

Osteochondritis Dissecans (OCD)

Extended Version

Classic case(s): A six-month old male Labrador retriever puppy with thoracic limb lameness.
A yearling standardbred with synovial effusion, may or may not be lame

Presentation:

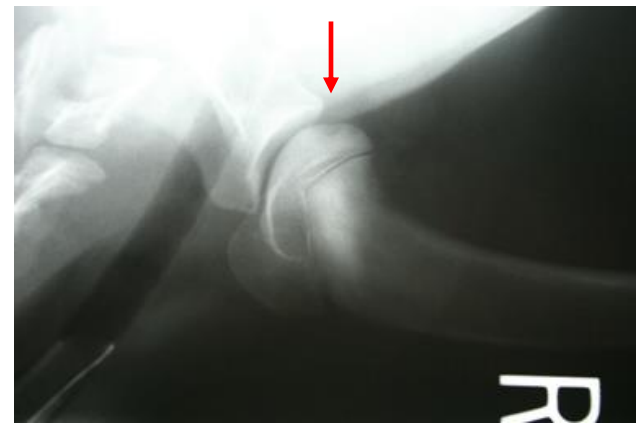
- Signalment and History
 - **YOUNG** dogs with good general health
 - **Fast growing large and giant breed dogs**
 - Possibly hereditary: Border collie, German shepherd, golden retriever, Great Dane, Irish wolfhound, Labradors, Newfoundland, rottweiler, Saint Bernard, Bernese Mountain dogs
 - More frequent in **males**
 - Usually **4-8 months of age (maximum growth rate)**
 - Homemade diet or supplemented commercial dog food
- Clinical signs
 - **Lame-unilateral or bilateral** (may be short-stepping gait)
 - **Joint pain**, swelling, crepitus, decreased range of motion
 - Muscle atrophy

DDX:

- Fracture, tenosynovitis, scapulohumeral luxation, fragmented coronoid process, ununited anconeal process, ununited medial epicondyle, elbow incongruity, collateral ligament injury (elbow, stifle, hock), cranial cruciate ligament rupture, meniscal injury, extensor tendon avulsion (stifle), patellar luxation

Test(s) of choice:

- **Radiographs of affected and contralateral joints** – may require multiple orthogonal views
 - Indentation (flattening/saucer shape) of subchondral bone
 - ± Mineralized density within the joint
 - Osteoarthritis
 - Subchondral sclerosis
- Most commonly affected joints in dogs:
 - **Caudal humeral head**
 - **Medial humeral condyle**
 - Medial or lateral trochlear ridges of the talus
 - Lateral or medial femoral condyle
 - Vertebral articular processes
- **Contrast** radiography or CT imaging may be necessary.
 - ± MRI or scintigraphy
 - ± Arthrocentesis – mild increase in mononuclear cells
- Arthroscopy
- Serum calcium, phosphorus, vitamin D levels are **NOT** helpful



*Osteochondrosis right side, caudal humeral head.
Image courtesy Dr. Scot Nachbar*



*Same dog left side, normal shoulder joint
Image courtesy Dr. Scot Nachbar*

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Rx of choice:

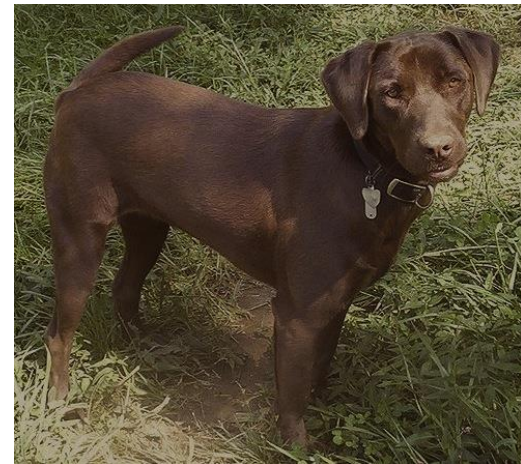
- **Surgical / arthroscopic débridement** – remove devitalized cartilage, stimulate new cartilage formation
 - Do not curette the ridge of the talus to avoid creating further instability
- **Exercise restriction**
- NSAIDs
- Nutraceuticals and chondroprotective agents
- **Nutrition**
 - Feed based on pet's body condition score (maintain at 2/5)
 - Use puppy food specific for large or giant breeds

Prognosis: (dogs)

- **Shoulder:** good after treatment
- **Elbow:** fair to good if degenerative joint disease (DJD) is minimal
- **Stifle:** variable – a large lesion may have a poor prognosis
- **Hock:** fair, anticipate DJD and residual instability

Prevention:

- **Exercise restriction**
 - Give puppy time to grow and don't train too heavily or too early
- **Breeding**
 - Only breed animals screened for OCD
 - Do not breed affected dogs and their relatives
- **Nutrition** – use puppy food specific for large or giant breeds
 - Feed based on pet's body condition score (maintain at 2/5)
 - Do **not** add supplements
 - Do **not** feed adult food to puppies
 - Calcium content should be <3.5 g/1000 kcal and energy density <4 kcal/g (<17% fat)



Fast-growing large & giant breed dogs, 4 to 8 months old are most at risk of OCD.

Image courtesy Wikimedia Commons

Pearls:

- Risk factors
 - Genetics and rapid growth rate
 - Nutrition – excessive calcium, ± excessive phosphorus, vitamin D, or food in general
 - Hormones – males, calcitonin
 - Intense exercise – increased joint loading and trauma
- **Osteochondrosis**
 - Disturbed endochondral ossification from excessive calcium, phosphorus, and vitamin D
 - Increased protein does NOT disturb endochondral ossification
 - Cartilage thickening and retention of cartilage in physis and articular epiphysis
 - Diffusion of synovial nutrients is impeded
 - Tissue malnutrition, ischemia and chondrocyte necrosis
 - Clefts develop at junction of viable and nonviable layers
- **Osteochondritis dissecans**
 - Inflammation of subchondral bone
 - Formation of cartilage flap
 - Often associated with hip dysplasia in dogs

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- **Horses** –OCD is most prevalent developmental orthopedic disease
 - Typical presentation is a **yearling w/ synovial effusion** (gonitis, bog spavin)
 - Possibly hereditary in Standardbred and Swedish Warmblood
 - Clinical signs – lameness is usually **absent or mild**
 - Nonpainful joint distention
 - Foals spending more time lying down
 - Joint stiffness
 - Upright limb conformation
 - Skeletal involvement
 - Distal intermediate ridge of the tibia
 - Vertebral articular facets
 - Shoulder
 - Medial femorotibial joint
 - Fetlock



Standardbreds may have a hereditary predisposition to OCD.

Image courtesy kallerna

Refs: Cote, Clinical Veterinary Advisor, 2nd ed. pp 798-800; University of Pennsylvania School of Veterinary Medicine: Canine Osteochondrosis; Merck Manual, 10th ed (online): Osteochondrosis in Small Animals, Osteochondrosis in Horses

My Notes: