

TIBIAL STRESS FRACTURES

DESCRIPTION

Complete or incomplete break in the larger of the 2 leg bones (tibia) caused by intense exercise or repetitive pressure on the extremity. The wear and injury in the bone exceeds the bone's ability to heal and repair the injury resulting in a breakdown of the bone, causing a stress or fatigue fracture. This is the most common bone to sustain a stress fracture in athletes. It can occur anywhere within the tibia.

FREQUENT SIGNS AND SYMPTOMS

- Vague, diffuse pain or ache and occasionally tenderness and swelling in the leg and/or calf
- Uncommonly bleeding, and bruising in the leg
- Weakness and inability to bear weight on the injured extremity
- Paleness and deformity (sometimes)

CAUSES

Repetitive forces greater than the bone can withstand. It usually occurs when there is an imbalance between bone injury and bone remodeling (healing). This usually follows a change in training or performance schedule or equipment and/or intensity. It is also associated with a bone's ability to heal and may be impaired with loss of menstrual period in women.

RISK INCREASES WITH

- Previous stress fracture
- Military recruits and particularly distance runners
- Bony abnormalities (including osteoporosis, tumors)
- Metabolic disorders, hormone problems and nutritional deficiencies and disorders (anorexia and/or bulimia)
- Females, especially when there is loss of or irregular menstrual periods
- Poor physical conditioning (strength/flexibility)
- Sudden increase in the duration, intensity or frequency of physical activity.
- Running on hard surfaces
- Poor extremity alignment, including flat feet
- Inadequate footwear with poor shock absorbing capacity

PREVENTIVE MEASURES

- Appropriate warm-up and stretching before practice or competition.
- Appropriate conditioning including leg muscle strength endurance and flexibility as well as cardiovascular fitness
- Proper footwear, including changing shoes after 300 - 500 miles of running
- Proper technique with training and activity
- Gradual increase in activity and training
- Hormonal disorder treatment, including birth control pills for women with menstrual period irregularity
- Correction of metabolic and nutritional disorders.
- Cushioned arch supports for runners with flat feet

EXPECTED OUTCOME

Usually curable with appropriate treatment, though return to sports may average 1 year from the onset of treatment.

POSSIBLE COMPLICATIONS

- Failure to heal (non-union), especially when the stress fracture involves the front part of the middle third of the tibia when the radiographs show a black line (a sign of poor healing response).
- Healing in poor position (mal-union).
- Recurrence of stress fracture.
- Stress fracture becoming a complete and displaced fracture.
- Risks of surgery including infection, bleeding, injury to nerves (numbness, weakness, paralysis), need for further surgery.
- Having another stress fracture, not necessarily at the same site, occurs in 1 of every 10 patients.

GENERAL TREATMENT CONSIDERATIONS

Initial treatment consists of medications and ice to relieve pain, relative rest from the activity that caused the fracture. Occasionally crutches may be recommended to protect the bone while it heals. Menstrual, nutritional and metabolic abnormalities need to be identified and treated appropriately to help healing and prevent recurrence. After rest, gradual return to activity is recommended. Uncommonly, bone stimulators which provide electrical currents to the bone may be attempted. Physical therapy may be helpful in gradually increasing strength of the muscles and bones after stress fracture and/or maintain cardiovascular fitness while awaiting the bone to heal. Surgery is rarely necessary, though may be offered for fractures that do not heal after 6 months despite appropriate conservative treatment.

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.
- Topical ointments may be of benefit.
- Narcotic pain relievers may be prescribed by your physician for severe pain. Use only as directed.

NOTIFY OUR OFFICE IF:

- Symptoms get worse or do not improve in 2 weeks despite treatment
- The following occur after immobilization or surgery:
 - Swelling above or below the fracture site.
 - Severe, persistent pain
 - Blue or gray skin below the fracture site, especially under the nails or numbness or loss of feeling below the fracture site.
- Report any of the above signs immediately.

New, unexplained symptoms develop. Drugs used in treatment may produce side-effects.