

Triple Pelvic Osteotomy (TPO)

Written for VSC by Dr. Andrew S. Levien, BVSc (hons), PgCertVS, MANZCVSc, DACVS-SA

What is hip dysplasia?

Hip dysplasia (HD) is a condition where there is increased laxity (looseness) of the hip joint. Untreated HD leads to early onset of old age arthritis in pets. Early interventions to correct the laxity include triple pelvic osteotomy (TPO) and juvenile pelvic symphysiodesis (JPS), both described in detail below. TPO is generally performed in pets younger than 10 months of age, while JPS is performed in pets younger than 20 weeks old.

What are the symptoms of hip dysplasia?

The symptoms of hip pain cause changes in the pet's gait, activity level, and comfort. Typically, dogs are presented with signs of hip dysplasia as puppies, and osteoarthritis develops during middle and older ages.

Presenting symptoms for diseases of the hip include: hind limb lameness (abnormal way of walking in the rear legs, such as favoring one leg over the other), difficulty rising, inability to jump into the car, refusal to use stairs, reluctance to exercise, and a tendency to be very tired after exercise and needing to lay down. Dogs often bunny-hop or skip when running and tend to be less active than littermates or other household dogs.

What is the diagnosis?

Hip dysplasia is commonly diagnosed by physical examination and X-Rays. Light sedation helps pain free manipulation of both hips, as the patient has to be placed in dorsal recumbency (on its back) on an X-Ray table and in lateral recumbency (on the side). In young patients, special techniques are available, such as the PennHip method to evaluate dogs for hip dysplasia as young as 16 weeks of age.

Triple Pelvic Osteotomy

What is a triple pelvic osteotomy?

Triple pelvic osteotomy (TPO) is a surgery performed in moderate- to large-breed dogs with early clinical hip dysplasia (HD). The goals of the procedure are eliminating coxofemoral joint laxity, improving hip congruity, and normalizing stresses of the hip joint. This should help to prevent or reduce the development of osteoarthritis. A TPO involves bone cuts in the pelvis so that the socket (acetabulum) portion of the joint can be rotated over the ball (femoral head); the bones are then stabilized with a bone plate (see X-Ray to the right). The surgery helps to provide better coverage of the ball portion of the hip joint, which eliminates joint laxity. Typically, dogs that undergo this procedure are puppies and younger than 1 year of age. The procedure can be performed on both sides simultaneously but, more commonly, each procedure is separated by four to six weeks. Once arthritis is apparent on X-Rays, a TPO can no longer be performed.



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What is recovery like after the procedure?

Dogs will spend roughly two nights in the hospital following surgery. Strict rest is required at home for an additional six to eight weeks, and X-Rays are required at about six weeks to document healing of the surgery site.

Which dogs are candidates for this procedure?

Candidates for triple pelvic osteotomy (TPO) are dogs over 30 pounds and older than 5 months of age but rarely older than 1 year of age. If hip looseness is seen on X-Rays without evidence of arthritis, the TPO is usually a very good option. A sedated examination is required in addition to the X-Rays in order to evaluate the degree of looseness and to determine the degree of correction that would be required with surgery.

What if my dog is not a candidate for TPO?

Fortunately, total hip replacement is also an excellent option to treat hip dysplasia. It eliminates pain and restores function of the hip joint to normal. Read more about total hip replacement.

Juvenile Pubis Symphysiodesis

What is juvenile pubis symphysiodesis?

Bones grow from specific locations on the bone called growth plates (see arrow on the X-Ray to the right). Juvenile pubis symphysiodesis is a technique used to induce "closure" of a growth plate located on the floor of the pelvis. This growth plate is known as the pubic symphyseal growth plate. The effect of "closing" the growth plate is that development in this portion of the bone is halted, which changes the final conformation of the acetabulum, leading to increased femoral head coverage and, therefore, less hip laxity (looseness), better joint congruity, and decreased osteoarthritis.

Which dogs are candidates for this surgery?

In order to be a candidate for this surgery, dogs must be identified at a very young age (while the pelvis is still growing), typically younger than 16 weeks old (ideally between 12-16 weeks). This makes selection of candidates difficult, as many are too old for the surgery. Candidates can be identified using physical examination in conjunction with X-Rays (specifically the PennHip method).

