Early ORIF of Tibial Pilon Fractures Is Safe

Written by Wayne Kuznar

The complication rate with acute fixation of pilon fractures is comparable to that of delayed or staged fixation. Daniel Deakin, FRCS, University of British Columbia, Vancouver, British Columbia, Canada, presented early and medium-term data from a prospective cohort study examining early open reduction and internal fixation (ORIF) of tibial pilon fractures.

Although most centers advocate delay of ORIF until soft tissues settle, early ORIF has been favored, when feasible, at Vancouver General Hospital (VGH). A retrospective review of early definitive ORIF for tibial pilon fractures reported a complication rate that was comparable to published results of delayed or staged ORIF [White TO et al. *J Orthop Trauma.* 2010], but it was criticized for its limited follow-up of radiographic or functional outcome, said Prof Deakin.

The prospective study included 53 patients with 55 AO classification type 43-B (n = 17) or 43-C (n = 38) distal tibial pilon fractures definitively treated at VGH between 2004 and 2012. The goals were to determine the early complication rate and medium-term functional and radiographic outcomes. Whenever possible, early ORIF was performed using an anteromedial or anterolateral approach. Open fractures were managed with early soft tissue cover (< 7 days) while waiting for the antibiotic bead pouch technique to be used.

In addition to routine clinical follow-up, patients were assessed with radiographs and functional scores (Short Musculoskeletal Function Assessment, Short Form-36 [SF-36], and Foot and Ankle Outcome Scores [FAOS]) at baseline and 6, 12, and 60 months postoperatively. Osteoarthritis (OA) was graded using the modified Resnick and Niwayama criteria. Outcome measures were deep infection requiring reoperation; ankle arthritis requiring reoperation; functional scores at 6, 12, and 60 months; and radiographic OA at final follow-up.

Peer-Reviewed Highlights From the

Orthopaedic Trauma Association Annual Meeting

October 15–18, 2014
Tampa, Florida

The mean age of patients was 42 years. Three patients with 4 fractures were referred from other centers with external fixation and were managed with delayed ORIF. Of the remaining 51 fractures, 57% underwent definitive ORIF within 24 hours of injury, 79% within 48 hours, and 91% within 72 hours.

Of the 51 fractures undergoing acute definitive ORIF, the deep infection rate was 4.7% (2 of 43) for closed fractures and 25% (2 of 8) for open fractures. One patient had an ankle fusion following a deep infection, and 2 patients had aseptic nonunion that was successfully revised. Of the 3 patients (4 fractures) referred with a fixator, 1 patient sustained an open (IIIb) C3 fracture with significant metaphyseal bone loss and underwent delayed definitive fixation and free flap 14 days after injury. This patient underwent a below-knee amputation 4 months following deep infection.

Fifty patients completed > 1 year of radiographic follow-up. Using strict assessment of reduction, 34 had reduction graded as "anatomical," and 16 had reduction graded as "fair." The mean mental component scores on the SF-36 were not different at any follow-up time point compared with baseline; the mean physical component scores were significantly lower at all follow-up time points vs baseline ($P < .05$).

Patients with fair reductions were significantly more likely to develop moderate or severe arthritis than mild or no arthritis ($P = .009$), and patients with arthritis were significantly more likely to have worse FAOS scores at 12 and 60 months ($P < .05$).

An advantage of early ORIF is that it is an easier reduction; limitations include the difficulty of extrapolating its methods to low-volume centers without the facilities found at VGH. Prof Deakin concluded that acute fixation of pilon fractures is safe and results in comparable complication rates to those in published studies of delayed or staged fixation. Anatomical articular reduction is associated with better short- and medium-term functional outcomes and less radiographic OA.