

STRESS FRACTURES

DESCRIPTION

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.

FREQUENT 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

Repetitive forces greater than the bone can withstand. 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 and poor energy intake (nutrition).

RISK INCREASES WITH

- Previous stress fracture
- Certain sports have an association 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, baseball catchers
 - 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/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

- Appropriate warm-up and stretching before practice or competition.
- Appropriate conditioning including muscle strength and endurance, flexibility and cardiovascular fitness
- Proper protective equipment, including proper footwear, including changing shoes after 300 - 500 miles of running
- Proper technique with training and activity
- Gradual increase in activity and training
- Birth control pills for women with menstrual period irregularity
- Cushioned arch supports for runner with flat feet

EXPECTED OUTCOME

Usually curable with appropriate treatment.

POSSIBLE COMPLICATIONS

- Failure to heal (non-union).
- 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, bone death.
- Recurrence of stress fractures, not necessarily in the same bone or location, occurs in 1 of 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, bone protection with splint, brace or cast immobilization to allow the bone to heal. Bone stimulators which provide electrical currents to the bone may be attempted uncommonly. Surgery may be needed in fractures that (1) have a high risk to move with great risk of complications (hip), (2) have a high risk to not heal (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 after immobilization or surgery and to regain strength of the muscles around the joint.

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.