

# **Diagnosis and Treatment of Osteochondritis Dissecans**

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This condition affects the articular (joint) cartilage, and often also involves the subchondral bone just beneath the cartilage surface. Generally a dissecting lesion develops that involves cartilage, or cartilage and bone, and the dissection plane ultimately reaches the joint surface. Although multiple joints can be affected, this is unusual and commonly only one joint is involved. However, bilateral involvement (both stifle joints or both hock joints etc.) is sufficiently common that the opposite joint should always be radiographed. Nonetheless it is uncommon for the hocks and stifles, or the stifles and shoulders, to be involved in the same animal at the same time. It is also uncommon to treat QCD in one joint(s) and have it develop at a later time in other joints.

It is theorized that clinical signs develop when the joint surface is breached by the dissecting lesion. Sometimes the QCD fragment will completely detach and become a free body or joint mouse. In most cases however, the fragments remain loosely attached in their bone of origin, but the debris that is released into the joint from beneath the flap results in synovitis or joint inflammation, and the clinical signs of pain and lameness that are seen with the disease.

## **Osteochondritis Dissecans of the Femoropatellar (Stifle) Joint**

The stifle joint is one of the principal joints affected with QCD. Although stifle QCD can be diagnosed in almost any breed, it seems to be more common in Thoroughbreds than in other breeds. Approximately 60% of affected horses will be one year of age or less at the time the condition becomes symptomatic, and younger animals that develop clinical signs often have more severe damage within the joint. However, incidental lesions are sometimes identified in older horses where no clinical signs have ever been observed.

### ***Clinical and Radiographic Signs***

Animals usually present with a sudden onset of joint swelling and lameness. A recent increase in the level of exercise is sometimes part of the history. Lameness sometimes may be very mild, with a stiff action and shortened stride being observed, rather than the horse having a prominent lameness. Some more severely affected horses will have a 'bunny hop' action behind that can initially be confused with a neurologic problem.

Joint distention, however, is the most consistent sign seen with QCD of the stifle. Careful palpation of the joint may identify free bodies, or the surface irregularity associated with the damage within the joint. Bilateral involvement is common in the stifle, so careful examination of both stifles should be completed. In one study, 57% of affected animals had bilateral involvement.

<b>Breed Distribution of 161 Horses Presented for Femoropatellar QCD</b>		
<b>Breed</b>	<b>Number</b>	<b>Percentage</b>
Thoroughbred	82	50.9
Quarter Horse	39	24.2
Arabian	16	9.9
Warmblood	9	5.6
Crossbred	5	3.1
Paint Horse	3	1.9
Appaloosa	3	1.9
Other	4	2.5

<b>Age Distribution of 161 Horses Presented for Femoropatellar QCD</b>		
<b>Age (yr)</b>	<b>Number</b>	<b>Percentage</b>
<1	22	13.7
1	68	42.2
2	36	22.4
3	21	13
>4	14	8.7

Flexion of the limb will usually exacerbate the lameness, and anesthetic placed into the joint will improve or eliminate the lameness. However intra-articular anesthesia is usually not necessary to confirm a diagnosis

Lateral to medial radiographs provide the most useful information regarding specific lesion location and size. The most common defect identified is a variably sized irregularity or flattening of the lateral trochlear ridge of the femur. The area of the ridge that comes in contact with the bottom portion of the patella is most commonly involved. Partial calcification of the tissue within the defect is sometimes seen, and free bodies are also occasionally identified. It is rare to see OCD primarily affecting the patella, but secondary radiographic change in the patella resulting from the trochlear ridge damage can be seen. The medial ridge of the femur is much less commonly involved.

Generally, the extent of damage to the joint identified at surgery is more extensive than would be predicted from radiographs. Although other joints can be involved concurrently, this is uncommon. In one study of 161 horses with stifle OCD, 5 also had OCD affecting the rear fetlocks, 4 had hock OCD, and 1 had OCD of a shoulder joint.

## ***Treatment***

It is generally accepted that surgical debridement of the lesions is the treatment of choice. However, smaller lesions identified in younger horses may respond to rest and resolve radiographically. These are generally lesions that are not causing severe clinical signs. If lameness and swelling are prominent, arthroscopic surgery is indicated.

As for all joint surgery, the joint is thoroughly explored, and suspicious lesions are probed. Loose or detached tissue is elevated and removed. Loose bodies are also removed. The defect site is then debrided down to healthy tissue. Care must be taken to not be overly aggressive with bone debridement in young animals having soft subchondral bone.

Animals are usually stall rested for 2 weeks after surgery, at which time hand walking is started. Restricted exercise is usually continued for 2-3 months after surgery, at which time training is started or the horse is turned out.

## ***Prognosis***

In one study of 252 stifle joints in 161 horses, follow-up information was available for 134 horses. Of these 134 horses, 64% returned to their previous use, 7% were in training, 16% were unsuccessful, and 13% were unsuccessful due to reasons unrelated to the stifle. The success rate was higher in horses having smaller lesions, and it was also higher for older horses. However, this age factor was considered to be due to the fact that the most severe lesions were generally identified in the younger horses.

## **Osteochondritis Dissecans of the Tarsocrural (Hock) Joint**

Hock OCD usually affects the intermediate ridge of the tibia in the proximal and cranial portion of the joint. However lesions can also develop along the trochlear ridges (lateral ridge much more common than medial ridge) and the medial malleolus of the tibia. Hock OCD is very common in Standardbreds, but can be diagnosed in most breeds.

### ***Clinical and Radiographic Signs***

The most common clinical sign of hock OCD is effusion of the tarsocrural joint. This is manifested clinically as a 'bog' spavin, which simply refers to the prominent swelling seen most readily along the medial or inside aspect of the joint. Lameness can also be seen but it is not common and is rarely prominent. Racehorses usually present as 2 year olds, but non-racehorses usually present as yearlings prior to going into training.

On radiographs, most attention is paid to the intermediate ridge of the tibia, followed by the lateral trochlear ridge, and then the medial malleolus of the tibia. Lesions are identified as fragments still in place (intermediate ridge), or surface irregularities of the trochlear ridge(s) or malleolus. The radiographic appearance often underestimates the extent of damage identified at surgery, particularly for lateral trochlear ridge lesions. The hock is also a joint where

radiographically silent lesions (lesions identified at surgery where no abnormality was seen on radiographs) occur more commonly than in other joints.

<b>Location of QCD Lesions in 318 Tarsocrural Joints</b>	
<b>Number of Joints</b>	<b>Location</b>
244	Intermediate ridge (dorsal aspect) of distal tibia
37	Lateral trochlear ridge of talus
12	Medial malleolus (dorsal aspect) of tibia
11	Intermediate ridge of tibia plus lateral trochlear ridge of talus
4	Intermediate ridge plus medial malleolus of tibia
3	Intermediate ridge plus medial trochlear ridge of talus
3	Medial trochlear ridge of talus
3	Lateral trochlear ridge of talus plus medial malleolus of tibia
1	Lateral and medial trochlear ridge of talus
<b>318</b>	<b>Total</b>

### ***Treatment***

Although lameness is usually minimal with hock OCD, surgery is the recommended treatment. Lameness may only be a problem at racing speeds, or at upper levels of performance, that cannot be determined during a clinical examination. As well, resolution of the effusion cannot be expected without removal of the abnormal tissue is not to say however, that all horses having hock OCD need to have surgery. Horses with small lesions, minimal effusion, no lameness and a potential career as a pleasure horse or light use horse, may not require surgery. Surgery should be considered early enough in the course of the disease so that the joint capsule is not unduly stretched, making resolution of the joint effusion less likely.

Arthroscopic identification and removal of fragments is recommend, although an arthrotomy (surgical incision into the joint) can be used successfully and is preferred by some for certain OCD lesions in this joint. Postoperative management is similar to that for OCD of the stifle, for

small lesions the time period for restricted exercise may be decreased. Maintenance of good bandages is more difficult for the hocks, and must be taken in the early postoperative period to avoid bandages and subsequent infection into the joint through the small surgical incisions.

### ***Prognosis***

In a study involving 183 horses, 76% raced successfully performed at their intended use after surgery. If degenerative changes were identified at surgery in the cartilage surrounding the OCD lesion, the prognosis was less favorable. Resolution of effusion was inferior for lesions involving the lateral trochlear ridge compared to the intermediate ridge of the tibia; however, this seemed to have no effect on subsequent performance.

## **Osteochondritis Dissecans of the Fetlock Joint**

The most common manifestation of QCD in the fetlock joint is 1) fragmentation and irregularity that occurs on the dorsal aspect of the sagittal ridge and the condyles of the metacarpus or metatarsus (cannon bone). A second condition involving the fetlock that may be QCD is 2) fragmentation of the proximal palmar-plantar aspect of the first phalanx or long pastern bone. Debate continues as to whether these fragments are truly QCD related, or whether they represent small avulsion fractures. A final entity is 3) QCD of the palmar aspect of the metacarpal condyles, which does seem to be a trauma-related condition of racehorses. Although this condition has been referred to as QCD, it does not fit with the developmental etiology. The remainder of this discussion will include the first two entities.

## **Osteochondritis Dissecans of the Dorsal Aspect of the Distal Metacarpus/Metatarsus (Fetlock Joint)**

### ***Clinical and Radiographic Signs***

Joint swelling (effusion) is the most common clinical sign, with lameness being variable in both appearance and severity. Fetlock flexion tests are usually positive. It is not unusual for all four fetlocks to be involved, and is quite common for bilateral forelimb or hind limb involvement.

The diagnosis is confirmed on radiographs, and clinically silent lesions (no effusion or baseline lameness) are often identified along with the lesions causing clinical signs. Lameness can sometimes be induced by flexion in these clinically silent joints. A variety of radiographic presentations are seen with fetlock QCD. Some joints will show only flattening of the sagittal ridge (Type I QCD), others will have a fragment in place within the area of flattening (Type II QCD), and others have flattening with or without a fragment in place, but also have free or loose bodies within the joint (Type III QCD).

### ***Treatment***

A conservative approach is initially recommended where only flattening without fragmentation is identified. Many of these cases will have resolution of clinical signs, as well as improvement or

disappearance of radiographic signs; however surgery will eventually be necessary in some of these cases. Surgical debridement is recommended for lesions where fragmentation or loose bodies are present. The prognosis is quite favorable for Type I lesions using conservative treatment, but more guarded for Type 11 and Type III lesions. Surgery is recommended for Type 11 and Type III lesions. Horses having other signs of articular cartilage erosion or wear lines within the joint had a less favorable prognosis. If the lesion extended out onto the condyle of the metacarpus/metatarsus from the sagittal ridge, the prognosis was also less favorable. It was determined that clinical signs would persist in approximately 25% of cases.

### ***Proximal Palmer/Plantar Fragments of the First Phalanx***

Two types of fragments have been identified in this location. Type I fragments usually involve the hind fetlock joints and are located between the midline of the bone and its caudomedial (most common) or caudolateral (less common) borders. Type 11 fragments are also called ununited proximoplantar tuberosities of the proximal phalanx, as these lesions occur almost exclusively in the hind limb. These fragments are located at the most lateral (most common) or medial (much less common) borders of the bone.

Both of these entities have been identified frequently in radiographic surveys completed on yearling Standardbreds, supporting a developmental concept.

### ***Clinical and Radiographic Signs***

With Type I fragments, effusion is uncommon, and typically lameness is identified only as a somewhat vague problem at racing speeds or at the upper levels of performance. Flexion tests are often positive and anesthetic placed within the joint will usually eliminate any clinical signs that may be present. Regular oblique radiographs will usually demonstrate the lesions, although a special view is often used to highlight their location. Most fragments are present medially. Lameness and effusion are rare with Type 11 fragments.

### ***Treatment***

Arthroscopic surgery is recommended for Type I fragments where clinical signs are present. If these lesions are identified incidentally on fetlock radiographs, treatment is based on what the intended use is for the horse. If vigorous athletic activity is planned, prophylactic surgery is justified. If less rigorous pursuits are planned, most horses will not require surgery and the fragment will not lead to further arthritic changes within the joint.

Surgery is rarely indicated for Type 11 fragments, and most of these fragments will unite with the parent bone over a period of many months. However, Type I and 11 fragments can occasionally occur together in the same joint, and the Type I fragment may require surgery. The prognosis for Type I fragments with surgery is favorable. Most Type 11 fragments are self-limiting.

## **Osteochondritis Dissecans of the Shoulder Joint**

OCD involving the shoulder joint is probably the most debilitating type of OCD affecting horses. Generally, large areas of the joint surfaces are involved, and secondary joint disease is common. However, it is unusual to have free or loose bodies develop. OCD of the shoulder is less common than for the other joints described, and seems to affect Quarter horses and Thoroughbreds with a similar incidence.

### ***Clinical and Radiographic Signs***

Most horses with shoulder OCD present at one year of age or younger, with a history of forelimb lameness of variable severity. Many of these horses will have prominent lameness and if lameness has been present for many weeks, muscle atrophy will also be seen. Because of the altered gait and use of the limb, many cases develop an upright or club-footed appearance to the foot, and the foot may appear smaller on the affected limb. Deep pressure over the shoulder joint will often cause discomfort, and forced flexion/extension of the limb will sometimes accentuate the lameness that is seen. Intra-articular anesthesia will improve or eliminate the lameness.

On radiographs, the most common sign is flattening or indentation of the humeral head. Often, cystic type lesions are also identified in the glenoid cavity of the scapula. Productive remodeling changes are also commonly identified along the caudal border of the glenoid cavity.

### ***Treatment***

Conservative treatment is rarely associated with a successful outcome, and sufficient numbers having surgery have not yet been accumulated to accurately identify the prognosis with surgery. However, there is little doubt that surgery dramatically improves the clinical signs in most affected cases. If extensive degenerative arthritic change is present on radiographs at the time of initial examination, the prognosis for an athletic career is unfavourable, and surgery should only be considered for relative improvement in the degree of lameness. However, for more localized lesions, the prognosis is favourable for a successful outcome.

The shoulder is probably the most difficult joint on which to perform arthroscopic surgery, due to the depth of the joint below the muscles in the area. Surgery is easier on younger animals due to their relative muscle mass. Problems encountered in the shoulder are inaccessibility of lesions due to their location within the joint, and extravasation or leakage of fluid outside the joint, which impairs visibility within the joint.

### ***Prognosis***

A large series of cases having surgery has not yet been reported although preliminary results from such a series that is being compiled at CSU suggests that the overall prognosis is approximately 50%. The prognosis seems to be less favorable if lesions are present on both the humeral head and the glenoid cavity. In unsuccessful cases, further deterioration of the joint surfaces on radiographs is common.