



Hip Dysplasia

What is Hip Dysplasia?

Hip dysplasia describes an abnormal development of the hip joint that results in irregularities in form and function of the hip. Dysplasia leads to abnormal stress and friction within the joint. The hip joint becomes unstable, leading to pain, muscle loss, development of osteoarthritis, altered gait patterns, and reluctance to exercise.

Causes of Hip Dysplasia

Hip dysplasia in pets typically results due to a combination of factors. These include genetic predisposition, rapid growth rate, and diet. Larger breed dogs are more commonly affected, and the disease usually occurs bilaterally.

Symptoms of hip dysplasia can vary greatly between individuals, depending on the severity and progression of the disease as well as the age and size of the pet.

Puppies with genetic predisposition for hip dysplasia are born with normal hips that gradually develop instability in the first 4-12 months of their lives. Early symptoms in puppies can be exhibited as difficulty rising, decreased activity level, loss of muscle mass in the hind legs, and what is known as a "bunny hop" gait, typically more pronounced during a trot or run.

Older dogs with hip dysplasia have symptoms that are related to joint degeneration as a result of the development of osteoarthritis in the affected joints. The symptoms of hip dysplasia in middle aged or older dogs include pain, crepitus, decreased range of motion of the hind limbs, waddling gait, difficulty rising, reluctance to exercise, and thigh muscle atrophy.

Diagnosis

Diagnosis of hip dysplasia typically involves hip x-rays and specific palpation methods performed by a veterinarian. The preferred technique for hip x-ray is called the PennHIP distraction method, which provides a quantitative measurement of laxity present within the hip joint. The degree of laxity will help to predict whether a puppy is likely to develop hip dysplasia, therefore, potential surgical options can be considered. This test is most accurate in puppies around 16 weeks of age. The palpation method is called the Ortolani Sign, which can be performed on

puppies as young as 10-16 weeks old. A puppy with a positive Ortolani Sign will typically have signs of arthritis in the hips by 1 year old. Unfortunately, the Ortolani sign is not a diagnostic test for dysplasia in older dogs and definitive diagnosis will rely on evidence of arthritis seen on xrays.



A normal hip; the femoral head fits snugly inside the acetabulum, Photo by Dr. Greg Harasen



This dog has hip dysplasia. Photo by Dr. Martha Broda

Surgical Interventions

For younger dogs diagnosed with hip dysplasia, there are 2 main preventative surgical options designed to alter the joint alignment and increase stability of the hip joint:

1. **Triple Pelvic Osteotomy (TPO)** – This procedure results in 3 incisions into the hip bones in order to realign the acetabulum (the socket) of the hip joint. A bone plate is used to stabilize the hip once its orientation has been changed. This procedure is typically done for puppies between 4-10 months of age with early signs of hip dysplasia and joint laxity and no changes evident on x-rays.
2. **Juvenile pubic symphysiodesis** – In this procedure, the pubic symphysis is surgically altered, causing early fusion and change in pelvic growth. Puppies between 16 – 18 weeks of age that are at risk of developing hip dysplasia are candidates for this procedure.

Rehabilitation following surgical intervention for hip dysplasia focuses on promoting muscular development in the hind limbs.

In older dogs, two surgical options are available:

1. **Total Hip Replacement (THR)** – This procedure involves removal of the entire diseased hip joint, followed by replacement with a prosthetic joint.
 - A. This procedure typically result in excellent weight bearing immediately after surgery
 - B. Rehabilitation post-operatively focuses on muscle strengthening, improving hip mobility, and proprioception re-education to reduce chance of a hip luxation occurring

2. **Femoral Head and Neck Osteotomy (FHO)** – This procedure involves removal of the head and neck of the femur, resulting in the absence of a true hip joint.
 - A. This procedure can result in functional shortening of the limb and gait abnormalities with asymmetric hind limb muscle mass
 - B. Rehabilitation post-operatively focuses on regaining hip extension, and strengthening hind limb musculature

Conservative Management

For older dogs, conservative management consists of weight management, pain management, joint supplementation to support cartilage health and a structured rehabilitation program involving heat therapy, electrical stimulation, laser therapy, therapeutic ultrasound, aquatic therapy and therapeutic exercise. Senior pets with hip dysplasia and resultant arthritis will require a multimodal approach to optimize mobility and improve comfort.

Professional Rehab/Physical Therapy

Early physical rehabilitation therapy should be considered as part of the conservative or pre/postoperative management of hip dysplasia for optimal long term management. A customized rehabilitation program for conservatively managed patients or those following surgical intervention for hip dysplasia has been proven to significantly improve muscle mass, comfort and mobility when compared to standard home care.

Post-operative rehabilitation programs also improve joint range of motion, reduce muscle spasms and associated discomfort, and improve weight bearing, resulting in significantly improved overall joint function. Many dogs undergoing post-operative rehabilitation will recover with near normal function, however, those with moderate to severe osteoarthritis at the time of diagnosis may require long-term management.

The goals of rehabilitation are to control inflammation, maintain joint range of motion, decreased pain and strengthen muscle. In addition, weight management can be incorporated into a rehabilitation program if indicated. A customized rehabilitation program may include:

Manual therapy

Stretching and massage increase blood flow to muscles and decrease joint stiffness. When pets are not ambulating normally, their muscles become tight and joint range of motion can become compromised. Controlled and appropriate stretching promotes increased flexibility and comfort during physical activity and decreases the risk of future injury. Massage alleviates discomfort through releasing endorphins and by increasing blood and lymphatic flow to affected areas. These techniques will result in decreased pain and inflammation post-operatively.



Aquatic Therapy

Aquatic therapy may include swimming and/or the underwater treadmill. The buoyancy provided by the water helps to limit the concussive impact on joints, allowing these pets to move more comfortably than on land. The increased resistance created by moving through water promotes increased muscle strength and cardiovascular endurance. The implementation of aquatic therapy in a

senior management program can help to maintain an ideal body weight, improve joint range of motion, and increase muscle strength and tone. This will result in joint stabilization and increased overall comfort.

Physical modalities

A variety of physical modalities, such as cold laser therapy, may be utilized to reduce the severity of clinical signs and reliance on medications to control pain and discomfort. Laser therapy is the painless use of light energy to generate a photochemical response in damaged or dysfunctional tissue. This will, in turn, decrease pain and inflammation while accelerating healing. This modality is non-invasive, fast, comfortable and effective.

Cryotherapy/Heat therapy

Cold therapy can be used post-operatively to decrease inflammation. It can also be used after exercise to soothe sore joints and tissues. Heat therapy can be used prior to stretching and exercise to warm up the muscles and prevent injury.

Hip dysplasia and resultant arthritis in pets is a common cause of lameness and can significantly impact mobility and long term quality of life. Early identification and a customized physical rehabilitation program will ensure an optimal outcome and rapid return to function, allowing our furry friends to get back to doing what they love. For further information about how rehabilitation can help your pet, please contact Blue Springs Animal Rehabilitation Center.

www.bluespringsanimalrehabcenter.com