

What Is Osteonecrosis?

Fast Facts: An Easy-to-Read Series of Publications for the Public

Osteonecrosis is a disease caused by reduced blood flow to bones in the joints. With too little blood, the bone starts to die and may break down.

Osteonecrosis is also known as:

- Avascular necrosis
- Aseptic necrosis
- Ischemic necrosis.

Osteonecrosis is most often found in the hips, knees, shoulders, and ankles. You may have osteonecrosis in one or more bones.

In people with healthy bones, new bone is always replacing old bone. This process keeps bones strong and also happens when children grow or if a bone is injured. In osteonecrosis, bone breaks down faster than the body can make enough strong, new bone. If you do not get treatment, the disease worsens and the bones in the joints break down. You may not be able to bend or move the affected joint very well, and you may have pain in the joint.

Who Gets Osteonecrosis?

Osteonecrosis can occur in people of any age, but it is most common in people in their thirties, forties, and fifties.

What Causes Osteonecrosis?

Osteonecrosis is caused when the blood flow to the bone decreases, but why this happens is not always clear. Some known causes of osteonecrosis are:

- Steroid medications
- Alcohol use
- Injury
- Increased pressure inside the bone.

Risk factors for osteonecrosis are:

- Radiation treatment
- Chemotherapy
- Kidney and other organ transplants.

Osteonecrosis is more common in people with illnesses such as:

- Cancer
- Lupus

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- HIV
- Gaucher's disease
- Caisson disease
- Gout
- Vasculitis
- Osteoarthritis
- Osteoporosis
- Blood disorders such as sickle cell disease.

Osteonecrosis can also affect people for no known reason, even if they have no other health problems.

What Are the Symptoms of Osteonecrosis?

When osteonecrosis first begins, you may not have any symptoms. You may start to feel pain when you put weight on a joint with osteonecrosis. As the disease gets worse, you may have more pain and the joint may hurt even when you rest. Pain may be mild or severe.

If the bone and joint start to break down, you may have severe pain and not be able to use the joint. For instance, if you have osteonecrosis in the hip, you may not be able to walk. The time from the start of symptoms to losing use of the joint can range from months to more than a year.

How Is Osteonecrosis Diagnosed?

To diagnose osteonecrosis, your doctor will take your medical history and do a physical exam. Your doctor may then order one or more tests to see which bones are affected:

- X ray
- Magnetic resonance imaging (MRI)
- Computed tomography (CT) scan
- Bone scan
- Bone biopsy
- Measure of the pressure inside the bone.

Treatment helps more if the disease is diagnosed early.

How Is Osteonecrosis Treated?

Treatment helps to keep bone in joints from breaking down. Without treatment, most people with the disease will have severe pain and limited movement within 2 years. To decide on the best treatment, your doctor will find out:

- Your age
- The stage of the disease

- Where and how much bone has osteonecrosis
- The cause, if known. If the cause is steroid or alcohol use, treatment may not work unless you stop using those substances.

The goals in treating osteonecrosis are:

- To improve use of the joint
- To stop further damage
- To protect bones and joints.

For early stage disease, doctors may first order nonsurgical treatments. If they do not help, surgery may be needed.

Nonsurgical treatments

Nonsurgical treatments may relieve pain in the short term, but they do not cure the disease. One or more of these treatments may be used at the same time.

- Medications. Nonsteroidal anti-inflammatory drugs (NSAIDs) are used to reduce pain and swelling. For people with blood clotting problems, blood thinners may be used to prevent clots that block the blood supply to the bone. If you take steroid medications, cholesterol-lowering drugs may be used to reduce fat in the blood.
- Taking weight off the joint. Your doctor may suggest that you limit your activity or use crutches to take weight off the affected joint. This may slow bone damage and allow some healing. If combined with NSAIDs, it may help you avoid or delay surgery.
- Range-of-motion exercises. Exercise of the joints with osteonecrosis may help increase their range of motion.
- Electrical stimulation. Research has shown that this can prompt bone growth.

Surgery

In time, most people with osteonecrosis need surgery. There are four main types of surgery used for osteonecrosis. Your doctor will decide if you need surgery and what type is best for you.

- Core decompression surgery. Lowers pressure inside the bone to increase blood flow to the bone.
- Osteotomy. Reshapes the bone to reduce stress on the damaged joint.
- Bone graft. Takes healthy bone from one part of the body and uses it to replace diseased bone.
- Total joint replacement. Replaces the joint with a manmade one.

What Research Is Being Done to Help People With Osteonecrosis?

Some goals of research are to learn more about:

- How many people have osteonecrosis
- Risk factors for osteonecrosis
- Why steroids cause osteonecrosis
- The role of genes
- How to diagnose the disease early
- Better treatments for osteonecrosis
- Ways to improve hip replacement
- How mechanical factors—such as the alignment of hips, knees, and ankles—affect treatment success.

For More Information About Osteonecrosis and Other Related Conditions:

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The information in this publication was summarized in easy-to-read format from information in a more detailed NIAMS publication. To order the Osteonecrosis Q&A full-text version, please contact NIAMS using the contact information above. To view the complete text or to order online, visit www.niams.nih.gov.

For Your Information

This fact sheet contains information about medications used to treat the health condition discussed here. When this fact sheet was printed, we included the most up-to-date (accurate) information available. Occasionally, new information on medication is released.

For updates and for any questions about any medications you are taking, please contact the U.S. Food and Drug Administration at 888-INFO-FDA (888-463-6332, a toll-free call) or visit its Web site at www.fda.gov.