Comment on Mohammed et al.: Intramedullary tibial nailing in distal third tibial fractures: distal locking screws and fracture non-union

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The treatment of distal third tibial fractures being challenging, we read with great interest the article by Mohammed et al. “Intramedullary tibial nailing in distal third tibial fractures: distal locking screws and fracture non-union” [1].

Modern tibial nail designs have interlocking holes that enable distal placement of screws in close proximity to the tip of the nail. Three distal interlocking holes at 5, 15 and 25 mm, respectively, from the nail tip are common in current tibial nails. Also success of at least two interlocking screws in the distal fragment after removal of the distal tip of the traditional nail has been reported [2]. Screw failure and malalignment have been common problems reported in the literature following the use of a single interlocking screw in distal tibial fractures [3, 4]. Distal locking screws have less cortical purchase in metaphyseal bone; as control of the intramedullary nail position in the distal tibial canal depends on these screws, there is increased stress on the screws to maintain fracture alignment [4]. Consequently late complications, in particular loss of reduction, are attributed to implant failure at the distal locking sites of the intramedullary nail [4]. The study [1] however reported that 52% of the cases had only one distal locking bolt, which is against accepted principles.

Also Mohammed et al. reported that 5 of 12 cases with a single distal screw treated for non-union had unreamed nailing. The unreamed interlocking nail screw system cannot be equated with reamed interlocking nails. Mosheiff

et al. [5] reported that 22 of 52 patients with distal tibial metaphyseal fractures treated with unreamed nailing required secondary procedures (e.g. dynamisation, autogenous bone grafting, fibulectomy) to progress to union. Thus the use of unreamed nails may have been an important variable in the non-union cases.

Designed as temporary implants, the unreamed nails can only bear a certain number of load cycles, significantly less than the locking screws of reamed nails. As a consequence, screw failure occurs frequently in unreamed nailing, especially on weight-bearing [6]. In spite of 46% of the cases in the study by Mohammed et al. having unreamed nailing, they had only one (0.9%) incidence of screw breakage. It would be helpful if the authors could detail the postoperative protocol and the method of supplementary protection used, if any, during mobilisation and ambulation in the two subsets of patients as these also influence the screw breakage and healing process.

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