Analysis of Intertrochanteric Hip Fractures Failure: What Do Trauma Surgeons Agree Upon?

***Yoram A. Weil**; Mariano Agustín Codesido; Rami Mosheiff; Meir Liebergall; Amal Khoury*
Hadassah Hebrew University Hospital, Jerusalem, ISRAEL

Purpose: Intertrochanteric fractures (ITFs) are among the commonest pathologies treated by orthopaedic surgeons. Fixation failures are reported to occur between 5% and 16% according to established and also recent literature. However, the definition of failure, the rate of failure between different implants (ie, nails or extramedullary implants), and the causes of failure remain controversial. The aim of the study was to identify factors that are commonly identified by orthopaedic surgeons as risk factors for fixation failure following ITF.

Methods: Between 2008 and 2015 more than 3000 ITFs were operated in our center. Out of them 169 were identified as ones with significant change of fracture alignment or implant position postoperatively and were considered fixation failures. Out of them 138 sets of radiographs including preoperative, intraoperative fluoroscopic images, and immediate and late postoperative images were presented to 4 experienced (>10 years) fellowship-trained trauma surgeons as blind PowerPoint presentations, coupled with detailed study questionnaires. 100 cases had complete questionnaires filled in by all surgeons. Out of them 70 were fixed by percutenous compression plate (PCCP) and 30 by cephalomedullary nails. The surgeons were asked to fill in the details regarding AO/OTA classification, identification of posteromedial comminution, lateral wall fracture, implant preference (nail or plate), quality of reduction (by a score and specifically for the calcar), existence of a technical error, permission for postoperative weight bearing, and eventually type of failure based on 9 categories. Time frames of radiographs included preoperative, interaoperative, immediate, and late postoperative. It should be noted that intraoperative fluoroscopic images after reduction were found only in 40 patients. The Kendall tau nonparametric test was used to assess agreement between the 4 observers. With this test a nonsignificant ($P > 0.05$) value was considered as an agreeable parameter.

Results: Of all parameters the following were considered to have agreement between the surgeons: preoperative AO/OTA (31A1 to 3) classification, posteromedial communition after reduction, broken lateral wall (after reduction), implant preference, postoperative reduction quality of the calcar and the fracture, weight-bearing recommendation, and the existence of a surgical error. The observers failed to agree about the intraoperative AO/OTA classification, intraoperative reduction quality, and the type of failure observed.

Conclusion: Intraoperative decision-making in treating trochanteric fractures may be more complicated than it seems. Although significant variation among surgeons can be seen, experienced trauma surgeons do agree among crucial factors affecting surgical outcome including fracture classification, reduction quality, preferred implant, and the existence of surgical errors.

See pages 401 - 442 for financial disclosure information.