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Osteonecrosis of the Knee

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A relatively common cause of knee pain in older women occurs when a segment of bone loses its blood supply and begins to die. This condition is called osteonecrosis, which literally means "bone death." More than 3 times as many women as men are affected; most are over the age of 60 years.

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Cause

In the knee, the knobby portion of the thighbone on the inside of the knee (the medial femoral condyle) is most often affected. However, osteonecrosis of the knee may also occur on the outside of the knee (the lateral femoral condyle) or on the flat top of the lower leg bone (tibial plateau).

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The exact cause of the osteonecrosis of the knee is not yet known. One theory is that a stress fracture, combined with a specific activity or trauma, results in an altered blood supply to the bone. Another theory supposes that a build-up of fluid within the bone puts pressure on blood vessels and diminishes circulation.

Osteonecrosis of the knee is also associated with certain conditions and treatments, such as obesity, sickle cell anemia, lupus, kidney transplants, and steroid therapy. Steroid-induced osteonecrosis frequently affects multiple joints and is usually seen in young patients.

Regardless of the cause, if the disease is not identified and treated early, it can develop into severe osteoarthritis.

Symptoms

- Sudden pain on the inside of the knee, perhaps triggered by a specific activity or minor injury
- Increased pain at night and with activity
- Swelling over the front and inside of the knee
- Heightened sensitivity to touch in the area
- Limited motion due to pain

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Diagnosis

Osteonecrosis of the knee develops through four stages, which can be identified by symptoms and X-rays.

Stage I: Symptoms are most intense in the earliest stage. Symptoms may continue for 6 to 8 weeks and then subside. Because X-rays are normal, a positive bone scan is needed to make the diagnosis. Treatment at this point is not surgical. The focus is on pain relief and protected weightbearing.

Stage II: It may take several months for the disease to progress to Stage II. At this point, X-rays will show that the rounded edge of the thighbone is starting to flatten out. An MRI or bone scan can be used to diagnose the disease. A computed tomography (CT) scan may also be used to measure the affected area.

Stage III: By the time the disease reaches stage III (3 to 6 months after onset), it is clearly visible on X-rays and no other diagnostic tests are needed. The articular cartilage covering the bone begins to loosen as the bone itself begins to die. Surgical treatments may be considered at this point.

Stage IV: At this point, the bone begins to collapse. The articular cartilage is destroyed, the joint space narrows, and bone spurs may form. Severe osteoarthritis results and joint replacement surgery may be necessary.

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Treatment

Nonsurgical Treatment

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In the early stages of the disease, treatment is not surgical. If the affected area is small, this treatment may be all that is needed.

Options include:

- Medications to reduce the pain
- A brace to relieve pressure on the joint surface
- A conditioning program with exercises to strengthen your thigh muscles
- Activity modifications to reduce knee pain

Surgical Treatment

If more than half of the bone surface is affected, you may need surgical treatment. Several different procedures may be used to treat osteonecrosis of the knee.

Among the surgical options are:

- Arthroscopic cleansing (debridement) of the joint
- Drilling to reduce pressure on the bone surface
- Procedures to shift weightbearing away from the affected area
- Unicompartmental or total knee replacement

Your orthopaedic surgeon will discuss the options with you and make a recommendation based on your individual situation.

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