

Clinical and Radiographic Outcomes Following Plate Fixation of Lateral Tibial Plateau Fractures

Markus Parkkinen, Rami Madanat, Antti Mustonen, Seppo K Koskinen, Mika Paavola, Jan Lindahl

Helsinki University Central Hospital

Background

The indications for operative treatment of lateral tibial plateau fractures are still controversial. Commonly used criteria are the presence of an articular surface depression of more than 2 mm or a valgus deformity of more than 5 degrees, yet there is little data on the medium and long-term outcomes following these criteria. The objective of this study was to determine if residual articular surface depression and valgus malalignment of plated lateral tibial plateau fractures at medium-term follow-up affect the clinical and radiographic outcomes.

Material and Methods

A chart review of all patients with operatively treated tibial plateau fractures that were admitted to our Level I trauma center between January 2002 and December 2008 was performed. We identified 123 patients with lateral tibial plateau fractures (AO/OTA type B3.1) who had been treated using plate fixation. 73 patients were available to participate in a clinical and radiographic follow-up examination. The mean follow up time was 4,5 years.

Hospital records, including operative reports were reviewed. All patients were clinically assessed and completed the Modified Lysholm knee score and the Western Ontario and McMaster Universities osteoarthritis index (WOMAC). The maximal articular surface depression, radiological mechanical axis and degree of posttraumatic osteoarthritis were evaluated from standing radiographs.

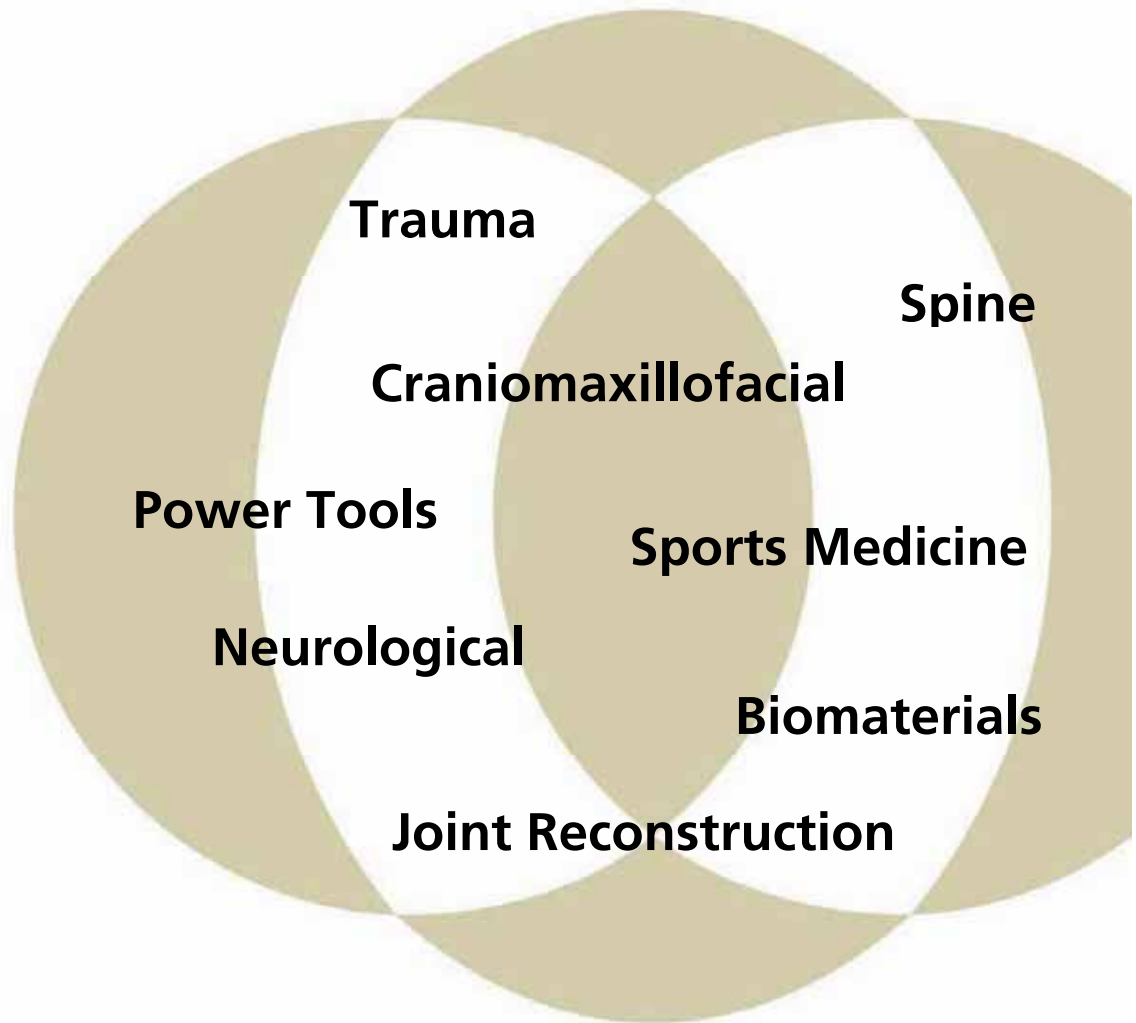
Results

Patients with a valgus malalignment of 5 degrees or greater at follow-up developed more advanced osteoarthritis (Kellgren-Lawrence grade 3-4) than patients

with a normal mechanical axis ($p=0.006$). Similarly, patients with an articular depression greater than 2 mm at follow-up also developed more advanced osteoarthritis compared to patients with a depression of 2 mm or less ($p=0.001$). The degree of valgus malalignment or articular depression had no effect on WOMAC or Lysholm scores. The BMI, type of bone substitute used, surgeon experience, or plate type (buttress plate or angle-stable plate) did not affect the radiological results or functional outcome.

Conclusion

The restoration and maintenance of articular congruity and mechanical axis of the lower leg after plate fixation in lateral tibial plateau fractures seems to have an important role in prevention of post traumatic osteoarthritis but does not appear to predict clinical outcome at medium-term follow-up.



= DePuy Synthes

DePuy Synthes
Mannerheimintie 105
00280 Helsinki

puh. (09) 696 2540
faksi (09) 6962 5420
www.depuysynthes.com