

Contribution Margins for Ankle Fractures: Why Hardware Choice Matters

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Purpose: Hospitals and health-care systems of all sizes face complex financial pressures. Generally, hospitals are high volume, low margin businesses. One financial productivity measurement commonly employed by health-care systems is contribution margin. Operating expenses on a system-wide basis can be categorized as fixed or variable; contribution margin can be defined as revenue minus variable costs. This can be calculated for service lines, departments, surgeons, or procedures. We sought to determine the contribution margin for routine ankle fracture fixation. Further, we hypothesized that the variable costs of implants used during these cases might explain variations in contribution margin when such margins were compared among individual surgeons.

Methods: 289 cases from 5 surgeons over a 2-year period and classified as open reduction and internal fixation ankle were reviewed after IRB exemption was obtained. Only isolated rotational ankle injuries were included. Cases with a length of stay greater than 6 days were excluded, as these cases would have generated increased revenue not related to the ankle fracture surgery. After review, 239 cases remained, representing 5 surgeons. Revenues, indirect costs, and implant costs were calculated for each of these cases and contribution margins were calculated. The overall contribution margins were compared relative to implant cost and surgeon.

Results: Average collections were \$11,671. Average direct costs were \$5780. Average contribution margin was \$3894. Average implant costs per case were \$842. Implant costs varied widely by the surgeon, ranging from an average of \$588 for the lowest cost surgeon to \$1572 for the highest cost surgeon. This corresponded to a variation of 26% in the contribution margins attributable only to discretionary implant usage. The highest drivers of cost were the use of locked fibular plates over nonlocking implants, and the use of suture-based syndesmotic fixation over screw-only fixation.

Conclusion: Contribution margins are commonly used by hospital administrators and health-care systems to quantify the relative value of both overall service lines and individual surgeons. In this study, variations in implant usage directly correlated with relative contribution margins when compared among surgeons performing similar cases. Direct implant costs varied nearly 5-fold from the least expensive to the most expensive average implant usage. The variation largely demonstrated a lack of standardization among the surgeons, resulting in variable implant costs of over \$240,000 during the study period.