

## Canine Hip Dysplasia (CHP)

### Introduction

Canine hip dysplasia (CHD) is a common developmental orthopedic condition in dogs. Although the exact cause is unknown, hip dysplasia has a hereditary (genetic) component. CHD can result in crippling lameness in both puppies and adult dogs.

The hip is a ball and socket joint that is composed of the femoral head (ball) and acetabulum (socket). All dogs are born with healthy/tight hips. Dogs afflicted with CHD have an abnormal growth of the hip joint that results in **a loose fit (laxity)**. The hip joint laxity causes abnormal motion of the femoral head relative to the acetabulum. This motion is responsible for hip pain and limb dysfunction. As the dog ages, the continual movement of the femoral head (ball) deforms the acetabulum (socket). Long-term, this causes the progressive loss of cartilage, the development of scar tissue around the joint and the formation of bone spurs around the ball and socket. This change results in (often-debilitating) arthritis.

There are multiple causes of CHD; however, hereditary (genetics) is the most significant single risk factor. Rapid weight gain and growth through excessive nutritional intake can complicate the development of CHD.

Dogs with clinical signs of CHD exhibit lameness (limping), reluctance to rise or jump, shifting of weight to the forelimbs, loss of muscle mass in the rear limbs and hip pain. Dogs may show symptoms at any stage of life. Two groups of dogs characteristically show clinical signs of CHD:

- **Group 1:** Younger dogs without arthritis, but with significant hip laxity
- **Group 2:** More mature dogs that have developed hip osteoarthritis

### Diagnosis

A combination of two methods is used to diagnose CHD. Specially positioned hip x-rays and palpation methods that determine abnormal hip joint laxity, both of which require light sedation.

Screening of puppies at 16 weeks of age using a PENNHip evaluation can lead to an early diagnosis and allow the correction of the underlying condition to provide life-long improvement in hip function.

### Treatment

The treatment options available vary depending on the stage and severity of the hip dysplasia:

## **Young Dogs with No Arthritis**

*Juvenile Pubic Symphysiodesis (JPS) < 5 months of age.*

JPS is a minimally invasive surgery that closes a growth plate at the bottom of the pelvis resulting in the growth of the pelvis and the hip cup (acetabulum) increasingly covering the ball (femoral head) as the puppy grows during the following 4–6 months.

*Double or Triple Pelvic Osteotomy (DPO/TPO)*

Double or Triple Pelvic Osteotomy (DPO/TPO) is another option for immature dogs (ideally less than 8–10 months old) with CHD but no arthritic changes. These surgical procedures involve cutting the pelvic bone in two (DPO) to three places (TPO) and rotating the segments to improve coverage of the ball by the socket and decrease hip laxity. TPO has been used successfully in dogs for decades. Recent advancements in implant technology (locking plates and screws) now allow similar results with only two cuts made in the bone (DPO), thus a less invasive procedure.

## **Dogs with Arthritis**

*Total Hip Replacement (THR)*

THR is the surgical method that provides the most normal, pain-free function in dogs with CHD that have arthritis or are otherwise not candidates for JPS or DPO/TPO

Total hip replacement eliminates hip pain by reproducing the mechanics of a healthy hip joint with a more natural range of motion and limb function. THR involves the replacement of both the ball and socket with metal and polyethylene (plastic) implants. Bone cement, metal pegs, or press-fit methods are used to secure the implants in place.

If the goal for the patient is for them to be athletic dogs who hunt, do agility, high-level obedience, run with their owners, etc., THR is the ideal surgical procedure.

*Femoral Head Osteotomy (FHO)*

The last surgical option to alleviate the pain secondary to severe hip laxity/dysplasia is femoral head osteotomy. FHO can provide enough comfort in a dog weighing less than 60–70 pounds to avoid the daily use of anti-inflammatory pain medication. This technique involves removing the femoral portion of the hip joint (ball) to reduce pain.

Following an FHO, a false joint develops with the muscles around the hip, transferring the forces from the leg to the pelvis during limb movement. The goal of an FHO is to relieve the pain associated with CHD, not to maintain/recreate the normal hip function. FHO dogs must remain slim throughout their lives and follow a limited exercise program, i.e., leash walks and confinement to the yard and house.

## **Summary**

Canine hip dysplasia is a common, hereditary disorder that causes limited mobility and decreases the quality of life in dogs. There are several treatment options for restoring function and eliminating pain.