STEVEN CHUDIK MD
SHOULDER, KNEE & SPORTS MEDICINE

Tibial Plateau Fracture

A tibial plateau fracture is a complete or incomplete break in the larger of the two leg bones (tibia) involving the knee joint. This fracture is common due to the lack of soft tissue around the structure and the relatively soft bone of the tibia at the knee joint. These have been called "bumper injuries" due to the susceptibility of the tibial plateau to fracture when hit by a car bumper.

Frequent Signs and Symptoms

- Severe pain in the leg at the time of injury
- Tenderness and swelling in the leg or calf
- Bleeding and bruising in the leg
- Inability to bear weight on the injured extremity
- Visible deformity if the fracture is complete and the bone fragments separate enough to distort normal leg contours
- Numbness and coldness in the leg and foot beyond the fracture site if the blood supply is impaired

Etiology (Causes)

- Injury causing a force greater than the bone can withstand
- Usually due to a direct blow
- Indirect stress caused by twisting or bending

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630-324-0402 ● contactus@chudikmd.com
stevenchudikmd.com

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Risk Factors

- Contact sports
- Motor sports
- Bony abnormalities (including osteoporosis), tumors of bone
- Metabolic disorders, hormone problems, and nutritional deficiencies and disorders (anorexia or bulimia)
- Poor physical conditioning (strength and flexibility)

Prevention

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
  - Thigh, knee, and leg strength
  - Flexibility and endurance
  - Cardiovascular fitness
- Wear proper protective equipment (such as shin guards for soccer).

Outcomes

This condition is usually curable with appropriate treatment.

Potential Complications

- Failure to heal (nonunion)
- Healing in a poor position (malunion)
- Compartment syndrome (excessive pressure within the leg, causing injury to the blood supply to the leg and foot and injuring the nerves and muscles to the leg and foot)
- Shortening of the injured bones
- Arrest of normal bone growth in children
- Risks of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis), and need for further surgery
- Infection in open fractures (the skin is broken over fracture site)
- Unstable or arthritic knee joint
- Prolonged healing time if activity is resumed too quickly
- Proneness to repeated leg injury
- Stiff knee

Treatment Considerations

Initial treatment consists of medications, elevation of the leg, and ice to relieve pain and reduce swelling. Treatment requires immobilization with a cast or brace, especially if the fracture is in proper alignment and position. Surgery is recommended to reduce the fracture into proper alignment and position, using plates or screws to correct the alignment if the fracture results in an uneven joint. Occasionally, a bone graft from the hip or from the bone bank is used to augment the surgical reduction. This is because when the bone is compressed during the fracture, it does not restore its normal volume when pushing the bone back to the joint. Surgery may be performed with an open incision, although for certain fractures arthroscopy may be used to assist in confirming restoration of a smooth joint surface. After immobilization (with or without surgery), stretching and strengthening of the injured and weakened joint and surrounding muscles (due to the injury and the immobilization) are necessary. These may be done with or without the assistance of a physical therapist or athletic trainer.

Possible Medications

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within seven days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Your physician for severe pain may prescribe narcotic pain relievers. Use only as directed.

Modalities (Cold Therapy)

Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every two to three hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage with a cloth between the ice and your skin to prevent burning /freezing your skin.

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