

### Can an Evidence-Based Treatment Algorithm for Intertrochanteric Hip Fractures Maintain Quality at a Reduced Cost?

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**Purpose:** This study was undertaken to compare the treatment costs of intertrochanteric hip fractures before and after the implementation of an evidenced-based treatment algorithm using the OTA classification system.

**Methods:** In March 2012 a classification-based treatment algorithm for intertrochanteric hip fractures (OTA 31-A) was implemented across our academic orthopaedic surgery department that included specified implant usage for specific fracture patterns. 102 consecutive patients presenting with intertrochanteric hip fractures were followed prospectively (post-algorithm group). Another 117 consecutive patients who had been treated immediately prior to the implementation of the algorithm were identified retrospectively as a control group (pre-algorithm group). OTA classification of fracture, type of hardware implanted (sliding hip screw [SHS], short cephalomedullary nail [CMN], long cephalomedullary nail [CMNL]) and implant cost as well as treatment-related complications were recorded. Comparisons were made between the two groups. The algorithm was retrospectively applied to the pre-algorithm group to determine the potential savings that would have resulted if the protocol was followed with these cases.

**Results:** The demographics of the two cohorts did not differ and the percentages of fracture patterns treated were similar. Prior to implementation of the algorithm 41.9% of patients were treated with a different implant than what would have been prescribed by the algorithm. Following institution of the protocol, 89% surgeon compliance was obtained. The total implant cost prior to algorithm implementation was \$357,457 (mean: \$3,055, standard deviation [SD]: \$1311): 27% SHS, 21% CMN, and 52% CMNL; compared to \$255,120 (mean: \$2,501, SD: \$1272) post-algorithm consisting of 40% SHS, 34% CMN, and 26% CMNL. Of note patients who were treated with the algorithm had fewer complications (33% pre-algorithm vs 22.5% post-algorithm) ( $P = 0.088$ ). The algorithm was applied retrospectively to the pre-algorithm group to determine the implants that should have been used (40% SHS, 39% CMN, 21% CMNL—similar to the distribution post-algorithm). Had the algorithm been used with the pre-algorithm cases, a total cost of \$284,500 (mean: \$2454.38, SD: \$1230.12) could have been obtained and \$70,295 potentially saved. The average cost savings per case would have been approximately \$601.

**Conclusion:** The implementation of an evidence-based intertrochanteric fracture classification/implant selection algorithm effectively reduced costs in our institution while maintaining quality of care with a lower rate of complications and readmissions. These cost savings are independent of any special pricing arrangements or institutional discounts that can also be arranged. This strategy has potential implications in physician gainsharing programs.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an “off label” use). For full information, refer to page 496.