



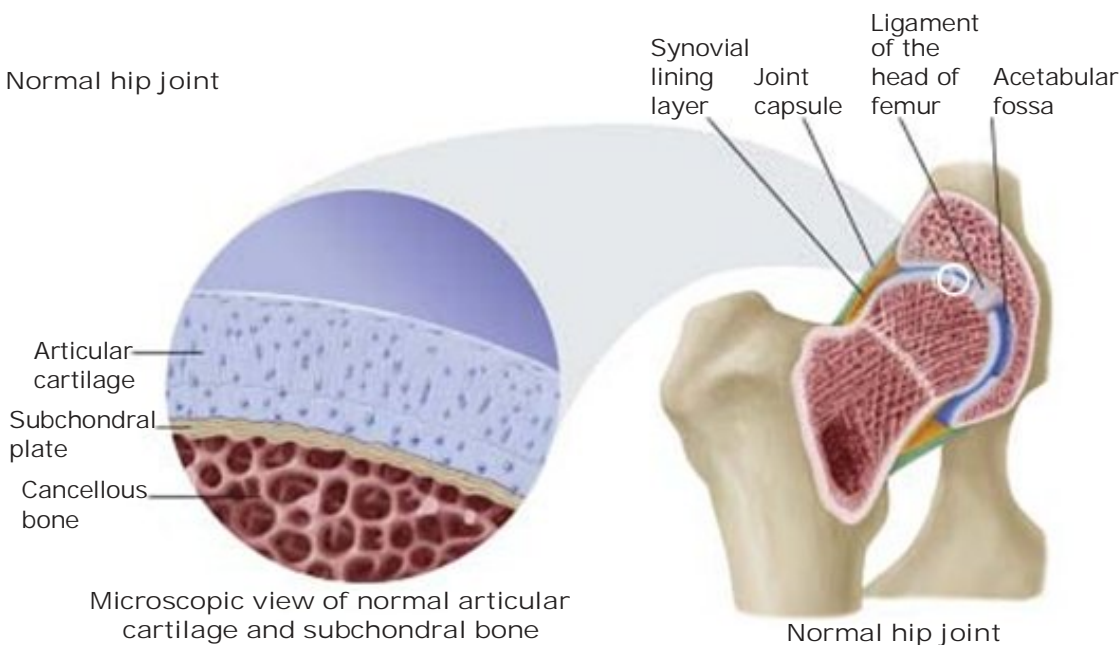
Degenerative Joint Disease (Arthritis)

Degenerative joint disease (arthritis) is a noninfectious progressive disorder of the weightbearing joints. The normal articular joint cartilage (Figure 1) is smooth, white, and translucent. It is composed of cartilage cells (chondrocytes) imbedded in a sponge-like matrix made of collagen, protein polysaccharides, and water. With early primary arthritis (Figure 2), the cartilage becomes yellow and opaque with localized areas of softening and roughening of the surfaces. As degeneration progresses, the soft areas become cracked and worn, exposing bone under the cartilage (Figure 3). The bone then begins to remodel and increase in density while any remaining cartilage begins to fray. Eventually, osteophytes (spurs of new bone)

covered by cartilage form at the edge of the joint. As mechanical wear increases (Figure 4), the cartilage needs repairing. The cartilage cells are unable to produce enough of the sponge-like matrix and therefore the damaged cartilage cannot repair itself. The cartilage has no blood supply to enhance healing.

The majority of degenerative joint disease is the result of mechanical instabilities or aging changes within the joint. This includes old age degenerative arthritis and, in younger animals, may be the result of injuries, bruises, abnormal joint configuration (i.e. hip dysplasia), or mechanical wear from anterior cruciate ligament rupture, patellar luxation, or osteochondritis dissecans.

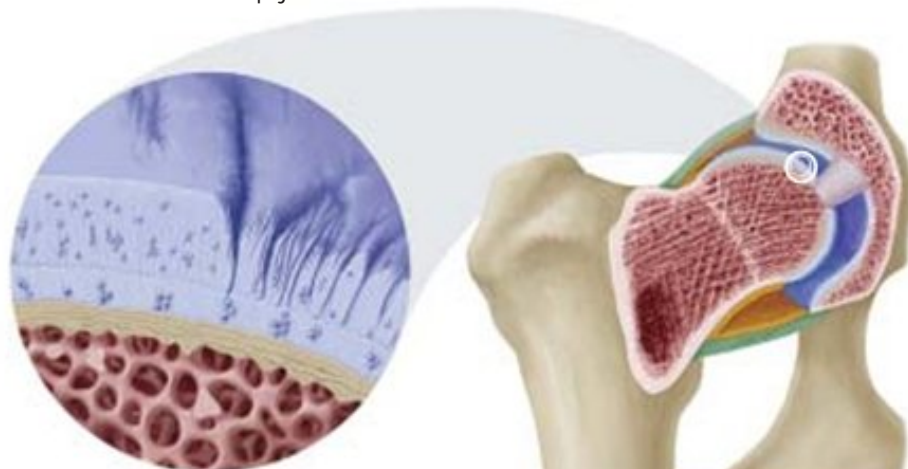
Figure 1. Normal hip joint



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Figure 2. Early osteoarthritis in hip joint



Microscopic view of early degeneration of articular cartilage and change in subchondral bone

Joint laxity and early osteoarthritis in hip joint

Symptoms

In most cases, degenerative joint disease is seen in dogs midway through their life, with an increasing incidence in the older animal. The early signs are mild and include a slight decrease in physical activity with stiffness, a decrease in playfulness, and reluctance to go on long walks. As the condition progresses, depending on the joint or joints involved, the animal may stand up slowly after lying down for a period of time, may walk up and down stairs more slowly, or may be reluctant to jump up as usual upon household furniture. At this

stage, the animal's stiffness will diminish as he or she moves about. This is referred to as 'warming out of the lameness.' Eventually, the animal may be asymptomatic at some time during the course of the day only to have the whole episode repeat itself the next time he or she gets up from a rest. As the disease progresses, the above mentioned signs increase in severity to a point where the dog refuses to stand or walk. Cold, damp weather accentuates the clinical signs in most cases, not only because of the cold temperature, but also because of the barometric changes.

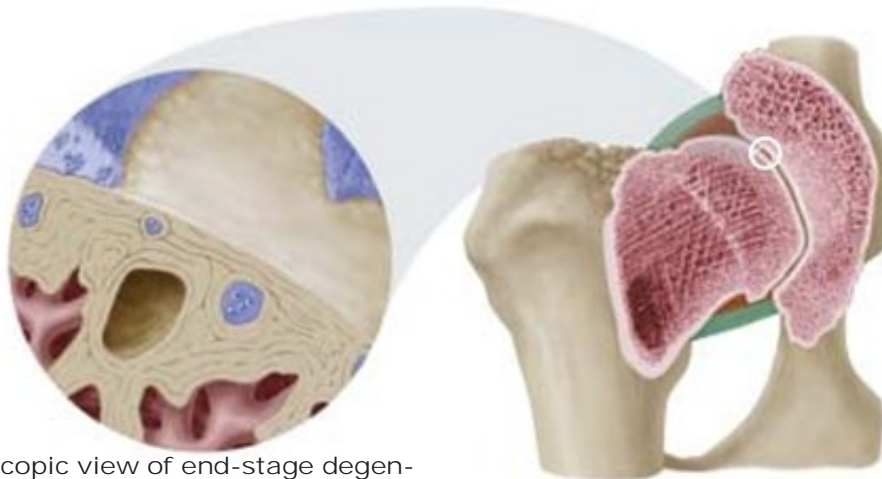
Figure 3. Advanced osteoarthritis in hip joint



Microscopic view of advanced degeneration of articular cartilage and change in subchondral bone

Advanced osteoarthritis in hip joint

Figure 4. End-stage osteoarthritis in hip joint



Microscopic view of end-stage degenerative changes in articular cartilage and change in subchondral bone

End-stage osteoarthritis in hip joint

Radiographs

Because cartilage does not show up on radiographs (x-rays), early degenerative joint disease may show only a narrowing of the joint space. As the disease progresses, bone spurs (osteophytes) form and the bone under the cartilage becomes very hard.

Treatment

Treatment is limited to reducing the degree of pain present in the joint capsule and surrounding ligaments (the joint cartilage has no nerve endings) so that activity can continue and muscular support can be increased. The most important consideration in the long term treatment of arthritis is the maintenance of muscular support.

As the arthritis progresses and the pain worsens, aspirin (Ascriptin) or more potent drugs such as Rimadyl (carprofen) may be required. Corticosteroids can be given but because of potential side effects should be used only after other drugs have been tried and found to be unsuccessful. These drugs should allow one to maintain the animal on normal exercise levels of walking, jogging, or swimming. Swimming is by far the best activity as it allows maximum motion with minimal weightbearing. Strenuous exercise is

contraindicated. Obese dogs should be put on a reducing diet. If surgery is performed on the affected joint, passive flexion and extension exercises will begin soon after bandage removal to work out the stiffness. This will be followed by very light activity as the long road towards complete rehabilitation is begun.

Another treatment involves drugs that actually help heal the matrix of the damaged cartilage. These innovative drugs have revolutionized the treatment of arthritis when treatment begins before irreversible damage has been sustained.

Infectious Arthritis

Infectious arthritis is the result of the penetration of living microorganisms into the synovial membrane (joint lining) or joint cavity. The most common type of organism causing the problem is bacteria, usually Staphylococcus or Streptococcus.

Three basic causes of bacterial arthritis are:

- A penetrating wound of the joint
- The presence of bacteremia (blood stream infection) with localization in the joint
- The spread of infection from an adjacent osteomyelitis (bone infection)

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Once bacteria have entered the joint, the cartilage matrix begins to degenerate. Sometimes, after the patient has been treated and the joint is rendered sterile, the cartilage destruction continues. It is thought that this is due to the inability of the uninjured chondrocytes to replace depleted matrix.

The clinical signs are those of a basic inflammatory process: swelling, heat, and pain in the joint(s) with occasional redness of the overlying skin. One or more joints may be involved. The body temperature is often elevated and the patient is lethargic, occasionally anorectic, resists movement of the joint, and is lame in the affected limb(s). The area should be examined closely for a penetrating wound.

A definitive diagnosis of infectious arthritis can be made only by isolating the infecting organism from the joint fluid or synovial tissue. Clinical history and signs, synovial fluid analysis (other than culture), and radiographic findings can help only to limit the possible causes of the painful joint.

Medicating Your Dog

1. When administering medication in capsule or tablet form to your dog, you may find it much easier to simply place the medication in a small amount of food and offer it as a treat to your pet.
2. If your dog will not accept medication in the above mentioned fashion, it will be necessary for you to manually 'pill' your pet (Figure 5). Place your hand around your pet's upper jaw and gently apply pressure by pressing the lips against the teeth. Using your other hand, gently pull the lower jaw downward and place the medication in the very back of your pet's throat. By holding his/her muzzle and gently stroking the throat, you will stimulate your pet to swallow.

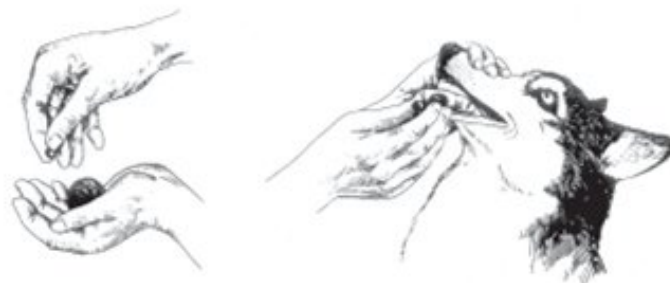


Figure 5. Administering medication to a dog

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