Clinical Outcomes of Intermediate Length Cephalomedullary Nails for Intertrochanteric Femur Fracture Repair in Older Adults: A Case Series

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BACKGROUND: Hip fracture is a major cause of morbidity and mortality in older adults. Due to the rising number of older adults in the United States, the prevalence of hip fractures is expected to increase dramatically in the coming decades. Therefore, it is important to identify safe, effective and cost-efficient methods to treat hip fractures. A common surgical repair for an intertrochanteric hip fractures utilizes a surgical nail implanted across the fracture site (intertrochanteric) for stabilization. Several lengths of intertrochanteric nails are manufactured; short and long length nails are most commonly utilized nationwide, however, intermediate length nails are more commonly used in local surgeon practice. There is a wealth of literature documenting surgical and patient outcomes of short and long length nails, but a paucity of literature exists documenting outcomes for intermediate length nail. This retrospective case series documents outcomes for a series of patients undergoing fracture fixation utilizing the less commonly used intermediate length nail. It was anticipated that surgical and patient outcomes utilizing intermediate length nails would be similar to published outcomes data for short length nails.

METHOD: The purpose of this descriptive case series was to determine and describe surgical and post-operative outcomes for a total of 77 patients identified as having had intertrochanteric hip fracture with surgical repair by two local physicians at one local hospital during the calendar year 2015. Surgical outcome data were collected during the hospital inpatient stay and for the outpatient, post-operative period of 16 months. Inpatient, surgical outcome data included estimated blood loss during surgery, operative time, blood transfusion, superficial wound infection and length of hospital stay. Of the initial 77 patients, 33 were lost to follow-up following hospital discharge. As a result, post-operative outcomes were included for 44 subjects. Outpatient post-operative complications included deep infection, non-union, femoral head osteonecrosis, periprosthetic fracture, and hardware failure. Data were summarized using means and/or percentages as appropriate for descriptive data.

RESULTS: Comparison of results to available published literature suggest that intermediate length nails are comparable to short length nails with regard to operative time and estimated surgical blood loss. In this study the rate of blood transfusion was lower and length of hospital stay was shorter than in comparable studies of different length nails. Inference of a difference related to nail length is difficult as multiple other healthcare system factors may be involved. There were no post-operative periprosthetic fractures in the studied population which is lower than the rate seen in other studies, however, the fracture rate has been noted to increase over time. The hardware failure rate (6.8%) of intermediate length nails in this study appeared slightly higher than that seen in published studies however comparison is difficult since there is a wide variation of the definition of “hardware failure” by different researchers.

STUDY LIMITATIONS: Study limitations include a retrospective study design, small sample size, study population limited to one hospital in the Midwest and a shorter follow-up period after surgery.

CONCLUSION: Analysis of results of this case series suggest that post-operative outcomes for intermediate length nails are subjectively similar to outcomes of the shorter length nails. Results also suggest that utilization of the intermediate length nail is an effective treatment option for surgical repair of intertrochanteric femur fractures. Further study is needed with a larger sample size to determine statistical significance.