



# POSNA

## The Core Curriculum

### Fractures of tibial tubercle

#### Objectives

1. Describe the anatomy of the patellar insertion
2. Describe the anatomy of the tibial tubercle, including development and closure of the secondary ossification center
3. Describe the mechanism of injury responsible for fracture of the tibial tubercle
4. Describe treatment of fractures of the tibial tubercle
5. List complications of treatment of fractures of the tibial tubercle, their recognition and management

#### Discussion points

1. Why is the age range so narrow for occurrence of this fracture?
2. Why is playing basketball so commonly the cause of tibial tubercle fractures?
3. Is there a relationship between pre-existing Osgood-Schlatter's disease and fractures of the tibial tubercle?
4. Why is there a relatively high incidence of compartment syndrome associated with tibial tubercle fractures?
5. Why is there not a higher incidence of genu recurvatum following this physeal fracture?

#### Discussion

The tibial tubercle is essentially a finger of bone extending distally from the anterior tibial epiphysis. The primary ossification center is that of the tibial epiphysis, the secondary is that of the tibial tubercle, which is normally multifragmented in the course of its development. The two centers eventually coalesce in the midteen years. Loading of the quadriceps tendon, most often associated with sports, (usually basketball) produces the injury, predominately in boys aged 14-16. Ogden et al proposed classifying these injuries according to the site of failure; through the tubercle (Type I), at the level of the tibial physis (Type II), or extending through the anterior tibial epiphysis (Type III). Differentiation from Osgood-Schlatter's disease can sometimes be difficult for type I lesions; but if the secondary ossification center is displaced from the tibial metaphysis, fracture has occurred. A substantial percentage of patients with tibial tubercle fractures have had prior symptoms compatible with Osgood-Schlatter's disease. Treatment is essentially always surgical, except for the most minimally displaced fracture, with screw fixation of the fragment to the tibial metaphysis. With greater amounts of displacement, the quadriceps tendon insertion can also be disrupted, and additional soft tissue repair may be indicated. The anterior tibial recurrent artery may also be avulsed with the tendon insertion, a possible cause of compartment syndrome. Results

of treatment are generally good. Due to the fact that most patients with this injury are approaching skeletal maturity, complications related to subsequent growth are rare.

## References

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