Does Distal Locking of Intertrochanteric Fractures Treated with Long IM Nails Enhance Functional Recovery?

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INTRODUCTION: Distal locking of long intramedullary nails used for intertrochanteric hip fractures may lead to greater stability. However, there are no studies of functional outcomes in those treated with and without locking. The purpose of this study is to compare the functional outcomes of a series of intertrochanteric fractures fixed with a long nail with and without distal locking with respect to peak recovery and recovery time.

METHODS: A single surgeon series of patients undergoing fixation of intertrochanteric fracture were prospectively studied. Patient factors including age, sex, fracture type, pre-injury functional status and functional outcomes were recorded. All patients were treated with a long cephalomedullary nail (Intertan Smith and Nephew, Memphis, TN) with and without distal locking. Those with subtrochanteric fracture extension or less than 30 days of follow-up were excluded. This was a sequential trial in which patients were not distally locked for the first half and these patients were compared with patients who had distal locking. All patients were treated by an experienced surgeon and the study did not include their learning curve with nailing. We compared the best achieved Harris Hip Score (HHS) and VAS pain between the groups and the time to achieve this result. Finally, we evaluated the patients' estimation of their recovery against their pre-injury state as a percentage.

RESULTS: There were 258 (146F:62M) patients with average age 83 (48-102) years. There were 82 two part, 14 three part, and 161 four part fractures. Two part fractures were less common in the locked group (18/137 vs. 64/120; $p < 0.0001$), and four part fractures were more common in the locked group (112/137 vs. 49/120; $p < 0.0001$). Length of follow-up in the locked cohort was longer (1057 (58-2813) days vs. 573 (34-3868) days; $p < 0.0001$) than the unlocked group. Pre-injury ambulatory status was better in the unlocked group than the locked group, but assistive living status did not differ between the groups. In follow-up, the best post-operative HHS scores (L=75.5; UL=73.4), lowest VAS pain scores (L=0.7; UL=1.0). The patients' estimation of their highest percent of recovery was 84% for both groups. The days to achieve their best HHS (295 vs. 432; $p = 0.04$) and VAS pain (161 vs. 260; $p = 0.04$) scores was shorter in the locked cohort. This was mirrored in the patients' assessment of the time to get to their maximal percent recovery (295 vs 366 days).

DISCUSSION AND CONCLUSION: We evaluated the post-operative functional outcomes of patients with intertrochanteric fractures treated with long cephalomedullary nailing with and without distal locking. While the best HHS and VAS pain scores were similar in locked and unlocked cohorts, these results were achieved statistically faster in the locked cohort. Recovery was 30% - 40% faster in the locked cohort. We recommend that long intramedullary nails be distally locked to diminish the time to maximum recovery.