

Source of Fetlock Bone Fragments - Developmental Disease or Damage During Development?

Dr. Alexandra Carlson

An osteochondral (bone/cartilage) fragment seen on radiographs in the joint of a young horse is commonly an osteochondritis dissecans (OCD) fragment. Osteochondrosis is a developmental disease process in which there is failure of growing cartilage to be replaced by bone (failure of endochondral ossification). The impaired bone/cartilage formation process at the articular (joint) surface creates flaps of cartilage termed osteochondritis dissecans (OCD). OCD fragments can detach and become free floating, remain in place or form attachments at another location. OCD lesions usually form within the first year of life and while often considered heredity in origin, there is also an association with rapid growth and high energy feeds. Clinical manifestation may not appear until later in life (if at all) when a horse is placed into work.

OCD is most commonly found in the hocks, stifle, and fetlock (with less common occurrence seen in other joints including the shoulder, carpal (knee) and cervical (neck) intervertebral joints). While a horse may only show signs (lameness, swelling, etc.) in one limb, as a developmental disease it is not uncommon to find OCD lesions in the same joint (that *develops* at the same time) of the opposite limb and potentially in all four limbs if looking at the fetlocks. Therefore, it is usually recommended to obtain radiographs of the opposite joint to check for non-clinical OCD.

In the fetlock joint, OCD lesions are typically associated with the metacarpal/metatarsal (cannon) bone in the dorsal (front) aspect of the joint (dorsal sagittal ridge). An OCD fragment found on the dorsal aspect of one fetlock warrants checking for lesions in the other three fetlocks. Fragments seen in other areas of the fetlock, particularly the palmar/plantar (back) aspect, do not necessitate the same degree of investigation in the other limbs. Previously, palmar/plantar (fore/hind limb backside) fragments were believed to form from osteochondrosis in the same process that results in development of dorsal lesions. While it is possible for a fragment on the backside of the fetlock joint to form as a result of osteochondrosis, the current belief has shifted towards more traumatic cause and thus more likely to only affect the one joint.

Formation of fragments on the backside of the fetlock joint have been predominantly studied in the hind limbs of Thoroughbred and Standardbred racers. Plantar fetlock fragments have been associated with outward rotation of the hind limbs resulting in increased load (force) on the medial (inner) aspect of the fetlock joint. The increased load during development results in fragmentation of cartilaginous tissue from the first phalanx that becomes an osteochondral fragment. Most commonly the fragment is found on the medial aspect in hind fetlocks where the increased load is placed. The “trauma” causes damage to normally developing cartilage (in contrast to the formation of OCD fragments resulting from a failure in the process of cartilage development). Depending on the size and location, while the cause is traumatic, there may not be any initial clinical signs. As a result, the fragment may remain in place for years.

Alternative etiologies include avulsion fractures related to the collateral ligament (medial>lateral) and fracture of the planter aspect of the first phalanx (fragment formed from bone breakage as opposed to cartilage). Both etiologies generally result from trauma, show acute lameness, and have some degree of heat and swelling. The commonality to the different sources of plantar fetlock fragments is that they form from normally developed tissue (cartilage or bone).

Whether a fragment formed as a result of failure to replace cartilage with bone (dorsal fetlock fragments) or from early tissue fragmentation from increased load in development (palmar/plantar fetlock fragments), the clinical importance of the fragment is related to the

specific location and degree of motion. In general, osteochondral fragments cause the most inflammation and damage when they are within the articular (joint) surface (axial) and interfere with the opposing joint surface. The intra-articular fragments are classified as type 1 fragments and surgical removal is recommended. Horses with type 1 fragments tend to have associated lameness or effusion.

Type 2 fragments sit outside the joint (abaxial), causing minimal to no interference. In most cases the fragments go undiagnosed until seen as an incidental finding on radiographs (usually rounded as a result of chronicity). Dislodged fragments that are more moveable within their attachment, attach somewhere else (such as within the joint) or become free floating within the joint can present as a problem later. The change in position can result in increased inflammation and lameness. While the fragment formed during growth and development, it may not become a clinical problem until years later. In the case of chronic fragments found during lameness evaluation, it is important to confirm the fragment as the source of lameness by blocking the joint, particularly in the absence of heat or swelling.

OCD is a common source of lameness in young horses, however if you find a lesion on the backside of the fetlock joint, it is likely not a result of the developmental disease but rather trauma that occurred early on. A rounded fragment, whether in the fetlock or another joint, indicates the fragment has been present for some time. When there is lameness involved, it is worth blocking the area to determine if the fragment is truly contributing or an incidental bystander formed at an earlier time of youthful activity. If OCD is suspected in a joint of a lame horse, it is worth taking a look at the same joint on the other limb(s).

References

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