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Systematic review on management and outcomes following proximal tibial peri-articular fracture-related infections

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Background: Tibial plateau fracture related infection (FRI) is a common but dreaded complication following surgical management. The diagnosis and management of this condition poses a challenge to clinicians. To date, all systematic reviews on this topic evaluate the incidence and risk factors for tibial plateau FRIs.

Objective: This systematic review primarily aims to evaluate the current literature on the management strategies employed to eradicate tibial plateau FRIs, and report on their outcomes. Furthermore, it aims to report variations in diagnosis and management of this complication.

Methods: A search was performed on Medline, Embase and Cochrane Library Central Register for Controlled trials using terms synonymous with tibial plateau, infection, and fracture. Studies were reviewed for eligibility against a pre-defined inclusion and exclusion criteria. The quality of included studies was assessed using the Coleman Methodology Score (CMS). Data pertaining to study characteristics, diagnostic tool and management strategies was collected.

Results: A total of 13 studies met the inclusion and exclusion criteria. An additional study was identifying through snowballing of relevant literature. The average CMS score was poor. Eleven studies had a level of evidence (LoE) of 3, whilst three had a LoE of 4. Of the 232 cases, 47 were superficial FRIs and 185 were deep FRIs. Most cases of superficial FRIs (94.8%) could be eradicated with antibiotics with or without debridement. Deep FRIs require a more aggressive approach, with antibiotic and debridement only eradicating 23.3% of infections. Deep FRIs are associated with an increased number of debridement procedures (mean 2.1) and additional procedures (mean 3.8). Eradication rates were 79.7%. Diagnostic strategies and functional outcomes were poorly reported across most studies. Non-union, bone loss and soft tissue coverage was associated with poor functional and clinical outcome scores.

Conclusion: Tibial plateau fracture-related infections are a challenge to diagnose and manage. The pathogenesis of superficial, deep, acute, and chronic FRIs are varied, therefore different therapeutic approaches need to be taken to successfully eradicate each pathology. Further studies with homogenous definitions and robust methodology are required to better evaluate the management strategies of this condition.

Recent Publications

1. Choo KJ, Morshed S. Postoperative complications after repair of tibial plateau fractures. The journal of knee surgery. 2014; 27:11–19. doi: 10.1055/s-0033-1363517.
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3. Phisitkul P, McKinley TO, Nepola JV, Marsh JL. Complications of locking plate fixation in complex proximal tibia injuries. J Orthop Trauma. 2007; 21:83–91. doi: 10.1097/BOT.0b013e31803d0f96.

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