

# Is Pretreatment Magnetic Resonance Imaging Necessary Prior to Surgery in Pediatric Tibial Spine Fractures

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# Disclosures

- No Disclosures
- The views expressed in this presentation are those of the authors and do not reflect the official policy of the US Army/Navy/Air Force, the Department of Defense, or the U.S. Government

# Background

- MRI is considered to be standard of care for evaluation of patients with anterior cruciate ligament (ACL) injuries, but its utility in management of tibial spine fractures (TSF) is not known.
- Though MRI can help to diagnose concomitant injuries (utility), it's procurement (feasibility) may delay surgical treatment of displaced tibial spine fractures.
- The purpose of the study was to evaluate the utility and feasibility of MRI in management of displaced tibial spine fracture in children and adolescents

# Methods

- Utilizing an institutional review board approved retrospective study, we identified patients under 18 years of age who underwent arthroscopic management of a TSF from December 31st 2008 to December 31st 2021.
- Exclusion criteria were patients with a concomitant lower extremity fracture or posterior cruciate ligament injuries, poor imaging quality, and incomplete medical records.
- Patients were then grouped based on whether a preoperative MRI was obtained (cases) or not (controls). MRI was evaluated for concomitant injuries and correlated with arthroscopic findings noted in written operative reports.
- The time from injury to surgery, total operative time and tourniquet time were compared between the two groups.
- Chi-Squared and Fisher's Exact testing was used to compare concomitant pathology. ANOVA testing was used to compare tibial slopes between groups.

# Results

- 44 Patients in MRI group, 41 patients in Non-MRI group
- No difference in average age, gender, Mckeever grade
- 63% of pathology seen on MRI confirmed at Arthroscopy

	Seen on MRI (% Total Patients)	Seen on Arthroscopy MRI Group (% seen on MRI)
<b>Medial Meniscus Tear</b>	6 (13.6%)	4 (66.7%)
<b>Medial Meniscus Interposed</b>	2 (4.5%)	4 (150%)
<b>Lateral Meniscus Tear</b>	13 (29.5%)	8 (61.5%)
<b>Intermeniscal Ligament Interposed</b>	6 (13.6%)	1 (16.7%)
<b>Total (%)</b>	27 (61.4%)	17 (63%)

# Results

- No difference in amount of pathology seen between MRI group and Non-MRI group

	Seen on Arthroscopy MRI Group (% Total)	Seen on Arthroscopy Non-MRI group (% Total)	
<b># of Patients</b>	44	41	
<b>Medial Meniscus Tear</b>	4 (9.1%)	0 (0%)	P=0.64
<b>Medial Meniscus interposed</b>	4 (9.1%)	5 (12.2%)	P=0.42
<b>Lateral Meniscus Tear</b>	8 (18.2%)	7 (17.1%)	P=0.89
<b>Intermeniscal Ligament interposed</b>	1 (2.3%)	3 (7.3%)	P=0.35
<b>Total (%)</b>	17 (38.6%)	15 (36.5%)	P=0.85

# Results - Continued

- Difference in time between injury and surgery
- No difference tourniquet time or operating room time

	MRI Group	No MRI Group	
<b>Time to Surgery (days)</b>	<b>19.3</b>	<b>10.1</b>	<b>P&lt;0.01*</b>
<b>Tourniquet Time (min)</b>	<b>72.5</b>	<b>76.5</b>	<b>P=0.49</b>
<b>OR Room Time (min)</b>	<b>83.5</b>	<b>90.5</b>	<b>P=0.33</b>

# Conclusions

- The majority of patients who sustained a displaced tibial spine fracture were noted to have concomitant pathology on MRI; most of these could be correlated at arthroscopy.
- Patients with a preoperative MRI had increased time between injury and surgery without any significant change in operative time, tourniquet time, or percentage of pathology identified at time of surgery.
- Preoperative MRI may delay surgery and may not impact intraoperative time or amount of pathology identified
- Routine use of MRI prior to arthroscopic management of displaced tibial spine fractures in children and adolescents may not be warranted.



# Thank You!