



# HIP DYSPLASIA

## What is Hip Dysplasia?

Hip Dysplasia is the failure of normal development (known as “malformation”) and gradual deterioration, leading to loss of function, (known as “degeneration”) of the hip joints (known as the “coxofemoral joints”. The hip joint is composed of the “ball” (known as the “femoral head”) and the “socket” (known as the “acetabulum”). Development of hip dysplasia determined by an interaction of genetic and environmental factors.

## How common is Hip Dysplasia?

It is one of the most common skeletal diseases seen in dogs. Common large-breed dogs are Saint Bernards, German Shepherd dogs, Labrador Retrievers, Golden Retrievers and Rottweilers. Smaller breed dogs may be affected but are less likely to show clinical signs. Signs will start to show in the immature dog and may develop after 4 months of age or may develop later due to osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage).

Cats—incidence is significantly lower than in dogs. Breeds more commonly affected are purebred cats. It reportedly affects approximately 18% of Maine coon cats and is more common in female cats than male cats.



## What causes it?

- Genetic susceptibility for hip looseness or laxity
- Rapid weight gain, nutrition level, and pelvic-muscle mass—influence development and progression of hip dysplasia
- Pets that are overweight and have poor muscle tone are more at risk

## What causes it?

- Genetic susceptibility for hip looseness or laxity
- Rapid weight gain, nutrition level, and pelvic-muscle mass—influence development and progression of hip dysplasia
- Pets that are overweight and have poor muscle tone are more at risk

## Clinical Signs

- Depend on the degree of joint looseness or laxity; degree of osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage); and duration of the disease
- Early disease—signs related to joint looseness or laxity
- Later disease—signs related to joint degeneration and osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage)
- Decreased activity
- Difficulty rising
- Reluctance to run, jump, or climb stairs
- Intermittent or persistent hind-limb lameness—often worse after exercise
- “Bunny-hopping” or swaying gait
- Narrow stance in the hind limbs
- Painful hip joints
- Joint looseness or laxity—characteristic of early disease; may not be seen in long-term (chronic) hip dysplasia due to arthritic changes in the hip joint
- Grating detected with joint movement (known as “crepitus”)
- Decreased range of motion in the hip joints
- Loss of muscle mass (known as “atrophy”) in thigh muscles
- Enlargement (known as “hypertrophy”) of shoulder muscles; occurs because dog puts more weight on front legs as it tries to avoid weight on its hips, leading to extra work for the shoulder muscles and subsequent enlargement

## Treatment

### Healthcare

- May treat with conservative medical therapy or surgery
- Outpatient, unless surgery is performed

- Depends on the pet's size, age, and intended function; severity of joint looseness or laxity; degree of osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage); veterinarian's preference for treatment; and financial considerations of the owner
- Physiotherapy (passive joint motion)—decreases joint stiffness; helps maintain muscle integrity
- Swimming (hydrotherapy)—excellent form of physical therapy; encourages joint and muscle activity, without increasing the severity of joint injury



### Activity

- As tolerated by the pet
- Swimming—recommended to maintain joint mobility, while minimizing weight-bearing activities

### Diet

- Weight control—important; decreases the pressure applied to the painful joint as the pet moves; minimize weight gain associated with reduced exercise.
- Special diets designed for rapidly growing large-breed dogs—may decrease severity of hip dysplasia.

### Surgery

#### Triple Pelvic Osteotomy (TPO) or Double Pelvic Osteotomy

Corrective orthopaedic surgical procedure; designed to re-establish corresponding surfaces (known as “congruity”) between the “ball” (femoral head) and the “socket” (acetabulum) making up the hip joint.

Immature pet (6-12 months of age) is surgical candidate.

Rotate the “socket” (acetabulum)—to improve coverage of the “ball” (femoral head); correct forces acting on the joint; minimize the progression of osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage); may allow development of a more normal joint, if performed early (before joint deterioration or degeneration develops).

#### Juvenile Pubic Symphysiodesis

Surgical procedure to fuse the pubis (part of the pelvis) bones together

The pelvis develops from matching bones on the right- and left-side of the body; the area where the two sides meet is composed of cartilage and is called a “symphysis”; the pubis is a part of the pelvis; the surgical procedure fuses the pubic symphysis at an early age (using electrocautery).

Causes the “socket” (acetabulum) to better cover the “ball” (femoral head).

Improves relationship of corresponding surfaces of the joint and joint stability—similar effects as TPO, without surgical metal implants.

Minimal postoperative problems; easy to perform—must be performed very early (3-4 months of age) to achieve effect; minimal effect achieved if performed after 6 months of age.

#### Total Hip Replacement

Indicated to salvage joint function in mature dogs, with severe osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage) that is unresponsive to medical therapy

Pain-free joint function—reported in more than 90% of cases

Hip joint replacement in only one leg provides acceptable function in approximately 80% of cases

Complications—dislocation (luxation); damage to the sciatic nerve; infection

#### Excision Arthroplasty

Surgical removal of the “ball” part of the hip joint

Removal of the “ball” (femoral head and neck) to eliminate joint pain; the muscles “act” as the joint

Primarily a salvage procedure—for significant osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage) —when pain cannot be controlled medically or when total hip replacement is cost-prohibitive

Best results—small, light dogs (weighing less than 20 kg or 44 lbs); pets with good hip musculature

Slightly abnormal gait often persists following surgery

Postoperative loss of muscle mass (muscle atrophy) in the hind limbs—common, particularly in large dogs

## What medication is available?

- Pain-relieving drugs (known as “analgesics”) and anti-inflammatory drugs—minimize joint pain (and thus stiffness and loss of muscle mass [muscle atrophy] caused by limited usage); decrease inflammation of the lining of the joint (known as “synovitis”); drugs that relieve pain and decrease inflammation include carprofen; etodolac; deracoxib.
- Medical therapy—does not correct the structural or biomechanical abnormality; deterioration or degeneration of the hip joint likely to progress; medical therapy often provides only temporary relief of signs
- Glucosamine and chondroitin sulphate—may have a cartilage protective effect in osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage)

## Prognosis & Follow up care

Joint deterioration or degeneration usually progresses—most pets lead normal lives with proper medical or surgical management. Unless a corrective orthopaedic surgical procedure is performed early in the disease deterioration is expected.

- Monitor signs, degree of lameness, and changes seen on x-rays (radiographs)—assess progression
- Medical treatment—if poor response or initial response is followed by deterioration of condition, change the dosage of medication or try a different medication or consider surgical intervention
- Triple pelvic osteotomy—monitored by x-rays (radiographs), taken periodically; assess healing, metal-implant stability, reestablishment of corresponding surfaces between the “ball” (femoral head) and the “socket” (acetabulum) making up the hip joint (that is, joint congruence), and progression of osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage)
- Hip replacement—monitored by x-rays (radiographs); assess metal implant stability

## Preventions & Avoidance

- Best prevented by not breeding dogs affected with hip dysplasia
- Pelvic x-rays (radiographs)—may help identify dogs with actual bony changes of hip dysplasia; may not identify all dogs carrying the genes for the disease
- Do not repeat dam-sire breeding that result in affected offspring
- Special diets designed for rapidly growing large-breed dogs—may decrease severity of hip dysplasia

## Overview of Hip Dysplasia

Hip dysplasia has a genetic (inherited) basis, involving multiple genes. Development of hip dysplasia is determined by an interaction of genetic and environmental factors. Medical therapy is designed to relieve signs (known as “palliative therapy”); it does not “cure” the disease, because the joint instability is not corrected. Joint deterioration or degeneration often progresses, unless a corrective orthopaedic surgical procedure is performed early in the disease. Surgical procedures can salvage hip-joint function once severe joint deterioration or degeneration occurs.