

Management and Outcomes of the Treatment of Intracapsular Neck of Femur Fractures in Young Patients

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Purpose: Intracapsular (IC) neck of femur (NOF) fractures represent a rare injury in young patients, most commonly associated with high-energy trauma. The cornerstone of their management is anatomic reduction and stable internal fixation of the femoral neck in an attempt to salvage the femoral head. The aim of our study was to evaluate the characteristics, outcomes, and complications of patients.

Methods: Over a seven-year period all patients presenting with IC NOF less than 50 years of age were eligible to participate. Exclusion criteria were older patients, pathological fractures and patients lost to follow up.

Results: Overall, 97 patients (pts) (99 fractures) fulfilled the eligibility criteria and were included in our study. The mean age was 39.3 years (range, 19.9-50.0; SD: 8.7 years). 58 patients were male, 52 fractures involved the left side, 1 patient sustained an open injury, and 13 pts sustained associated injuries. 35 fractures were undisplaced (Garden I: 5; Garden II: 30) and 61 were displaced (Garden III: 37; Garden IV: 24). Three fractures were not classified as the initial radiographs were unavailable at the time of the analysis. As per Pauwels classification, 12 fractures were type I, 34 type II, and 50 type III. Only 23 patients had dual-energy x-ray absorptiometry (DXA) scans, 5 of which were diagnosed with osteopenia and 9 with osteoporosis. The average time from admission to operating room (OR) was 13.9 hours (range, 0.7-158.3; median: 8.9 hours; SD: 21.8), whereas the average length of stay was 8.0 days (range, 1-151 days; median: 4.3 days; SD: 15.7 days). The majority of the fractures were treated with cannulated hip screws (CHS; 64 pts). Ten fractures were treated with a Dynamic Hip Screw (DHS) alone, whereas in 25 fractures a derotation screw was used along with the DHS. The mean tip-apex distance in the patients who received a DHS was 19.44 mm (range, 10-34 mm; median: 18 mm; SD: 6.1 mm). Complications were reported in 30 pts (some pts >1 complication), including nonunion in 16, avascular necrosis (AVN) in 15, screw cut-out in 5, and deep infection in 1. 13 patients underwent a total hip replacement (THR) following failure of their fixation. The risk ratio (RR) for developing a nonunion in the background of displaced fractures was 2.72 (95% confidence interval [CI]: 0.83-8.90), whereas the RR for developing AVN in displaced fractures was 2.09 (95% CI: 0.62-7.10).

Conclusion: This study demonstrates that the incidence of complications in IC NOF fractures in young pts remains high (30%), while a significant number of these patients receive a THR because of the failure to preserve the femoral head (13.4%). Regardless of the fixation method used the patient should be informed of the risk of complications, especially nonunion and AVN) and additional procedures, while a minimum follow-up of 2 years should be considered.