

## Total Hip Replacement

This option (fig. 6) involves replacing the diseased hip joint with an artificial joint made of a high density polyethylene (socket) and stainless steel (ball). These components are held in place with bone cement. A new technique of Total Hip Replacement involves the use of porous coated components that are held in place by surrounding bone in-growth rather than by cement. This system has been shown to have a very hearty and long-term durability.



Fig 6: X-Ray post-operative Total Hip Replacement (THR)

## Evaluation

For an evaluation of your dog or for further information about the diagnosis and treatment of hip dysplasia, please call Veterinary Surgical Centers.

## Conclusion

Canine Hip Dysplasia is a serious problem facing veterinarians, dog breeders and pet owners alike. Few patients are exactly alike. Careful evaluation of all the radiographs, combined with a sedated examination must be considered by the veterinary surgeon prior to electing the proper method of treatment option available.

Early diagnosis is critical for the pet, pet owner and breeder. PennHIP distraction films allow accurate hip evaluation as early as 4 months of age, allowing plenty of time for surgery to prevent further hip deterioration.

Several surgical procedures are available for correcting various stages of Canine Hip Dysplasia, with the success of most of them relying on early diagnosis.



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## The Hip

Treatment of Canine Hip Dysplasia



Come. Sit. Stay.

**Heal...**

## Canine Hip Dysplasia

Hip dysplasia is a multi-factorial, hereditary disease that, in its most severe clinical presentation, can result in both early (puppyhood) lameness and late term (juvenile or adult) crippling lameness. The causes for hip dysplasia are a combination of genetic and environmental factors including hormonal, nutritional and physiologic. Certain breeds (retrievers, Rottweilers, shepherds and pit bulls/bull breed dogs) are at higher risk for hip dysplasia. It most commonly affects both hips (92% of patients).

All dogs are born with normal hips (fig. 1). Between 12-16 weeks of age, the dysplastic hip will begin to loosen due to increased joint fluid and excessive elasticity in the soft-tissues surrounding the hip (fig. 2). This results in the ball (femoral head) coming out of the socket and eventually getting 'locked out' of the socket with scar tissue. As time passes, the constant grinding of the ball on the rim of the socket results in potentially severe arthritis (fig. 3).

The loosening of the ball in the socket and the developing arthritis will result in pain and rear limb stiffness which can cause difficulty rising or walking and playing. Often a noticeable 'bunny hopping' hind limb gait is the result. These symptoms can begin as early as 4 months of age or as late as 9 to 10 years of age, depending on the individual severity of the disease, as well as the dog's tolerance for pain.

## Diagnosis

Diagnosis of hip dysplasia relies on physical examination combined with radiography (x-rays). Particularly in the early



Fig 1: X-Ray of Normal Set of Hips



Fig 2: X-Ray of Early Juvenile Hip Dysplasia



Fig 3: X-Ray of Hip Dysplasia with Secondary Arthritis

stage, when the hips are dynamic, a standard x-ray study may underestimate the degree of hip laxity present. In young dogs, a fully awake, and fully sedated physical examination are necessary and are complementary to a radiographic study. As a puppy ages, x-rays begin to more accurately demonstrate the secondary changes that occur with hip dysplasia, and a physical examination becomes essential in determining the impact that this progressive orthopedic condition has on the patient's quality of limb use and gait. These subjective qualities are important if a surgeon is considering a surgical prophylactic treatment for hip dysplasia. In general, the earlier that the diagnosis of dysplasia is made, the better for the patient when considering treatment strategies. We recommend hip palpation and hip extended views for high risk breeds at the time of gonadectomy (neuter/spay).

Radiographically, the series of films taken in puppies will depend on their age. Early on, when there are few changes present, and the patient is being assessed for surgery the film study may include: hip extended view (V/D pelvis); PennHip (distraction view); frog leg (compression view) and DARview (dorsal acetabular rim view). Each of these films allows the surgeon to quantify and qualify the health of the hip joint and gain an appreciation for the variety of surgical options that may be available to curtail the onset of the crippling stage of hip dysplasia.

## Treatment

Treatment regimens can be either medical or surgical depending on the individual circumstances. Medical treatments usually involves rest, strict weight control, nutritional supplements, physical therapy, acupuncture, stem cell treatment and anti-inflammatory medications to symptomatically relieve the pain. These treatments do not correct the source of pain or underlying problem. Several surgical procedures are now available for correcting the various stages of Canine Hip Dysplasia.

## Juvenile Pubic Symphysiodesis

If hip dysplasia is identified in a young dog (<16 weeks in medium to large dogs and <20 weeks in extra-large or giant breed dogs), a procedure referred to as juvenile pubic symphysiodesis (JPS) may be performed. This involves using electro-cautery (weakened electrical current) to 'arrest' the growing pattern in the growth plate of the

pelvis. This 'arrest' results in an alteration in the alignment of the pelvis such that the pelvic cup 'rotates' into a position which protects the pet from the debilitating effects of hip dysplasia. This protection generally lasts the life-time of your pet. The key to success for this particular procedure relies in exceptionally early identification of the problem.

## Pelvic Osteotomy

In a young dog with no degenerative changes in the hip joint, Pelvic Osteotomy (fig. 4) is effective in correcting the effects of the underlying joint looseness. In this procedure, the pelvic bones are cut in three places and the surgeon redirects the hip socket so that the ball (femoral head) becomes more deeply seated inside. The pelvic bone is then fixed in its new position by a bone plate and screws. This eliminates hip instability and pain, allowing the hip to develop more normally.



Fig 4: X-Ray of 3 year follow-up Triple Pelvic Osteotomy (TPO)

## Femoral Head & Neck Excision

If the hip joint (ball and socket) has become irreversibly damaged, a Pelvic Osteotomy would not benefit your pet. One result of the hip instability is cartilage deterioration and erosion. Cartilage covers the joint surface and serves to smoothly lubricate the joint through its entire range of motion. Once this layer has been ground away by dysplasia, the underlying bone and pain receptors of the joint are exposed.

In these instances, removal of the femoral head and neck (the ball portion of the joint) eliminates a source of pain (fig. 5). The dog's body reacts by forming a false joint with the hip being supported by surrounding muscles and the joint capsule. Although free from pain, this procedure may reduce the performance of the limb and alter the gait.



Fig 5: X-Ray post-operative Femoral Head Osteotomy (FHO)