

Dogs commonly have orthopedic conditions affecting their hip, knee, shoulder and elbow joints. This article will focus on an orthopedic abnormality in medium-large dogs called **Hip Dysplasia**.

It is worth noting at the outset that all orthopedic conditions and post-operative recoveries are made worse by an obese or over-weight body condition. Since dogs come in all shapes and sizes, even within one breed, body weight is a difficult variable to guide. Body "condition" is easier to evaluate and recognize when "ideal". Also worth noting is that carrying excess fat tissue is not "bad" just because the animal is "heavy", but probably more importantly because fat tissue is pro-inflammatory. It is an active, dynamic group of cells throughout the body that, when in excess, accelerates many degenerative processes that lead to disease and injury. A lifetime study of a large group of dogs demonstrated that lean dogs lived almost two years longer than their genetically similar overweight counterparts!

The "ideal" body condition is leaner than you think. Very few dogs these days are ideal (65% are overweight or obese), so our frame of reference is skewed. To evaluate body condition, you use your eyes and hands.

- You should be able to feel the ribs, pelvic bones and shoulder bones easily, but not see them.
- You should be able to see (or feel in the fluffy dogs) a "waist" behind the ribs when viewed from the top.
- You should be able to see the belly tuck up behind the ribs when viewed from the side.

Hip dysplasia is a common developmental problem in large breed dogs that is *both hereditary and affected by nutrition, body weight and activity level*. It is literally a looseness or **laxity** in the hip joints (usually both joints) that allows the *ball of the hip joint to bounce around the edges of the socket causing damage to both*. Over months and years, this results in degenerative joint disease (DJD), otherwise known as **arthritis**. In dogs over two years of age, DJD/arthritis seen on xrays can *only be presumed* to be caused by hip dysplasia; **other less common causes** of hip arthritis are trauma, overuse, infection.

Hip dysplasia and hip arthritis **do NOT always cause hip pain**. X-rays can look abnormal yet a dog can feel completely normal.

The three lifestages of hip dysplasia:

- 1) As puppies with loose hips grow and become more active, they may enter the "young dog pain period". This usually starts around 9-10 months of age (but can start as early as 6 months) and ends around 14-18mo of age. The pain comes from stretching of the joint capsule (repeated "sprains") and microscopic fractures of the ball and cup of the hip joint.
- 2) As they age, they then enter the "adult dog pain-free period". Nothing inside has become normal, but the bones are maturing and getting less susceptible to microfractures, the joint capsule is thickening, tightening up and stabilizing the joint, and muscles are getting bigger and more supportive of the hip. Arthritis is progressing slowly and silently during this period of variable length; the dogs are fully active and mobile.

- 3) Then the dogs enter the "old(er) dog pain period". This can start as young as 3yrs of age or as late as 14yrs of age. The abnormal hip environment has created an unhealthy home for joint cartilage; arthritis is defined by damaged joint cartilage and exposure of the sensitive bone underneath. "Bone on bone" contact is painful.

When present, hip pain will look similar in all ages of dogs. **Signs of hip pain** can include: *difficulty getting up* when lying down; *bunny hopping* in the rear legs when running; *limping* when walking, *difficulty navigating stairs*, avoiding or having *trouble jumping* onto furniture or into the car; and oddly enough, *never jumping up* to greet people (though this may just seem like a polite, well-trained dog.)

In dogs less than one year of age, hip dysplasia (the looseness) can be helped in several ways depending on the severity of the laxity. **Preventing future arthritis is the goal!**

- 1) *Excess body weight and overfeeding* have been demonstrated in veterinary studies to result in more severe arthritis due to hip dysplasia. This is a very easy problem to avoid or remedy; ask your veterinarian for specific input on body condition and feeding requirements for a young dog. A young dog's future mobility may depend on it.

- 2) *Dietary supplements* may have some benefit in protecting a loose/dysplastic joint in the young dog from developing arthritis. High-dose fish oil has essential fatty acids that are very potent anti-inflammatory chemicals that may reduce the damage done by a loose hip banging on the joint cartilage. Glucosamine/Chondroitin/MSM are all "building blocks" of cartilage and joint fluid; use in the young dog with abnormal hips may reduce future damage. The data supporting glucosamine supplements are not conclusive; they are rarely associated with any side-effects.

- 3) *Low-impact activity* during the growing stages may reduce the micro-trauma that is occurring in the loose hip joints. Restricting growing puppies to close confinement for the majority of the day has been shown in veterinary studies to be worse for hip dysplasia than a normal degree of activity. So the happy medium is to allow normal play but do not encourage high jumping or long running in young dogs known to have loose hips.

- 4) *Thigh and gluteal muscle strengthening* may help anatomically support the hips. When puppies sit with their feet widely spaced, this acts to push the head of the femur into the acetabulum (i.e. the normal hip position.) Encourage this wide-sit position by gently pushing the feet apart when sitting, to "train" that into normal. Also, standing up fully upright from a sit position, much like squats in people, will strengthen thighs and gluteals. This "circus poodle" exercise will require much treat/reward and encouragement/assistance in the beginning. Discussions with a veterinary physical therapist can be very informative toward this goal, and "exercises" can be easily integrated into daily life for you and your dog.

- 5) In dogs less than one year of age, a **Triple Pelvic Osteotomy (TPO)** surgery may be beneficial to slow the progression of arthritis. The surgery cuts the pelvis in three locations, rotates the hip socket over the

ball of the hip and stabilizes it in the new location with a plate and screws. This creates a new "roof" to the hip joint so less looseness is present and ongoing joint micro-injury is reduced. A younger surgical candidate is better (9mo vs. 12mo), but the young puppy may also tighten up enough to be at low risk for fast arthritis. Several xrays taken each month as the puppy grows and several exams may be helpful to identify ideal surgical candidates.

In older dogs with hip pain, it is likely due to hip arthritis; this can be managed in several ways. **Preventing pain is the goal.**

1) *Excess body weight puts more workload on arthritic hips.* This is a very easy problem to avoid or remedy; ask for specific input from your veterinarian on body condition and feeding requirements for an adult/older dog. This "simple" therapy is immeasurably beneficial to a dog dealing with arthritic hips.

2) *Dietary supplements* may have some benefit in treating the inflammation (and thus pain) of arthritis. High-dose fish oil has essential fatty acids that are very potent anti-inflammatory chemicals that have been demonstrated in veterinary studies to reduce pain in joints. Glucosamine/Chondroitin/MSM are all "building blocks" of cartilage and joint fluid; use in the adult/older dog with arthritic hips may reduce further damage. The data supporting glucosamine supplements are not conclusive; they are rarely associated with any side-effects.

3) *Low-moderate impact activity* has been demonstrated in humans to be beneficial to arthritic joints; anecdotal information in dogs seems to suggest the same. Close confinement for extended periods results in stiff, aching joints that need to "warm up" to become more comfortable. Avoid high impact activities such as fetch or long-distance jogging/running. Encourage movement throughout the day.

4) *Non-steroidal anti-inflammatory drugs (NSAIDs)*, like aspirin and ibuprofen for people (unsafe in dogs), are very useful for hip pain. NSAIDs used in dogs include: carprofen (Rimadyl, Vetprofen), meloxicam (metacam), dericoxib (Deramaxx), firocoxib (Previcox), and grapiprant (Galliprant). They can be used "as needed" just before a known exacerbating activity (i.e. a trip to the cabin) or after the soreness shows up. Or they can be used steadily when hip pain is obvious every day. *The lowest effective dose is always ideal*, so weaning down the prescribed dose to "just what works" is the goal.

5) **Hip denervation surgery** can be used to treat pain in the arthritic hip. This procedure is relatively minimally invasive, requiring only a 1.5-2in incision and no cutting of bone. The concept is to remove the microscopic nerves that are coming from the hip joint carrying pain signals up to the brain. No nerves that signal muscles to work are affected. Veterinary studies have demonstrated good results in reducing hip pain with this procedure; recovery from the surgery is brief and unrestricted. Both hips can be operated at the same time.

6) **Total hip replacement surgery** will remove the hip ball-and-socket joint and thus the source of hip pain completely. A metal ball and a plastic socket are inserted where the hip used to be, so hip and leg function are normal. This is a very effective though major surgery, has some degree of risk of infection and failure, and requires strict activity restriction after surgery for 2-3 months. One hip is operated at a time.

7) **Femoral head and neck excision (FHO)** is a surgery that removes the ball of the hip joint and allows a "false joint" to form. Commonly, a gait abnormality will be seen after recovery from an FHO due to a slightly shorter leg, loss of firm hip support during weight bearing, and some degree of restricted range due to scarring. Residual pain in the hip region is common and may or may not be less than the original hip pain; for this reason, FHO is rarely of benefit for typical hip arthritis.

Hip dysplasia is not the scary, crippling disease for which it has been come to be known.

There are many, many more puppies with loose hips who go on to normal, active lives than there are who are severely disabled. Understanding the mechanisms and sources of pain that may come from this anatomic abnormality is one step toward making good decisions for your dog if he/she has this diagnosis. Do your part toward pain and arthritis prevention by maintaining a lean-ideal body condition and a moderately active dog lifestyle, using supplements when appropriate. And visit with an orthopedic surgeon to fully explore your dog's diagnosis and therapeutic options.

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October 2017