

# Comparison of Healthcare Costs between Reconstruction Procedure and Direct Amputation of Lower Extremities among Patients with Diabetic Neuropathic Arthropathy

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## BACKGROUND/OBJECTIVE

- Diabetic neuroarthropathy (Charcot) is a progressive, destructive joint condition predominately affecting the foot and ankle among patients with diabetes.<sup>1,2</sup>
- Although leading to permanent disability, direct amputation is a treatment option for diabetic Charcot perceived to have lower costs than limb reconstructions.<sup>3</sup>
- Our aim was to compare healthcare costs associated with reconstruction versus direct lower-limb (i.e., Lisfranc to transfemoral) amputation in real-world settings.

## METHODS

- **Data Source:** Premier Healthcare Database (PHD)  
Nationally representative U.S.-based encounter level electronic medial records  
Data Coverage: 01-JAN-2016 to 31-MAR-2025
- **Population**  
40 to 80 years of age  
Diagnosed with Diabetic Charcot (ICD10-CM codes)  
Treated with Limb Reconstruction vs. Direct Amputation (ICD10-PCS, CPT codes)  
Between 01-JUL-2016 (Washout: 6 Months) and 31-MAR-2022 (Follow-up: 3 Years)
- **Outcome**  
Total Healthcare Costs:  
▪ Index Surgery    ▪ During 3-year Follow-up    ▪ Index + 3-year Follow-up  
Category/Department-Specific Costs:  
▪ Emergency Room    ▪ Laboratory    ▪ Subsequent Surgery    ▪ Diagnostic Imaging  
▪ Prosthetic Supply    ▪ Room and Board    ▪ Physical Therapy    ▪ Other Orthopedic
- **Statistical Analysis**  
Propensity Score Matching on key demographic and clinical characteristics  
Linear mixed-effects model to estimate and compare costs

## RESULTS

**Table 1. Baseline demographic and clinical characteristics.**

	Reconstruction (N=2,424)	Amputation (N=1,279)	P
Age (years, mean(SD))	59.2 (9.3)	58.2 (9.3)	<0.01
Male (n, %)	1,585 (65.4%)	905 (70.8%)	<0.01
White (n, %)	1,991 (82.1%)	1,015 (79.4%)	0.08
Overweight/Obese (BMI ≥ 25kg/m <sup>2</sup> , (n, %))	1,154 (47.6%)	719 (56.2%)	<0.01
Smoking History (n, %)	916 (37.8%)	575 (45.0%)	<0.01
Foot Ulcer (n, %)	1,639 (67.6%)	1,017 (79.5%)	<0.01
Peripheral Arterial Diseases (n, %)	379 (15.6%)	310 (24.2%)	<0.01
Osteomyelitis (n, %)	1,073 (44.3%)	793 (62.0%)	<0.01
Chronic Kidney Diseases (n, %)	695 (28.7%)	529 (41.4%)	<0.01

**Table 2. Mean (95% CI) of Healthcare Costs**

	Reconstruction	Amputation	P
Index Surgery	\$20,470 (\$19,744, \$21,196)	\$23,166 (\$22,439, \$23,893)	<0.01
Follow-up	\$49,958 (\$46,505, \$53,411)	\$53,309 (\$49,850, \$56,768)	<0.01
Index Surgery + Follow-up	\$62,013 (\$56,364, \$67,611)	\$64,569 (\$58,919, \$70,220)	<0.01

**Table 3. Department-specific costs with major differences (Index Surgery + Follow-up)**

	Reconstruction	Amputation
Subsequent Surgery	\$9,668 (\$8,564, \$10,773)	\$8,013 (\$6,906, \$9,120)
Prosthetic Supply	\$18,152 (\$16,267, \$20,037)	\$6,715 (\$4,600, \$8,829)
Room and Board	\$34,838 (\$27,795, \$41,881)	\$46,090 (\$39,046, \$53,134)
Physical Therapy	\$2,377 (\$2,122, \$2,632)	\$4,976 (\$4,721, \$5,231)

## CONCLUSIONS

- Healthcare costs associated with limb reconstruction were significantly **lower** at the index surgery and over 3 years after the surgery.
- The differences were mainly attributed to lower **room/board** and **physical therapy** costs, despite higher prosthetic supply and subsequent surgery costs.
- **Post-amputation prosthetic costs** (\$5,000 - \$70,000)<sup>4</sup> were not included in the analysis.
- Given the potential survival benefit, limb reconstruction may be more **cost effective**.