1.27, p=0.04).
- Five-year survival was lower following amputation (**62.0% vs. 70.1%, p<0.001**).
- Patients without amputation had greater long-term antibiotic and opioid use.
- Amputation patients had fewer pain diagnoses (**6.4% vs. 9.1%, p<0.001**) but higher rates of reduced mobility or bed confinement (**14.0% vs. 9.8%, p<0.001**).

Complication	No Amputation N (%)	Amputation N (%)	Risk Ratio	P-value
Long-Term Antibiotic Use	591 (20.1)	401 (13.6)	0.679	<0.001
Opioid Use	159 (5.40)	125 (4.20)	0.786	0.039
Delayed Wound Healing	537 (18.2)	670 (22.8)	1.248	<0.001
Sepsis	735 (25.0)	886 (30.1)	1.205	<0.001
Bacteremia	442 (15.0)	546 (18.5)	1.235	<0.001
Death	597 (20.3)	734 (24.9)	1.229	<0.001

Methods

- Retrospective cohort study using a multicenter, deidentified database.
- Patients with chronic tibial or fibular osteomyelitis between March 2006 and March 2026 were identified and stratified by amputation status.
- 1:1 propensity score matching was performed to control for comorbidities and lower extremity fractures.
- Five-year outcomes were assessed using risk differences, risk ratios, and Kaplan-Meier survival analyses.

Discussion

- Amputation was associated with greater five-year mortality and medical morbidity but reduced long-term antibiotic and opioid use.
- Patients who underwent amputation had fewer pain diagnoses but were more likely to experience reduced mobility or bed confinement, highlighting a potential tradeoff between pain and functional outcomes.
- Limitations include the retrospective study design and use of a multicenter database, which may introduce variability in coding and reporting practices.

Conclusion

Lower extremity amputation for chronic osteomyelitis may increase mortality and morbidity when compared with non-operative management. The risk-benefit profile of amputation is critical to appropriate patient selection, shared decision-making and perioperative risk stratification.

