

DISORDERS OF COXOFEMORAL JOINTS

ANATOMY

- Most naturally stable joint
- Joint is formed by the articulation of the acetabulum and the head of the femur
- Has well developed joint capsule and round ligament
- Possess massive muscle support
- Common problem of this joint include luxation, hip dysplasia, avulsion fracture

COMMON DISORDERS:

- Luxation
- Luxation with fracture of acetabulum
- Luxation with fracture of femoral head and/or neck
- Hip dysplasia
- Legg-Calve Perthes

Femoral Luxation:

- Generally sudden in onset
- It is characterized with pain, crepitus and limited or abnormal movement
- Antero-dorsal luxation is the most common and is characterized by shortness of the leg when extended ventrally or posteriorly.
- Postero-dorsal luxation is characterized by increase in the length of the leg when extended posteriorly and is often associated with sciatic nerve injury.
- Ventral or intra-pelvic luxation is rare and is usually associated with the fracture of the acetabulum.

Management:

- Closed reduction with either manipulation method or traction and counter traction
- Osteotomy of trochanter followed by re-attachment distally and caudally
- Fixation using Ehmer sling or its modification, or Knowles toggle pin
- Application of long i.m pin inserted through the skin and soft tissue ventral to the tuber ischii (De Vita method)
- Excision athroplasty is used in irreparable cases due to dysplasia, avascular necrosis and fractures

Hip Dysplasia

It refers to instability of the coxo- femoral joint caused by mal-development of the femoral head and the acetabulum with resultant degenerative osteoarthritic changes. It is seen primarily in the large breed of dogs.

Aetiology

- Hereditary- although the mode of inheritance is unknown, it is thought to be due to an autosomal recessive gene.
- While heritability is estimated to range from 2-6% in other species, it is about 46-61% in German shepherd.
- Overnutrition is one of the principal non- genetic factors that influence the expression of canine hip dysplasia
- Environmental factors such as type of housing, exercise e.t.c. also influence the expression of canine hip dysplasia.

Diagnosis

- Palpation to detect joint laxity (Ortolani's, Barden's lift method)
- Radiographic examinations should include the following views 1) extended antero-posterior view, 11) flexed antero-posterior view (frog view) and distractions view.
- Osteo-arthritic changes of the hip can also be evaluated sonographically.

Radiographic Signs of Hip Dysplasia

- Perichondral osteophyte formation
- Remodeling of femoral head and neck
- Remodeling of the acetabulum
- Increased opacity of sub- chondral bone of the femoral head and the acetabulum
- Solitary bone enthesophytes on the caudal aspect of the femoral neck visualized as an opaque line (Morgan line)

Radiographic Method of Screening for coxo-femoral Joint Laxity

1) Orthopedic foundation for animal (OFA) method

- It is the most popular screening program for coxofemoral joint laxity
- Requires only one radiograph i.e. the extended antero- posterior view
- Has a large data base about coxofemoral phenotype
- Inaccurate in young animals. The optimal time to radiograph is 24- 36 months
- Insensitive in identifying coxo-femoral joint laxity
- The technique of extending femur camouflages signs of joint laxity by spiral tension of the joint capsule

2) Penn Hip Distraction Projection: It involves placing the dog in dorsal recumbency and the hip placed in neutral position as if the dog is standing. The radiograph of the hip is obtained while the coxo-femoral joint is compressed. A second radiograph is obtained when a distraction device is positioned between the femurs. The two radiographs are evaluated to determine the laxity index (DI)

- It is a valuable screening method for breeders before litters are placed in homes
- An accurate method for predicting dysplastic changes in young animals from 6 months
- Has greater heritability than the OFA method
- It generates an index that can be used to predict whether osteoarthritis will develop
- It is a more sensitive method of identifying joint laxity
- Requires special training to certify users
- Require special equipment for hip distraction
- Requires multiple radiographic projections

3) Fluckigers technique: It is a variant of Penn Hip method in which Ortolani maneuver is simulated with the dog in dorsal recumbency

- It discloses cranio-dorsal and lateral coxo-femoral joint laxity defined by subluxation index (SI)
- It measures the functional laxity of the coxo-femoral joint compared to the Penn Hip method which measures the passive laxity

MANAGEMENT OF HIP DYSPLASIA

- Restricted activity combined with non-steroidal anti-inflammatory drug (carprofen, piroxicam, ketoprofen e.t.c.) and disease modifying osteoarthritic agents (Adequan, glucosamine, chondroitin sulphate)
- Femoral head osteotomy results in relief of pain and more stable joint
- Pectineus myectomy only relief joint pain but does not correct gait abnormalities
- Triple pelvic osteotomy aimed at preventing subluxation.
- Excision arthroplasty with femoral neck osteotomy is used to correct the angle of the head in the acetabulum. It is useful if done before animal is skeletally mature.
- Total hip replacement for optimal restoration of joint and limb functions.