

Editors Comments:

1. Add Biostatistics, Conflict of Interest and Data Sharing Statements.

These have been added as requested

2. Add an Audio Core Tips.

This has been added as requested.

3. It is an table, not figure, please named it table, and list all tables in order. Thank you!

This has been adjusted as requested.

4. Add a Comments Section.

This has been added as follows:

COMMENTS

(1) Background

Tibial plateau fractures account for 1% of all fractures. The main causes for these injuries include road traffic accidents, falls from a height, pedestrian struck by motor vehicle and high-impact sporting collisions. Despite sport being a common cause for this injury, the literature on return rates and return times to sport for this fracture type remains limited. Such data is valuable to sporting medical personnel and sports teams alike, as this can allow optimisation of management and rehabilitations technique for this injury, ensuring optimisation of sporting outcome for the affected athletes.

(2) Research frontiers

Despite comprising only 1% of all fractures, tibial plateau fractures represent an injury with significant morbidity, due to the intra-articular nature of the fracture. This is particularly the case for athletes sustaining this injury, as return to sport can be significantly affected. Despite sport being a well-documented cause for this injury, data on return to sport following this fracture remains limited, as most studies present outcome data through combined scoring systems, failing to differentiate sporting outcomes. Given the significant difficulties experienced by athletes planning to return to sport following this injury, accurate information on the return rates and return times to sport for this fracture type, stratified by fracture classification and treatment modality, can allow sporting medical personnel and sports team to appropriately select the optimal treatment modality for each patient and adequately schedule rehabilitation programmes following these injuries. By optimising the treatment and rehabilitation of these injuries, this can ensure that affected athletes achieves the optimal sporting outcome possible.

(3) Innovations and breakthroughs

In our systematic review, we identified 27 studies which reported either return rates or return times to sport following tibial plateau fractures: all studies recorded return rates; only one study recorded return times. One study reported on the outcome of conservatively-managed fractures; all 27 studies reported on the outcome of surgically-managed fractures. The surgical techniques comprised Open Reduction Internal Fixation (ORIF), Arthroscopic-Assisted Reduction Internal Fixation (ARIF) and Frame-Assisted Fixation (FRAME). The return rates were: Total Cohort 70%; Conservatively-Managed Cohort 100%; Surgically-Managed Cohort 70%. For the different surgical techniques, the return rates were: ORIF Cohort 60%, ARIF Cohort 83% and FRAME Cohort 52%. The recorded return time was 6.9 months (median), from a study reporting on ORIF. ARIF was more commonly used for lower energy fracture patterns (Schatzker I-III; AO/OTA Type A & B), while ORIF and FRAME were used for all fracture patterns. ARIF provided the best return rates to sport, particularly for the lower energy fracture patterns. Data however is limited, particularly for return times to sport. Further research in this area is required.

(4) Applications

A comprehensive understanding of the expected return rates and return times to sport following tibial plateau fractures, stratified by fracture pattern and treatment modality, ensures the treating clinician can appropriately select the optimal method of management, to allow the best possibility of return to sport post-injury. Such information can also allow sports team to realistically plan rehabilitation schedules, with a better understanding of the required treatment duration before athletes will be able return to sport. This allows optimization of both the management and outcome of these injuries.

(5) Terminology

Arthroscopic-Assisted Reduction Internal Fixation – Fixation of a Tibial Plateau Fracture with Internal Fixation and an Arthroscope to ensure accurate articular surface reduction.

Frame-Assisted Fixation – Fixation of a Tibial Plateau Fracture with an External Fixation Device.

Non-Bridging Frame – an External Fixation Device which does not bridge across the knee joint.

Bridging Frame - an External Fixation Device which bridges across the knee joint.

Arthroscopic-Assisted Frame Application - Fixation of a Tibial Plateau Fracture with an External Fixation Device and an Arthroscope to ensure accurate articular surface reduction.

Frame Application with Internal Fixation - Fixation of a Tibial Plateau Fracture with an External Fixation Device along with Internal Fixation.

AO/OTA Classification – the Arbeitsgemeinschaft für Osteosynthesefragen /Orthopaedic Trauma Association Tibial Plateau Fracture Classification. This comprises three main categories: Type A – Extra-Articular; Type B – Partial Articular; Type C – Articular.

Schatzker Classification - the Schatzker Tibial Plateau Fracture Classification. This comprises six groups: I – Lateral Plateau Split Fracture; II – Lateral Plateau Split-Depression Fracture; III – Lateral Plateau Depression Fracture; IV Medial Plateau Fracture; V – Bicondylar Fracture; VI – Bicondylar Fracture with Metaphyseal-Diaphyseal Disassociation.

Reviewer 1:

abbreviations are used very frequently , and all are not standard abbreviations

1. 'AARIF' (Arthroscopic-Assisted Reduction and Internal Fixation) has been changed to 'ARIF' throughout the text, for improved succinctness
2. 'FAF' (Frame-Assisted Fixation) has been changed to 'FRAME' throughout the text, for improved clarity.
3. In Table 4, the following abbreviations have been changed, to improve succinctness:
 - 'AAPSF' (Arthroscopic-Assisted Reduction and Percutaneous Screw Fixation) to 'APSF';
 - 'AACF' (Arthroscopic-Assisted Reduction & Cement Filling) to 'ACF';
 - 'AAPF' (Arthroscopic-Assisted Plate Fixation) to 'APF'.
4. In Table 5, the following abbreviations have been changed, to improve clarity:
 - 'Fr & IF' (Frame Application with Internal Fixation) to 'Frame & IF';
 - 'Arthro Fr' (Arthroscopic-Assisted Frame Application) to 'Arthro Frame';
 - 'BF' (Bridging Frames) has been written in full;
 - 'NBF' (Non-Bridging Frames) has been written in full.
5. In Table 6, the following abbreviations have been changed:
 - 'AAPSF' (Arthroscopic-Assisted Reduction and Percutaneous Screw Fixation) to 'APSF';
 - 'Arthro Fr' (Arthroscopic-Assisted Frame Application) to 'Arthro Frame';
 - 'Arthro Fr & IF' (Arthroscopic-Assisted Frame Application with Internal Fixation) to 'Arthro Frame & IF';

Reviewer 2:

The authors investigated return rates to sports following to tibial plateau fractures by reviewing plenty of literatures. They concluded arthroscopic assisted reduction and internal fixation was superior to other operative procedures. The manuscript is nice and well written. I would recommend the manuscript to be accepted without revision.

Nil to add