

HIP DYSPLASIA

BASICS

OVERVIEW

- 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”)

GENETICS

- Complicated pattern of inheritance, multiple genes involved (known as “polygenetic transmission”)
- Development of hip dysplasia determined by an interaction of genetic and environmental factors
- Some breeds are more likely to have the genes for hip dysplasia than other breeds

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs—one of the most common skeletal diseases seen in dogs
- Cats—incidence is significantly lower than in dogs

Breed Predislection

- Large-breed dogs—St. Bernards; German shepherd dogs; Labrador retrievers; golden retrievers; rottweilers
- Smaller breed dogs—may be affected; less likely to show clinical signs
- Cats—more commonly affects purebred cats; reportedly affects approximately 18% of Maine coon cats

Mean Age and Range

- Begins in the immature dog
- Clinical signs—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)

Predominant Sex

- Dogs—none
- Cats—more common in female cats

SIGNS/OBSERVED CHANGES in the ANIMAL

- 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
- 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

CAUSES

- Genetic susceptibility for hip looseness or laxity
- Rapid weight gain, nutrition level, and pelvic-muscle mass—influence development and progression of hip dysplasia

RISK FACTORS

- Overweight and poor muscle tone

TREATMENT

HEALTH CARE

- May treat with conservative medical therapy or surgery

- Outpatient, unless surgery is performed
- Depends on the patient'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 animal
- 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 animal 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”)

- Corrective orthopedic 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 patient (6 to 12 months of age)
- 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 to 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 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); patients with good hip musculature
- Pain free function, even in giant-breed dogs
- Slightly abnormal gait often persists following surgery
- Postoperative loss of muscle mass (muscle atrophy) in the hind limbs—common, particularly in large dogs

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- 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 sulfate—may have a cartilage protective effect in osteoarthritis (form of joint inflammation [arthritis] characterized by chronic deterioration or degeneration of the joint cartilage)

FOLLOW-UP CARE

PATIENT MONITORING

- Monitor signs, degree of lameness, and changes seen on X-rays—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, 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; assess metal implant stability

PREVENTIONS AND AVOIDANCE

- Best prevented by not breeding dogs affected with hip dysplasia
- Pelvic X-rays—may help identify dogs with actual bony changes of hip dysplasia; may not identify all dogs carrying 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

EXPECTED COURSE AND PROGNOSIS

- Joint deterioration or degeneration usually progresses—most patients lead normal lives with proper medical or surgical management

KEY POINTS

- Hip dysplasia has a genetic (inherited) basis, involving multiple genes
- Development of hip dysplasia 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 orthopedic surgical procedure is performed early in the disease
- Surgical procedures can salvage hip-joint function once severe joint deterioration or degeneration occurs

