Variation in Implant Selection for Ankle Fractures: Identifying Cost-Drivers

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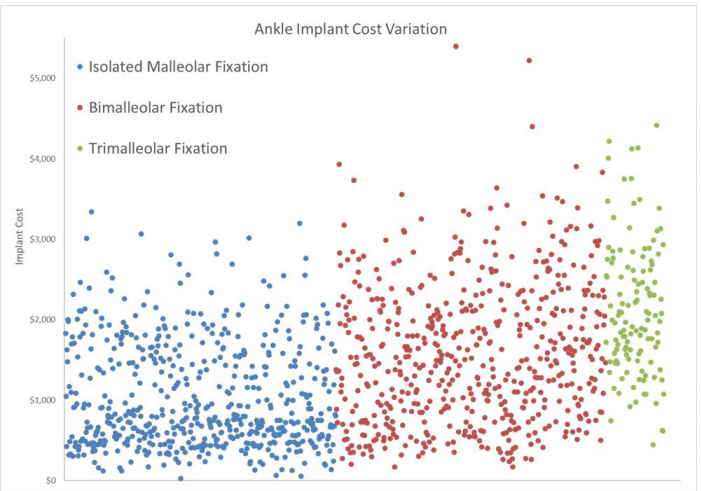
Purpose: There is significant variability in the cost of implants in orthopaedics without evidence of improved outcomes for more expensive constructs. The purpose of this study is to identify cost-drivers and determine if specialty training is linked to implant selection.

Methods: A 2010-2017 review was performed on 1278 patients at a Level-I trauma center. Patients were excluded for skeletal immaturity, open fractures, and concurrent surgeries. Variables assessed included demographics, OTA and Weber classifications, surgeon specialty, and use of locking plates and cannulated screws. Cost was determined via implant model numbers cross-referenced with the chargemaster database. Analysis involved intergroup comparative tests, regression, and goodness-of-fit analyses.

Results: Mean patient age was 46.1 years among 613 males and 665 females. Costs differed among OTA patterns (P <0.01), highest among 43C ($3771) and lowest with 44A ($819). OTA pattern prevalence was 44B (74%), 44C (16%), 44A (8%), and 43A-C (2%). Costs were comparable across Weber patterns (P = 0.15), with Weber B being the highest ($1494). Weber pattern prevalence was B (74%), C (17%), and A (1%). Costs were highest among reconstructive, foot and ankle, and podiatric surgeons, with mean costs of $1804, $1404, and $1357, respectively. Traumatologists offered the lowest price ($987). 433 procedures (33.8%) utilized locking plates with 512 (40.0%) utilizing at least 1 cannulated screw. Locking plates averaged a larger total implant cost ($1547) than nonlocking plates ($1313). Use of a cannulated screw had a higher cost ($1633 vs $1245).

Conclusion: There was significant variation in implant costs used for surgical management of the reviewed ankle fractures. Cannulated screws and locking plates were independent cost-drivers. Traumatologists offered significantly more cost-effective constructs than other specialties.



Scatterplot visualizing the total construct cost for ankle fracture between 2010 and 2017, between a metropolitan level I trauma center and an accompanying ambulatory surgery center (N=1281). Implants are sorted by increasing fracture fixation methodology and date of procedure within each fixation method.

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