

# Trauma Rounds

Case Reports from the Mass General Hospital and Brigham & Women's Hospital

A Quarterly Case Study

Volume 1, Fall 2009

## Wiring Tibial Tubercle Fractures



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A fracture of the tibial tubercle when associated with a fracture of the tibial plateau often disrupts the extensor mechanism and can be difficult to manage. Traditionally, tibial tubercle fractures have been repaired by lagging the tubercle fragment to the posterior cortex of the tibia. However, the screws do not get adequate purchase, particularly in comminuted or osteoporotic bone. Over several years we successfully stabilized such tubercle fractures using a simple wiring technique. Here, the tibial tubercle fragment is stabilized by wiring it directly to the screws of a locking plate (Figure). Our preliminary results using this new technique have demonstrated a high rate of clinical and radiographic union, with near normal return of extensor mechanism function.

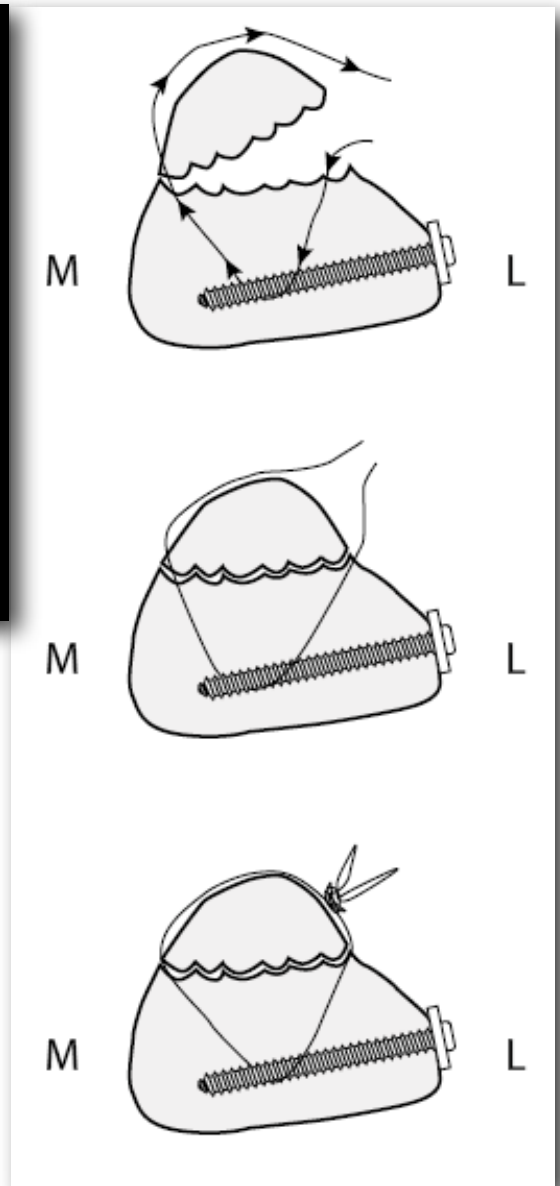
### Surgical Technique

Our technique relies on the stable fixed angle construct created by the locking plate. The tibial plateau fracture and tibial tubercle fragment are exposed using a standard proximal tibia approach. Three or four 16-gauge stainless steel wires are tunneled beneath the medial soft tissues, through the medial fracture line and into the medullary canal. Care is taken to preserve as much of the soft tissue attach-



ments to the tibial tubercle fragment as possible. The number of wires used is dependent upon the size of the fragment; for most routine cases, we generally use two or three. The plateau fracture is then reduced and stabilized using a locking plate (see figures on next page). The lateral free ends of the wire are then looped around the visible screw shafts and brought out to the lateral side of the fracture site. The fragment is reduced and the wires are tightened to compress the fragment into place. The locking screw shafts anchor the wires and provide an overall excellent fixation.

Reference: Chakraverty and others; *J Orthopaedic Trauma*, 2009; 23: 221-225.



Above left: Pre-op x-ray  
Figure: Stabilizing the tibial tubercle by wiring it to the locking screws

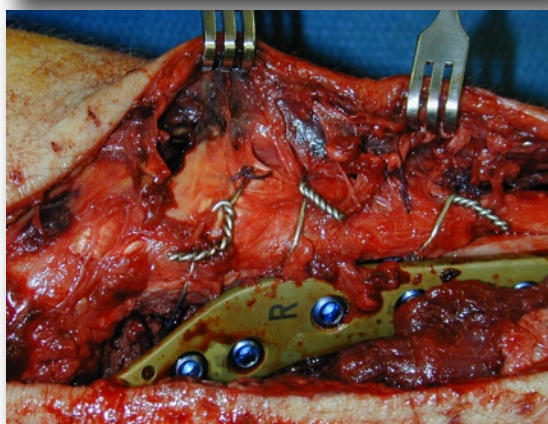
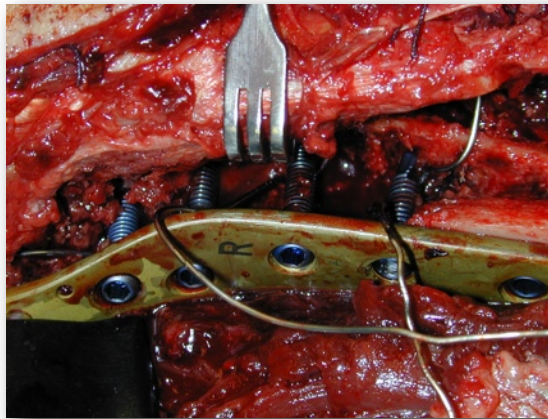
## Post-operative Care

Patients are maintained at touch down weight bearing in a range of motion brace for six weeks to protect the plateau, but are allowed full, active, and passive range of motion from day one.

## Key Learning Points

Use a proximal tibia locking plate for this kind of operation. Whether the cerclage wires used to tie down the tubercle are placed before or after the locking plate is not important. The critical factor is that the wires pass around locking screws.

*Right top:* Wires are tunneled and passed around screw shafts  
*Right below:* Fragment is reduced into place by tightening the wires  
*Far right:* Post-operative x-ray



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*Dear Colleague:*

*Thank you for taking the time to read the first edition of Partners Orthopaedic Trauma Rounds. We hope these Rounds provide you with useful information that you can apply to your practice.*

*We plan to publish quarterly both on paper and on our website: <http://achesandjoints.org/Trauma>. Each issue will feature an article authored by one of our Partners Orthopaedic Trauma faculty, whom you will be able to contact directly with your questions and feedback.*

*The Partners Orthopaedic Trauma Service is a combined clinical and academic entity which spans the campuses of the Massachusetts General Hospital and Brigham & Women's Hospital. This year, we celebrate our Tenth Anniversary. We could not have come this far without your support – our partners in the community.*

*In this new venture, we welcome your comments and suggestions for future topics.*

*Best regards,*

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