

Disposable Reamer-Shafts for Intramedullary Nail Fixation: An Addressable Source of Extraneous Cost and Medical Waste in Orthopaedic Surgery

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INTRODUCTION:

A substantial proportion of medical waste comes from operative procedures and as such, surgeons have an opportunity to be stewards of this waste. The purpose of this study was to analyze the impact of switching from one-time use disposable reamer shafts to reusable reamer shafts for intramedullary nail fixation.

METHODS:

A retrospective review of a surgeon's practice at an urban level one trauma institution was performed (8/22/2018 to 5/23/2023) to identify reamed intramedullary nail fixation of femur and tibia fractures. Fractures that were fixed before and after the adoption of a reusable reamer shaft were identified. The estimated reduction in cost (\$292 US dollars per shaft) and metal waste (0.44 pounds (lbs) per shaft) was calculated. The number of disposable reamer shafts utilized over the same time frame (10/19/20 – 5/23/23) by the department were identified and the estimated combined reduction in cost and metal waste was calculated.

RESULTS:

The surgeon treated 141 fractures with reamed IMN fixation before and after switching to a reusable reamer shaft. The average age was 41 ± 20 years and 36.2% (102/282) were female. Fractures included OTA/AO fracture types 31 (n=58), 32 (n=84), 33 (n=24), 42 (n=112), 44 (n=4). No reamer-related complications were identified before or after the practice change. The estimated cost savings of switching to a reusable reamer shaft system was \$41,172 USD and metal waste was reduced by 62 lbs. Over the same time period, a total of 283 disposable reamer shafts were utilized by the same department. If the entire department had adopted using reusable reamer shafts during this time frame a total of 424 disposable reamer shafts would have been avoided, resulting in an estimated cost savings of \$123,808 USD and a metal waste reduction of 187 lbs.

DISCUSSION AND CONCLUSION: Disposable reamer shafts represent an easily addressable source of extraneous cost and metal waste in orthopaedic surgery. Considering the large amount of medical waste produced by the US healthcare system, this practice change, and others like it, should be considered.