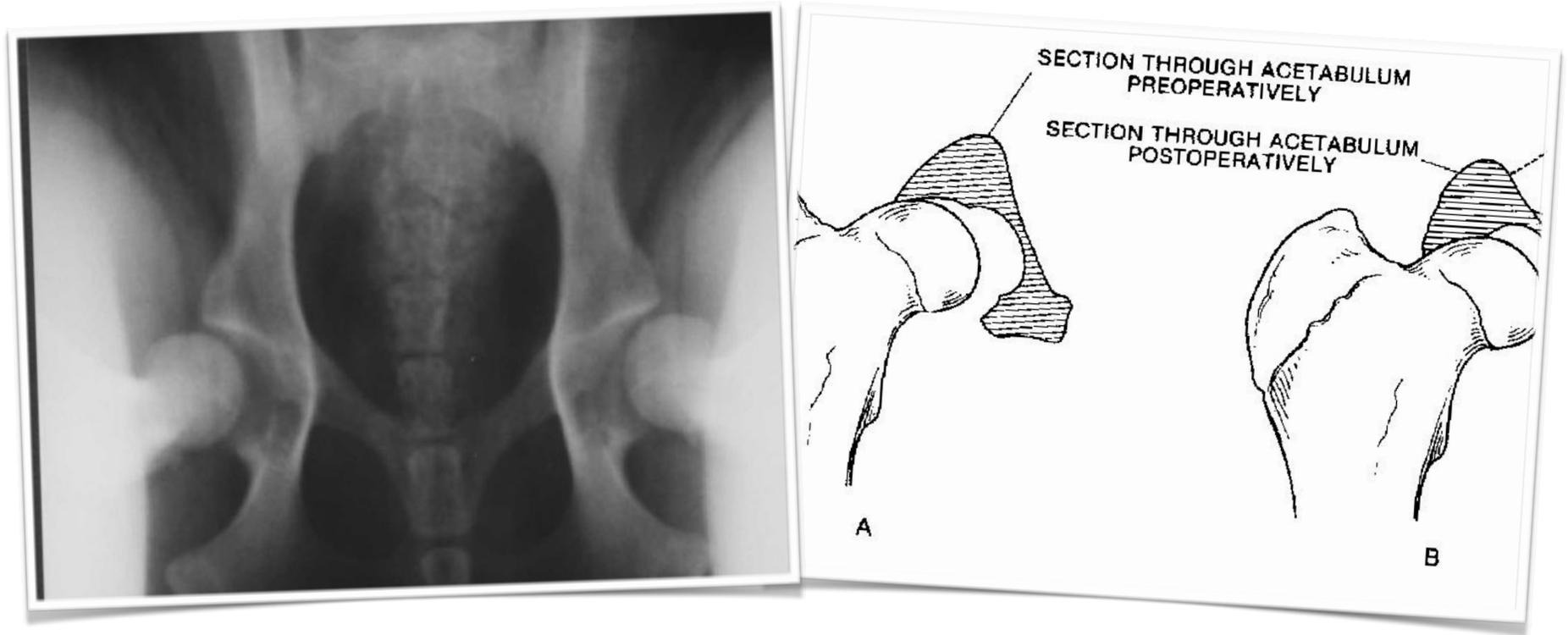


# Hip Dysplasia

Kenneth A. Bruecker, DVM, MS, DipACVS, DipACVSMR



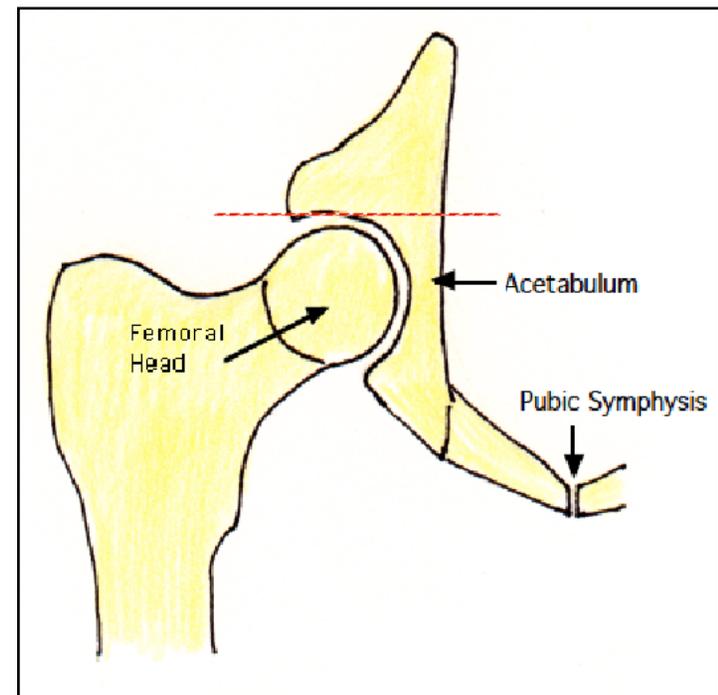
## INTRODUCTION

The hip is a "ball and socket" type of joint. In the normal dog, the head of the femur, the femoral head, (the "ball" portion) sits tightly into the acetabulum of the pelvis (the "socket" portion).

Hip dysplasia is a developmental abnormality wherein a puppy develops loose and abnormally shaped hip joints as it is growing. This is known as "incongruence" between the shape and function of the femoral head and the acetabulum. The angle of the top of the acetabulum may not be level, allowing the femoral head to slide "in and out" as the puppy is walking.

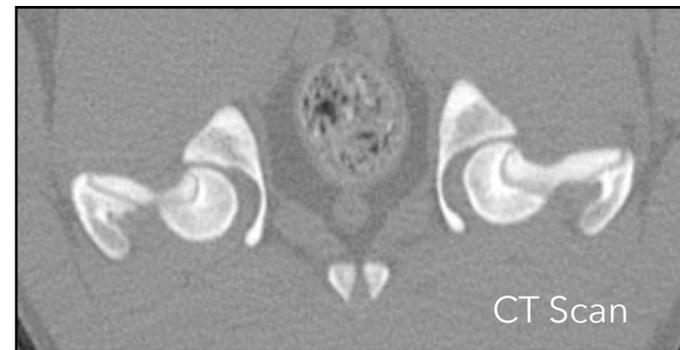
Damage to the cartilage and joint lining occurs with every step. **The end result is progressive abnormal development of the acetabulum and femoral head and pain!**

Although hip dysplasia is inherited (passed on from the parents), overfeeding high protein/high calorie diets and over-supplementing with vitamins or minerals, especially calcium, can worsen or accelerate its development in fast growing puppies.



## DIAGNOSIS

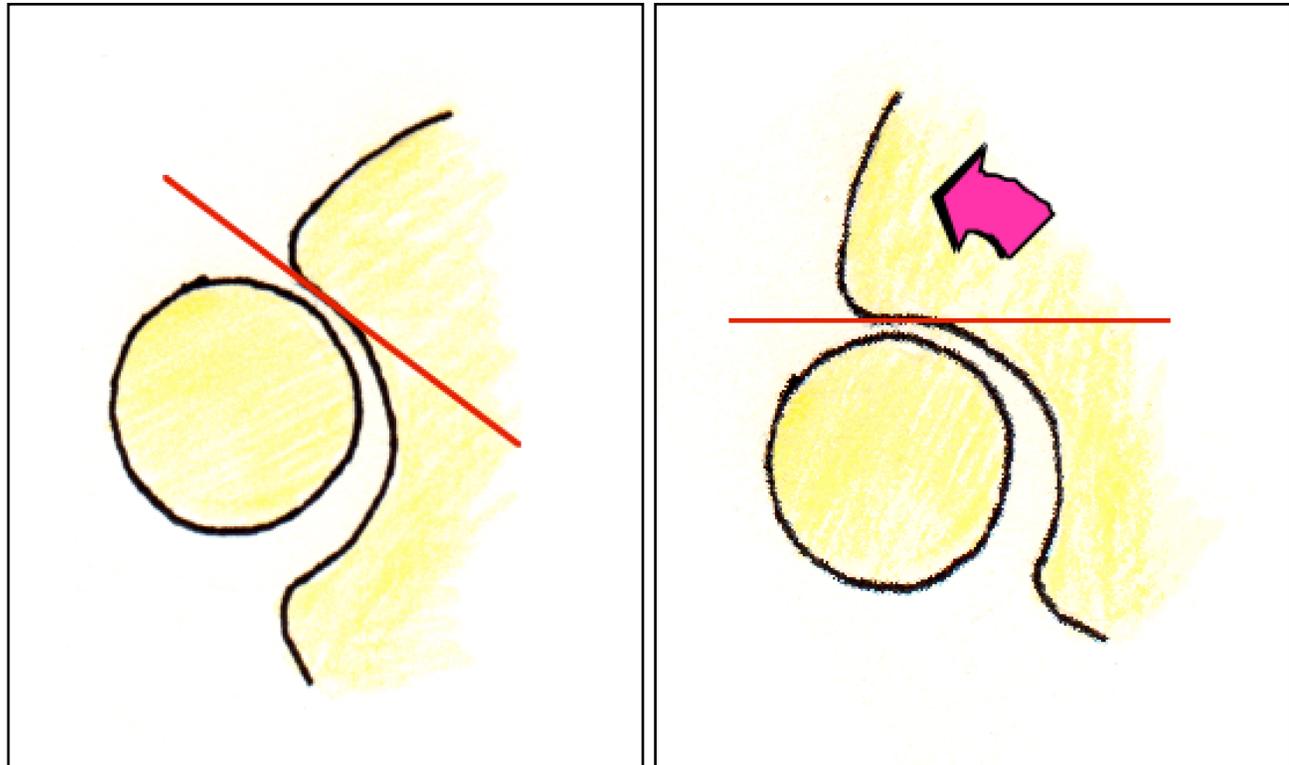
Hip laxity is the underlying cause of the incongruity that develops. Hip laxity can be accurately measured as early as 16 weeks of age using PennHip® radiographic views. In addition to a thorough radiographic evaluation (typically 5 different views), it is important for the clinician/surgeon to palpate the hips, that is to “feel” the hips through a full range of motion while sedated. If the hips are sliding in and out of the acetabulum, measurements can be made of those angles. Computed Tomography (CT) can be a very useful imaging modality, as well.



## TREATMENT

Hip dysplasia is a very painful condition and if identified early, surgical procedures exist to effectively treat and correct the problem. In very young patients (16-20 weeks of age), fusion or ablation of the central growth plate of the pubic bones (pubic symphysis) may result in improved joint development on both sides of the pelvis. This procedure is called, **Juvenile Pubic Symphysiodesis (JPS)**. Patients recover from this minimally invasive surgery in just a few days.

In older puppies (5-10 months of age), **Double Pelvic Osteotomy (DPO)** or **Triple Pelvic Osteotomy (TPO)** is recommended in those patients where the acetabulum is not level and secondary damage to the cartilage is not yet evident. Direct visualization of the hip joint to evaluate cartilage damage is performed arthroscopically at the time of TPO surgery. The TPO procedure involves three precision cuts in the three bones



of the pelvis to rotate and correct the angle of the hip joint. Specially designed bone plates are used to stabilize the cut pelvis bones.

This rotation and realignment allows the femoral head to “seat” more deeply within the acetabulum such that the hip joint can go on to develop in a more normal fashion as the puppy continues to grow.

There is not yet a treatment for patients with loose hips and normal hip joint angles.

### **POST-OPERATIVE AFTERCARE**

Patients can begin to resume normal activity after 6-8 weeks of strict rest. Strict rest entails confinement to a pen or crate with leash controlled walks to urinate and defecate when not confined.

If both hips need TPO surgery, the second side can be operated within a few days to weeks. It takes upwards from 12-16 weeks for full strength to return. Prognosis is better than 95% for good to excellent function following surgery. Factors such as the age of the puppy and the severity of the incongruity and abnormal shape of the hip joint are important in how well any particular puppy will do with early surgical intervention.

If hip dysplasia is not recognized and not treated with Pubic Fusion (JPS) or Pelvic Osteotomy (DPO/TPO) in time, severe, painful, crippling osteoarthritis may occur. Once the advanced stages of osteoarthritis are present (whether it be from hip dysplasia or another cause), other surgical procedures (such as total hip replacement) may be required to salvage pain-free use of the affected leg.

## **ABOUT THE AUTHOR**

*Dr. Kenneth Bruecker, DVM, MS, DACVS, DACVSMR  
Board Certified Veterinary Surgery  
Board Certified Veterinary Sports Medicine and Rehabilitation*

*A San Fernando Valley native, Dr. Bruecker attended Pierce College then received his bachelors degree in Animal Science from the University of California at Davis.*

*He graduated from the University of California at Davis, School of Veterinary Medicine in 1983. After one year of general small animal practice in San Fernando, Dr. Bruecker completed an additional year of clinical internship at the West Los Angeles Veterinary Medical Group. He received his master of science degree at the completion of a three year surgical residency at Colorado State University and moved back to Ventura County in 1988 to establish specialty veterinary care. Dr. Bruecker is Founder, Medical Director and Chief of Surgery at the Veterinary Medical and Surgical Group in Ventura, California. He also provides consulting and training services throughout the world.*

*Dr. Bruecker provided regular surgical support for practices in the state of Hawaii from 1996 through 2011.*

*In 2015, Dr. Bruecker founded Continuing Orthopedic Veterinary Education (COVE), a company whose mission is post-graduate veterinary orthopedic education, training, mentoring and surgical coaching around the world.*

*Board Certified in Surgery since 1990, Dr. Bruecker's primary clinical interests are spinal surgery, sports medicine/orthopedics (including arthroscopy, TPLO, TTA, and limb deformity correction), minimally invasive surgery (such as laparoscopy) and peri-operative pain management. He is well respected for his expertise in arthroscopy, limb deformity, disorders of the knee, fracture management and disorders of the spine. He has authored numerous articles and book chapters on Wobbler syndrome, treatment of*

*intervertebral disk degeneration and spinal fracture management. He is an active participant in working groups on elbow dysplasia, shoulder injuries, advanced techniques in small animal arthroscopy and cranial cruciate ligament repair. Dr. Bruecker was the first to offer TPLO surgery, TTA surgery, cementless hip replacement, arthroscopy and laparoscopy to owners of pets in Ventura, Santa Barbara and San Luis Obispo Counties, as well as to the State of Hawaii. He holds a patent for the first locking Triple Pelvic Osteotomy plate used to treat hip dysplasia. He has been an innovator in the development of many new surgical techniques and orthopedic implants.*

*Dr. Bruecker became a Diplomate of the American College of Veterinary Sports Medicine and Rehabilitation in 2015 and thus is now Board Certified in this field, as well as surgery.*

*Dr. Bruecker is a past program chair of Neurosurgery for the American College of Veterinary Surgeons and a past program chair for the veterinary technician program for the American College of Veterinary Surgeons. He served as the orthopedics program director for 2004 and 2005 for the American College of Veterinary Surgeons. He was also program director for orthopedics, pain management and anesthesia for the 2006 American Veterinary Medical Association annual symposium. He has served as the program chair for the Association for Veterinary Orthopedic Research and Education (AVORE). He is a past Executive Board Member (2004-2007) and is Past-President (2014-2015) of the Veterinary Orthopedic Society.*

*Due largely to his commitment to education and training, Dr. Bruecker was chosen as the Veterinarian of the Year by the California Veterinary Medical Association in 2004. He is an invited speaker and educator throughout the United States, Latin America, South America, Europe, Asia and the South Pacific on a variety of topics in orthopedics (fracture management and arthroscopy), neurosurgery and pain management. He splits his time between global veterinary education and clinical practice.*

*Dr. Bruecker and his family farm avocados and citrus in Ventura County. He is an enthusiast of classic cars.*