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Juvenile Pubic Symphysiodesis

Canine Hip Dysplasia

Canine hip dysplasia can be a crippling disease that commonly affects medium and large breed dogs. It is characterized by coxofemoral joint laxity, incongruence, and secondary degenerative joint disease. The pathogenesis is complex, involving both genetic and environmental factors. Two factors that are common to dogs that ultimately develop hip dysplasia are coxofemoral joint laxity and incongruity. These two factors are in large part responsible for initiating the inflammatory cascade which ultimately leads to synovitis, cartilage degeneration, and clinical signs related to chronically painful hip joints and arthritis.

Surgical treatment options

For skeletally mature dogs with established degenerative joint disease of the coxofemoral joints, there are primarily two surgical treatment options. Femoral head and neck ostectomy (FHO) is a salvage procedure used to address the pain associated with bone-on-bone contact of the femoral head with the acetabulum. Although effective at eliminating the source of pain, it is functionally inferior to the normal coxofemoral anatomy. A more functional salvage procedure is the total hip replacement. This surgical option is very effective at providing pain-free range of motion while maintaining the normal anatomic relationship of the coxofemoral joint.

For patients with clinical signs of hip dysplasia without degenerative joint disease, a triple pelvic osteotomy (TPO) may be indicated. The aim of this procedure is to provide ventrolateral rotation of the acetabula to improve joint congruity and stability of joints with increased laxity. By “capturing” the femoral head, less laxity is present and subsequently less erosion of articular cartilage occurs. This surgery is commonly done at 8 to 12 months of age, before damage to the joint cartilage has occurred.

In a similar fashion, juvenile pubic symphysiodesis (JPS) is a surgical technique that accomplishes the same objective, but with significantly less invasiveness and associated morbidity.

Principles of JPS

The objective of JPS is the same as that for the TPO procedure; ventrolateral rotation of the acetabula to increase capture of the femoral head. However the means of

accomplishing this anatomical alteration is very different. By cauterizing the growth plate and thus stopping further growth of the pubic symphysis, the ventromedial aspect of the pelvis remains underdeveloped while the dorsolateral aspect continues to grow normally. As the patient continues to mature, ventrolateral rotation of the acetabula ensues, and hip joint conformation improves.

Patient Selection

One of the biggest disadvantages of JPS is the limited age range that is needed for the procedure to be effective. The surgery needs to be done between age 12 and 15 weeks to be most effective. Because the surgery relies on the growth potential of the pelvis, the benefit of the procedure decreases significantly after 15 weeks of age. The earlier the surgery is done, the more rotation of the acetabula allowing better coverage and capture of the femoral head.

Every puppy of susceptible breed should be carefully screened for hip dysplasia by 12 weeks of age. An examination with heavy sedation is performed to determine hip joint laxity. If laxity is demonstrated on physical exam, radiographs should be made. Extreme laxity or severe conformational defects may not respond adequately to JPS and some dogs still may go on to develop clinical signs of hip dysplasia despite the surgery.

In dogs under 15 weeks of age with hip joint laxity and clinical signs, the decision is clear that JPS is indicated. In dogs with hip joint laxity with no clinical signs, the decision is not as simple. The presence of hip laxity indicates that the patient is at risk for developing hip dysplasia, however, a few of these cases may never develop clinical signs of disease. Therefore the surgery must be considered preventative, and we may be treating some dogs that may not have future problems if the surgery were not done. This must be considered in relation to the higher risks, expense, and invasiveness associated with the other surgical options once the window of opportunity to perform JPS has passed. Research has shown that JPS done on normal dogs does not cause any clinical problems and has a low risk of complications.

Summary

JPS is a preventive procedure for young dogs susceptible to hip dysplasia. The purpose of the procedure is to increase acetabular rotation and femoral head coverage in order to decrease hip laxity in immature, potentially dysplastic dogs. JPS induces premature closure of the pubic symphysis. Advantages of this technique include low cost, minimal invasiveness, no implants, very low morbidity, minimal exercise restrictions, and early return to normal activity. This procedure has been documented to improve hip joint conformation. Early screening of young, susceptible patients is essential for this very useful treatment option of canine hip dysplasia.