



## STRESS FRACTURE

### ■ ■ ■ Description

A stress fracture is a complete or incomplete break in a bone caused by intense exercise or repetitive and prolonged pressure on the bone. The wear and injury in the bone due to the excessive pressure or intense exercise exceeds the bone's ability to heal and repair the injury, resulting in a breakdown of the bone.

### ■ ■ ■ Common Signs and Symptoms

- Pain, tenderness, bleeding (uncommonly), bruising (uncommonly), and swelling at the fracture site
- Weakness and inability to bear weight on the injured extremity
- Paleness and deformity (sometimes)

### ■ ■ ■ Causes

Stress fractures are caused by repetitive forces greater than the bone can withstand. This usually follows a change in training or performance schedule, equipment, or intensity of activity. It is also associated with a bone's ability to heal, which may be impaired when there is a loss of menstrual period in women.

### ■ ■ ■ Risk Increases With

- Previous stress fracture
- Certain sports associated with specific fractures:
  - Leg: running, soccer, swimming, ballet, basketball
  - Foot: running, walking, marching, swimming, soccer, ballet
  - Heel bone: basketball, volleyball
  - Thigh: running, basketball, jumping
  - Kneecap (patella): basketball, catching in baseball
  - Hand: tennis, handball
  - Forearm: tennis, javelin
  - Arm: baseball, cricket
  - Ribs: tennis, baseball, golf, rowing
  - Spine: gymnastics, football, cricket, waterskiing
- Bony abnormalities (including osteoporosis, tumors)
- Metabolic disorders, hormone problems, and nutritional deficiencies and disorders (anorexia, bulimia)
- Loss of or irregular menstrual periods
- Poor physical conditioning (strength and flexibility)
- Training on hard surfaces or worn out equipment (running with shoes with more than 600 miles of wear), hard orthotics (arch supports made from metal or hard plastic)

### ■ ■ ■ Preventive Measures

- Appropriately warm up and stretch before practice or competition.

- Maintain appropriate conditioning:
  - Muscle strength and endurance
  - Flexibility
  - Cardiovascular fitness
- Wear proper protective equipment, including proper footwear; change shoes after 300 to 500 miles of running.
- Use proper technique with training and activity.
- Gradually increase activity and training.
- Women with menstrual period irregularity can take birth control pills to regulate periods and thus hormonal levels.
- Runner with flat feet should wear cushioned arch supports.

### ■ ■ ■ Expected Outcome

This condition is usually curable with appropriate treatment.

### ■ ■ ■ Possible Complications

- Failure to heal (nonunion)
- Healing in a poor position (malunion)
- Recurrence of stress fracture
- Stress fracture progressing to a complete and displaced fracture
- Risks of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis), need for further surgery, and bone death
- Recurrence of stress fractures, not necessarily in the same bone or location (occurs in 1 in 10 patients)

### ■ ■ ■ General Treatment Considerations

Initial treatment consists of medications and ice to relieve pain and relative rest from the activity that caused the fracture. Occasionally, bone protection with splint, brace, or cast immobilization may be recommended to allow the bone to heal. Bone stimulators, which provide electrical currents to the bone, may be attempted, but this is uncommon. Surgery may be needed in fractures that (1) are at high risk of moving and great risk of complications (hip), (2) are at high risk of not healing (Jones fracture, certain leg fractures), or (3) become complete and displaced (out of alignment). Immobility of a bone for a long period can cause loss of muscle bulk, stiffness in nearby joints, and edema (accumulation of fluid in tissues). Physical therapy may be necessary to regain motion of nearby ligaments after immobilization or surgery and to regain strength of the muscles around the joint.

### ■ ■ ■ Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 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.

- 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

- Any of the following occur after immobilization or surgery (report any of these signs immediately):

- 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
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

Notes:

(Up to 4400 characters only)

Notes and suggestions