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Stress Fractures of the Knee

Stress fractures are small cracks in the bone, usually caused by overuse from repetitive activity. 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. The knee is the largest weight bearing joint in the body, making it a common location for stress fractures to occur.

MRI of stress fracture of medial femoral condyle



Frequent Signs and Symptoms

- Deep thigh pain, particularly when walking
- Pain at night, particularly after a day with an increase in activity
- With continued activity and left untreated, constant pain that eventually causes the athlete to stop sports participation



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Etiology (Causes)

Stress fractures are caused by overuse from repetitive activity, which leads to breakdown of the tissues. Continued activity, before the breakdown can be repaired, leads to inflammation and breakdown of bone tissue. This breakdown exceeds the ability of the bone to heal completely, resulting in injury, more inflammation, and pain.

Risk Factors

- Sports that require repetitive loading or running, such as marathon running, soccer, walking, and jogging, particularly on uneven terrain or hard surfaces (concrete)
- Poor physical conditioning (strength and flexibility)
- Lack of conditioning early in the season or practice
- Poor running technique
- Sudden change in activity level, distance, intensity, or running surface
- Premature weight bearing after surgery

Prevention

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
 - Flexibility
 - Strength and endurance
 - Cardiovascular fitness
- Ensure proper shoe fit with adequate cushioning.
- Wear cushioned arch supports or custom foot orthotics.
- Use proper technique and have a coach correct improper technique.
- Gradually increase activity.
- Run on surfaces that absorb shock, such as grass, composite track, or sand (beach).
- Follow post-operation guidelines when transitioning to weight bearing following surgery.

Outcomes

Appropriate treatment can improve symptoms (swelling, pain, functional limitations) and allow gradual return to activity. If identified early and treated correctly, this may resolve in a matter of weeks. More severe cases may take up to a few months.



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Potential Complications

- Recurrence of symptoms, resulting in persistent pain and swelling
- Progression to complete and displaced fracture
- Risks of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis), and need for further surgery

Treatment Considerations

Conservative treatment consists of a period of non-weight bearing followed by a gradual return to activity once pain has subsided. Often, referral to a physical therapist or athletic trainer is recommended. For patients with persistent symptoms (swelling, pain, functional limitations) despite conservative treatment, with significant stress reaction identified on MRI, surgery to promote the healing of the damaged bone is usually recommended.

The first line of operative treatment usually involves arthroscopic surgery to evaluate the joint and assess the integrity of the cartilage surface. To initiate the bone healing process, a percutaneous (through the skin) drilling procedure is performed with small pins to the area of the bone affected by stress injury. By drilling the bone, this stimulates bleeding to the area of injury to promote accelerated healing.

Extensive rehabilitation is required following this restorative procedure. Following an initial six-week period of non-weight bearing, gentle passive (without using your own muscles) movement of the joint, range-of-motion, stretching and strengthening exercises for the joint and surrounding muscles are necessary. This typically requires the assistance of a physical therapist and at least three to six months before return to athletic activities can occur.

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.
- Strong pain relievers may be prescribed following surgery. Use only as directed and only as much as you need.

Notify My Office if Symptoms Worsen



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