

Tibial Plateau Fractures and Compartment Syndrome: A Multicenter Retrospective Analysis

Robert V. O'Toole MD, Ida Leah Gitajn MD MS, Zachary A. Panton BA, *et al.*

Introduction

- Infection is a debilitating complication for patients receiving Open Reduction and Internal Fixation (ORIF) after traumatic tibial plateau fracture.
- Patients who suffer from compartment syndrome are often treated via emergent fasciotomy, which relieves pressure within the inflamed muscle compartment.
- Orthopedic surgeons lack clear guidance on the best way to manage ORIF and fasciotomy sites to minimize risk of surgical site infection.
- Previous studies have indicated that tibial plateau fractures with a concomitant ipsilateral compartment syndrome have significant increase in infection risk (2).

Research Question

- Is the timing of fasciotomy and ORIF a modifiable risk factor to decrease infection risk for tibial plateau patients?

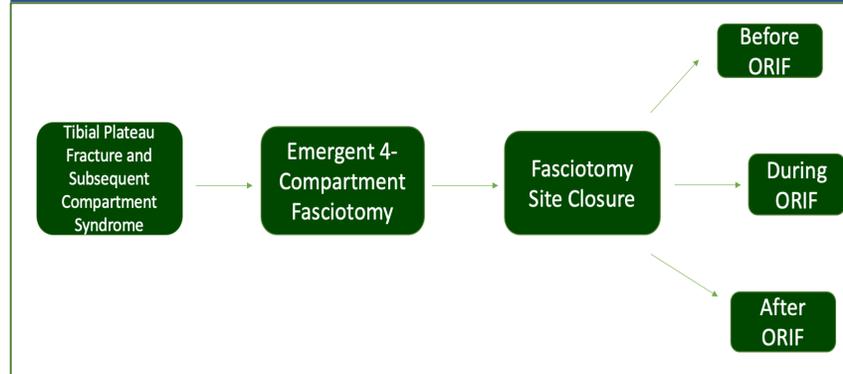
Methods

- This study was a multicenter (18 trauma centers), retrospective study that aggregated data from patients who suffered from a tibial plateau fracture between 2009 and 2019.
- Patient charts were analyzed within the medical record to determine when fasciotomy wounds were closed in relation to when ORIF surgical sites were closed.
- The timing of the surgical intervention was organized into three different categories: ORIF prior to fasciotomy closure, ORIF during fasciotomy closure, and ORIF after fasciotomy closure.

Results

Infection	Before ORIF	During ORIF	After ORIF
Infection (%)	23	17	23
Infection (#)	36	30	61

Fasciotomy-ORIF Treatment Flow



Results

- Of the 607 patients analyzed in the study, 127 patients (21%) suffered from a surgical site infection after fasciotomy and ORIF.
- Schatzker 6 fracture was associated with the highest risk of infection in comparison to all other Schatzker fracture types (24% vs 13%).
- There was no evidence to support that the timing of definitive fixation relative to fasciotomy site closure had any effect on mitigating infection risk in this patient population ($p=0.21$).

Conclusion

- The data showed that the risk of surgical site infection is relatively equal, regardless of the timing of the fasciotomy and surgical site closures.
- It is unclear whether timing of fasciotomy and ORIF site closures is a modifiable risk factor to improve outcomes in these patients

Schatzker Tibial Plateau Fracture Classification



References

1. Kfuri, Mauricio, and Joseph Schatzker. "Revisiting the Schatzker Classification of Tibial Plateau Fractures." *Injury* 49, no. 12 (December 1, 2018): 2252–63. <https://doi.org/10.1016/j.injury.2018.11.010>.
2. Zura RD, Adams SB Jr, Jeray KJ, Obremskey WT, Stinnett SS, Olson SA; Southeastern Fracture Consortium Foundation. Timing of definitive fixation of severe tibial plateau fractures with compartment syndrome does not have an effect on the rate of infection. *J Trauma*. 2010 Dec;69(6):1523-6. <https://doi.org/10.1097/TA.0b013e3181d40403>. PMID: 20495494.