

SWISSY HEALTH ISSUES
Osteochondrosis – Osteochondritis Dissecans
(from the Merck Veterinary Manual 5th Edition)

Osteochondrosis is a generalized disturbance in the maturation of cartilage (osteogenesis) and may involve the articular cartilage, the physis or areas of fusion of periarticular ossification centers. It is principally observed during the period of maximum growth rate, e.g. the dog 4 to 7 months and the horse 1 to 2 years of age. The syndrome is most common in medium to large breeds of dogs and more frequent in males. It also occurs in pigs, turkeys and chickens.

With osteochondrosis, the articular cartilage becomes abnormally thickened and small fissures develop in the surface, which may penetrate to the subchondrial bone. This allows the entry of synovial fluid into the necrotic subchondrial bone and the liberation of noxious elements into the joint. This in turn may initiate an inflammatory stage called osteochondritis dissecans. The articular cartilage becomes dissected (dissecans) and undermined, resulting in a partially attached “saucer like” plaque. (*Note re GSMD: this usually occurs after 8 months of age and can be permanent*) This plaque of cartilage is nourished by synovial fluid and thus may survive for long periods. It is **prevented from healing and reattaching** to the subchondrial bone by **joint motion** and the presence of synovial fluid. However, the cartilage flap may re-attach and heal spontaneously (*if exercise is restricted*), or be torn loose. The defect will then fill in with fibro cartilage. The dislocated cartilage may fall into the joint space and be reabsorbed or it may attach to the synovial membrane, gain a blood supply, hypertrophy, calcify, and form a radiographic joint mouse.

Fusion defects involving periarticular ossification centers are suspected to be of a similar cause. Examples of united ossifications are: anconeal process, coronoid process, tibial crest, scapular tuberosity, epicondyle of the humerus and olecranon. These defects frequently result in joint instability and osteoarthritis. Trauma may also result in separation of ossification centers. Physeal plates are physically the weakest area of maturing bone and thus are vulnerable to trauma.

The defect in the metaphyseal growth plate is most commonly seen as a retained cartilage core in the distal ulnar physis in large breeds of dogs. This may result in premature closure of the distal ulna physis which could lead to valgus deformity of the carpus, anterior bowing of the radius and perhaps subluxation of the elbow.

Etiology: The cause of osteochondrosis, which is characterized by excessive thickening of the cartilaginous growth plates, is unknown. Trauma is a significant factor in the development of focal lesions. The role of mineral imbalance, particularly of calcium, is in question. ***Experimentally excessive caloric intake (overfeeding) during the growth phase increases the incidence of the disease in susceptible animals and thus an inherited predisposition is seen in those animals selected for rapid growth.***

Clinical Findings: Osteochondrosis is presented as a persistent or intermittent lameness, which is usually insidious in onset. Lameness, is generally unilateral, however, the lesions are frequently bilateral. Occasionally various joints throughout the body may be affected concurrently. The animal may be stiff after resting and ***lameness is aggravated by exercise.*** Pain is usually elicited by hyperextension and hyperflexion of the joint. When untreated, the lameness may last for months, or may become permanent because of secondary osteoarthritis. In chronic cases, severe crepitus may be palpated and muscular atrophy observed. Mild cases are usually self-limiting and it is probable that many cases pass unnoticed. The lesions of osteochondrosis involving the elbow in the dog, osteochondritis dissecans of the medial humeral condyle, ununited coronoid process, and united anconeal process, reflect similar clinical signs and are differentiated radiographically or by exploratory arthrotomy. Osteochondrosis involving the articular facets and vertebrae may result in spinal cord compression and neurological deficits.

Diagnosis: The history, age, species, breed and clinical signs are useful. High quality radiographs taken bilaterally in the appropriate position and with the aid of chemical restraint is essential. The shoulder

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lesion is generally observed on a lateral radiograph as a flattened irregularity of the central caudal half of the humeral articular surface.

Ununited anconeal process is visualized from a lateral projection with the elbow in extreme flexion.

When diagnosing fusion defects, it is important to know when the growth plates normally fuse.

Radiographic projections for differentiating osteochondritis of the medial humeral condyle and ununited coronoid process are a lateral in full flexion, an anteroposterior, and an anteroposterior with a 10 to 20 degree oblique. In the early stages, these lesions may be difficult or impossible to demonstrate radiographically and may require an exploratory arthrotomy. As the conditions progress, osteophyte production may be seen on the medial epicondyle, the coronoid process, proximal surface of the anconeal process and the cranial head of the radius.

Osteochondritis of the lateral femoral condyle in the dog is observed the best from a lateral radiograph in which the condyles are not superimposed. An anteroposterior projection may also be of value.

Anteroposterior radiographs of a hock with osteochondritis dissecans may show swelling, and in many cases, a small joint mouse distal to the medial malleolus may be observed.

Treatment: Some animals with osteochondritis heal spontaneously with 4 to 6 weeks of rest and restricted exercise. In early cases, **anti-arthritic or anti-inflammatory drugs are generally contraindicated as they encourage activity and may retard healing. Surgical intervention of osteochondritis of the shoulder is recommended if the lesion is extensive or if it does not respond to conservative treatment (REST!)** Joint mice with or without an osteochondritis dissecans lesion should be surgically removed. In chronic advanced osteoarthritis secondary to osteochondritis, the use of phenylbutazone and other anti-arthritic drugs is the only alternative other than fusion of the joint, the application of a prosthetic device or amputation.

It is important to surgically treat lesions involving the stifle and hock as soon as diagnosis is made. The exception is that removal of an ununited anconeal process is attended with best results when accomplished at 9 months of age. If the lesions are extensive or osteoarthritis is advanced, the prognosis is guarded.

Osteochondritis dissecans in foals may be treated conservatively as in the dog. Surgical correction of shoulder lesions may be considered if the animal is not heavily muscled. Surgical intervention of stifle lesions in the horse is attended with poor results. Lesions involving the hock, when diagnosed and operated on early provide a more favorable prognosis.

Retained cartilage in most metaphyseal growth plates are asymptomatic and heal spontaneously. The primary exception is cartilage cores in the distal ulnar physis in the dog, which occasionally result in premature closure and asymmetric growth between the radius and ulna. If diagnosed early in the growth phase, stapling the distal radial growth plate and an ulnar osteotomy may correct lateral deviation of the carpus and bowing of the radius. If the animal is mature and the physeal plates are fused, correction of the deviation requires a radial and ulnar osteotomy with stabilization of the radius in the proper attitude.

Compression of the cervical cord and instability of the cervical vertebrae are best treated by stabilization, however with present methods, results are unsatisfactory.