

Outcomes in Young Hip Fracture Patients

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Purpose: Hip fractures in the young adult are rare and research has been more constrained than in the extensively investigated older population. We sought to establish the clinical outcomes of surgery in these patients and factors affecting recovery.

Methods: Over a 15-year period 830 patients were admitted to our center between the ages of 18 and 60 with a hip fracture. High-energy injuries such as road traffic collisions were excluded, as were those with bisphosphonate fractures and conservatively managed injuries. Letters were sent to 343 eligible patients of whom final complete clinical data were available for 73. Surgical outcomes data were available for all 343. The minimum period of follow-up was 9 months postinjury. Patients recorded Oxford Hip Scores (OHS) as the primary outcome measure and EuroQol (EQ)-5D was additionally taken as a quality of life measure. Baseline scores were recorded using patient recall and postintervention scores were taken following injury. Patients were stratified by type of fracture (OTA 31-A + subtrochanteric area/31-B1/31-B2+3) and type of operation (cannulated screws/total hip arthroplasty/hemiarthroplasty/sliding hip screw/intramedullary nail).

Results: The median change in OHS across all groups fell from 48.00 (interquartile range [IQR] = 0) at baseline to 41.00 (IQR = 19) postinjury. The preinjury visual analog scale [VAS] fell from 90 (IQR = 20) to 80 (IQR = 30). Wilcoxon signed rank test showed postinjury scores were significantly lower than baseline (OHS $z = 70$, $P < 0.001$; EQ-5D $z = 187$, $P < 0.01$; VAS $z = 294$, $P < 0.01$). There were no domain-specific associations with poor outcomes in either the OHS or EQ-5D and additionally no association with age or gender was found in statistical analysis with the OHS, EQ-5D, or VAS. Testing pre- and postinjury OHS using the Kruskal-Wallis test found a statistically significant difference in distribution across fracture types with OTA 31-B1 fractures almost returning to baseline function whereas B2 and B3 fractures showed a moderate decline and all other 31 and subtrochanteric area fractures a larger still decline ($P = 0.01$). No significant variation was found across fracture types with the EQ-5D and VAS.

All operation types demonstrated a fall in OHS and EQ-5D comparing pre- and postinjury scores with a statistically significant variation across groups. Fall in OHS was greatest with hemiarthroplasty (-16.33, SD = 13.91) followed by dynamic hip screw (-13.32, SD 12.18), intramedullary nail (-10.44, SD 12.88), cannulated screws (-4.31, SD 5.82), and finally total hip arthroplasty (-2.00, SD 15.30). Negative change in EQ-5D followed the same pattern as for OHS.

Conclusion: This group of 343 young hip fracture patients, 73 of whom were included in this analysis, is one of the largest groups reported to date. It is clear that young patients

with hip fractures as a group do not do well as measured by the OHS, with a mean fall of 9 points. Within the data are important insights into these patients. Minimally displaced intracapsular fractures (OTA 31-B1) can almost return to baseline function with appropriate management. Patients with displaced intracapsular fractures (OTA 31-B2+3) managed with total hip arthroplasty came close to a return to baseline with a mean fall of only 2 points of the OHS. Those with undisplaced fractures or displaced fractures managed with an open reduction both ultimately receiving cannulated screw fixation did well with a mean fall of 4 points. At the other end of the scale patients managed with hemiarthroplasty had the worst outcome falling over 16 points on the OHS from baseline. Given that this group, from a fracture rather than patient perspective at least, were the same as those receiving total hip arthroplasty, great care needs to be taken in choosing hemiarthroplasty if the poorest outcomes are to be avoided.