Has the role of tibial interlocking nailing in closed tibial-shaft fractures diminished?

Sanjay Meena · Vivek Trikha · Sukesh Rao Sankineani ·
Ramakant Kumar · Pramod Saini

Received: 14 August 2012 / Accepted: 4 September 2012 / Published online: 20 September 2012
© Springer-Verlag 2012

We read the article by El-Sayed and Atef [1] with great interest, and the authors must be commended. However, we would like to share some concerns regarding this article.

The authors chose low-energy trauma closed-midshaft tibial fractures for Ilizarov application. The ilizarov external fixator has a proven role in the fixation of open, comminuted fractures associated with severe soft-tissue insult, but for the type of closed tibial diaphyseal fractures assessed by the authors, tibial interlocking nail is the most common method of fixation and is still considered the gold standard for treatment [2]. There have been a plethora of clinical studies over the past two decades showing tibial interlocking nails to be associated with superior outcomes and less complications compared to those obtained with open reduction and internal fixation (ORIF), external fixation, or nonoperative treatment in case of closed stable or unstable fractures [3].

The authors claim that their technique provided adequate stability and led to primary healing in most of their cases. However, the primary bone healing reported by the authors has more to do with lag-screw fixation than with Ilizarov fixator application, which heals by secondary bone healing. The standard textbook teaching is that interfragmentary screws in the diaphyseal region usually should be avoided, as they negate axial flexibility of the Ilizarov external fixator and lead to delayed union/nonunion [4]. These two systems should not be mixed, except in intra-articular fractures with shaft extension, where screws are placed in the periarticular region to achieve primary compression at the articular

surface, whereas Ilizarov fixation assists metaphyseodiaphyseal stability [5].

Further, the classification system used in the study was not mentioned. Lag screws produce their best effect when the screw is perpendicularly oriented in relation to the fracture, which may not be possible in Arbeitsgemeinschaft für Osteosynthesefragen/Orthopaedic Trauma Association (AO/OTA) type A3/B3. The authors first applied compression at the fracture site with a percutaneous lag screw, and then the Ilizarov external fixator was applied. Any attempt to achieve further compression with Olive wires may not be beneficial if an adequate number of lag screws was used.

There are some methodological flaws in the study also. The “Abstract” states the randomised blinded nature of the study, which is not evident in the “Materials and methods” section. The two comparative groups requisite for randomisation and statistical analysis are also not discussed in the article. Complications of the interlocking nail enumerated by the authors are not implant specific. There were pin-tract infections in 25 % of patients, which was attributed to inadequate or poor frame care in noncompliant patients. Proper compliance is essential in patients with Ilizarov fixator to avoid such infections.

The target population in Bhandari et al.'s study were patients with open fractures of the tibial diaphysis fixed with external fixation, plate fixation and intramedullary nails with or without reaming [5]. as both studies have different study populations, they cannot be compared. El-Sayed and Atef may have obtained excellent results in his research, which is commendable, but in our opinion, it remains to be determined whether the results are reproducible in the hands of an average orthopaedic surgeon, as Ilizarov is technically much more demanding than the standard tibial interlocking nail.

S. Meena (✉) · V. Trikha · S. R. Sankineani · R. Kumar · P. Saini
Department of Orthopaedics, All India Institute of Medical
Sciences (AIIMS),
New Delhi -110029, India
e-mail: sanjaymeena@hotmail.com

References

1. El-Sayed M, Atef A (2012) Management of simple (types A and B) closed tibial shaft fractures using percutaneous lag-screw fixation and Ilizarov external fixation in adults. *Int Orthop*. doi:[10.1007/s00264-012-1620-8](https://doi.org/10.1007/s00264-012-1620-8)
2. Bhandari M, Guyatt G, Tornetta P, Schemitsch EH (2008) Study to prospectively evaluate reamed intramedullary nails in patients with tibial fractures (SPRINT): study rationale and design. *BMC Musculoskelet Disord* 23:1–15
3. Alho A, Benterud JG, Høgevoid HE (1992) Comparison of functional bracing and locked intramedullary nailing in the treatment of displaced tibial shaft fractures. *Clin Orthop Relat Res* 277:243–250
4. Canale ST (2009) Campbell's operative orthopaedics, vol 3, chapter 51, 11th edn. Mosby Elsevier, Pennsylvania, pp 3129–3138
5. Bhandari M, Guyatt GH, Swiontkowski MF, Schemitsch EH (2001) Treatment of open fractures of the shaft of the tibia. *J Bone Joint Surg Br* 83:62–68