Open Diaphyseal Femoral Fractures Treated With Intramedullary Nailing: Incidence of Complications and Health-Related Quality of Life Outcomes
Hany Saleeb, MRCS; Theodoros Tosounidis, MD, PhD; Paul Harwood, FRCS; Nikolaos Kanakaris, PhD, MD; Peter Giannoudis, MD

Purpose: Our objective was to assess the incidence of open diaphyseal femoral fractures, postoperative complications, and outcomes.

Methods: This was a retrospective analysis of adult patients with open diaphyseal femoral fractures between February 2007 and January 2016. Exclusion criteria were proximal or distal articular femoral injuries, closed injuries, pediatric fractures, and fractures stabilized with plating or external fixators. Details documented and analyzed included patient demographics, mechanism of injury, Gustilo and AO classification, other associated injuries, ISS, time to operating theater, method of fixation, type of soft-tissue coverage, need of blood transfusion, length of hospital stay, follow-up period, and incidence of systemic and local complications. Health-related quality of life was assessed using the 5-Level EuroQol 5 Dimensions questionnaire (EQ-5D-5L). Mean follow-up time was 3 years.

Results: 50 patients (12.5%) (43 males) were included with mean age 36 years (range, 18-80). Gustilo classification included: Grade I, 10 cases; Grade II, 12; Grade IIIA, 14; Grade IIIB, 11; and Grade IIIC, 3 cases. The mean ISS was 21 (range, 9-57). 12 patients had retrograde reamed nailing due to associated knee/tibial injuries or associated pelvic injuries and 38 had reamed antegrade nailing. Soft-tissue reconstruction included primary closure in 18 cases, secondary closure in 17 cases (average time 2 days [range, 1-4]). 11 cases required skin grafting, 1 case rotational flap, and 3 free flaps. 21 patients necessitated blood transfusion on average 2 units (range, 1-6). Systemic complications included 1 case of pulmonary embolism, 3 cases of compartment syndrome, and 1 case of deep vein thrombosis. The union rate was 78% (39 patients) at a mean time of 7 months (range, 3-9). 11 patients (22%) developed non-union (7 cases of Gustilo III). The overall infection rate was 4%. There were 2 cases with rotational deformity, 1 case with shortening of 2 cm, and 2 patients developed heterotropic ossification Brooker Grade 1. Patients reported higher levels of anxiety and depression and lower quality of life, compared to healthy controls.

Conclusion: The incidence of nonunion is high and patients should be informed about this complication during the consent process. Moreover, it appears that the overall health-related quality of life and levels of anxiety and depression are higher compared to the healthy controls.