Pre-Treatment MRIs in Tibial Spine Fractures: How Much Are We Missing without Advanced Imaging? A Multicenter Study

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OBJECTIVES

Tibial spine fractures are uncommon injuries with **no gold standard workup or treatment for all patients**. These fractures present with a high rate of concomitant injuries; yet, **many tibial spine fractures are treated without an initial MRI**. Early knowledge of such associated injuries can help with preoperative case planning and facilitate a more accurate informed consent process.

We aimed to understand the overall incidence of concomitant injury in tibial spine fractures and compare the rate of concomitant injury in patients with and without a pre-treatment MRI.

METHODS

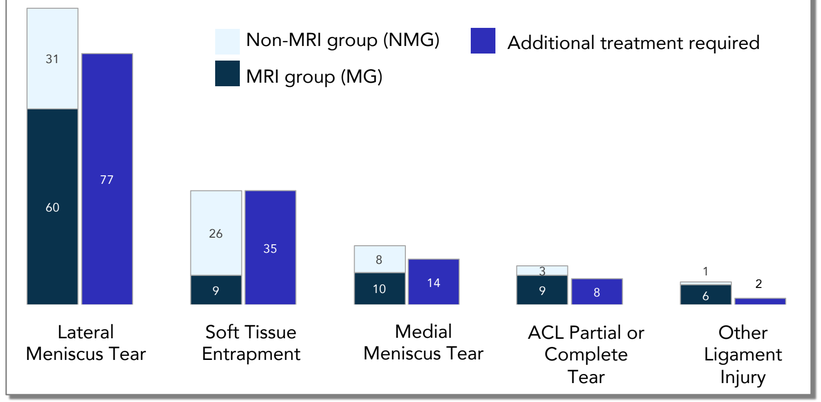
- Retrospective review of patients presenting with tibial spine fractures from 2000-2019 at 13 institutions
- Patients assigned to MRI group (MG) for cases with a pre-treatment MRI or non-MRI group (NMG) for cases without pre-treatment MRI
- Demographics, pre-treatment imaging, operative findings, and additional treatment requirements were recorded
- Patient demographics were similar between the two groups, with no significant differences in BMI, age, fracture type, or sex
- The incidence of reported concomitant injury was compared between the two groups

RESULTS

- 402 patients met inclusion criteria: 179 in MG and 223 in NMG
- **141 patients (35%) had a concomitant injury associated with the tibial spine fractures**
  - MG: 79 patients (44%)
  - NMG: 62 patients (28%)

- **Patients in the MRI group had higher rates of concomitant injury than patients in the non-MRI group ($p<0.001$)**
  - Higher rate of lateral meniscus tear ($p<0.001$), ACL partial or complete tears ($p<0.05$), other ligament tear/sprain (MCL, LCL, posterolateral corner injury) ($p<0.05$), and cartilage injuries ($p<0.05$) in MG patients compared with NMG patients

COMMON INJURIES AND TREATMENT REQUIREMENTS



CONCLUSIONS

Utilizing either pre-treatment MRI or arthroscopic evaluation during treatment of pediatric tibial spine fractures is necessary due to a high rate of concomitant injury and potential for additional treatment requirements.

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