

TIBIAL TUBERCLE AVULSION FRACTURE

DESCRIPTION

Complete or incomplete break (fracture) of the growth plate of the leg just below the knee at the tibial tubercle, a prominence just below the knee cap. The tibial tubercle is the bony attachment on the large bone of the lower leg (tibia) of the big, powerful thigh muscle (quadriceps). The growth plate is an area of relative weakness and fracture of it is usually due to a sudden vigorous activity of the patellar tendon pulling the bone away from the cartilage. While older adults would sustain a patellar tendon tear, growing athletes sustain this uncommon injury.

FREQUENT SIGNS AND SYMPTOMS

- Pain, swelling, warmth and tenderness below the knee
- Occasionally, swelling of the knee joint
- Inability to straighten the leg fully

CAUSES

Results from sudden stressful activity, such as take off or landing from jumping (bending of the knee while the thigh muscles are contracting). It may also occur while kicking a ball and the foot contacts the ground or opponent. This force exceeds the strength of the growth plate.. May also occur with untreated inflammation of the tibial tubercle growth plate and activity.

RISK INCREASE WITH

- Sports that require jumping (basketball, high jump)
- Contact sports and sports with kicking (soccer, football)
- Overweight
- Male between 12 and 16
- Poor physical conditioning (strength/flexibility)
- Tibial tubercle inflammation (Osgood-Schlatter)

PREVENTIVE MEASURES

- Help an overweight child or adolescent lose weight
- Appropriate warm-up and stretching before practice or competition
- Allow tibial tubercle inflammation to completely subside before returning to sports
- Appropriate conditioning
 - Strength, flexibility and endurance
 - Cardiovascular fitness
- Proper technique

EXPECTED OUTCOME

Full return to sports can be expected if treated and rehabilitated appropriately. May require surgery.

POSSIBLE COMPLICATIONS

- Failure to heal (non-union).
- Healing in poor position (mal-union) including the knee hyperextension
- Injury to meniscal cartilage resulting in locking and swelling of the knee,
- Arrest of normal bone growth in children
- Injury to the articular cartilage resulting in knee arthritis.
- Injury to ligaments of the knee (anterior cruciate ligament or medial collateral ligament)
- Knee stiffness (loss of knee motion)
- Risks of surgery including infection, bleeding, injury to nerves (numbness, weakness, paralysis), need for further surgery
- Persisting prominence (bump) below the kneecap
- Knee pain
- Knee cap too low or too high

GENERAL TREATMENT CONSIDERATIONS

Initial treatment consists of medications and ice to relieve pain and reduce the swelling of the knee. If the bone is in proper position or can be positioned without surgery, immobilization with a brace or cast for 3 - 6 weeks is recommended. Crutches may be recommended for walking. If the bones are not in proper position, surgery is usually needed to reposition the bone and held with sutures, wires, and/or screw(s). 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) is necessary. This may be done with or without the assistance of a physical therapist or athletic trainer. The sutures, wires and/or screws usually do not need to be removed unless they are bothersome.

MEDICATION

- Non-steroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take if surgery planned in 7 days or less), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact him/her immediately if any bleeding, stomach upset or an allergic reaction occurs. more time to heal than to use them.
- Stronger pain relievers may be prescribed as necessary by your physician. Use only as directed.

HEAT AND COLD:

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 - 15 minutes every 2-3 hours for inflammation and pain, and immediately after any activity which aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used prior to performing stretching and strengthening activities prescribed by your physician, physical therapist or athletic trainer. Use heat pack or a warm soak.

NOTIFY OUR OFFICE IF:

- Symptoms get worse or do not improve
- You experience pain, numbness, or coldness in the foot.
- Blue, gray or dusky color appears in the toenails
- Any of the following occur after surgery:
- Fever, increased pain, swelling, redness, drainage or bleeding in the surgical area.
- New, unexplained symptoms develop. Drugs used in treatment may produce side effects.

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