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OCD in warmblood horses, a radiographic overview and their clinical importance.

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Osteochondral fragments are often identified as a coincidental finding on routine radiographic screenings and prepurchase examinations, carried out at a young age (2-5 year old) in warmblood horses. The clinical relevance of these joint fragments is not always clear. Some fragments are considered relatively benign, whereas others are seen as potential hazards, and preventive arthroscopic removal is advocated. With the routine use of arthroscopy, and in the hands of experienced orthopaedic surgeons, the risk and complication rate related to arthroscopic surgery is very low. This accounts for the success of preventative arthroscopic surgery, often performed on young animals before any clinical symptoms are present. However the outcome varies from excellent to poor depending on the joint, the location of the fragment within the joint, and the presence of osteoarthritis at the time of removal of the fragment.

The key question that needs to be answered in sport horses is “Do osteochondral fragments (OCF) present in a joint, cause joint damage and subsequent lameness?” The answer is yes they can. However not all OCF cause cartilage fibrillation and secondary degenerative joint disease. Much will depend on the size of the fragments, how strongly they are attached to the parent bone, where they are located in the joint, the level of work, the type of work, and other external factors like abnormal strain on the joint that may dislodge the OCF.

In young warmblood horses, OCF in the fetlock joint are often accompanied by cartilage fibrillation, wear lines and cartilage erosions without any clinical signs. In Thoroughbreds these changes quickly cause clinical signs affecting racing results. In warm bloods these signs are often only visible at later age when the horse is performing at higher level.
The OCD found in hock (tarsocrural) and stifle (femoropatellar), are the result of a disturbance of endochondral ossification. In the fetlock joint, proximal P1 fragments, synovial plica fragments and plantar proximal P1 fragments are not necessarily OCD fragments, but can be the result of delayed ossification, trauma, avulsion fragments or a separate centre of ossification.

Hock OCD (intermediate ridge tibia, lateral talus ridge, medial malleolus) will mainly result in joint distension with no lameness. Lameness will only be present if the OCD fragments become detached and are free floating. This is often caused by an abnormal movement (hyperflexion of the joint), which breaks the fibrous attachments between the fragment and bone.

Stifle OCD often causes lameness after several years of competing and arthroscopic surgery is strongly advised in sport horses. The ideal age for stifle surgery is between 12 and the 18 months. At this age the healing potential of bone and cartilage is a lot more important and the quality of repair seems superior, than at a later age. Postponing surgery till a later age can result in important secondary lesions in the joint such as generalised cartilage fibrillation, cartilage erosion on the patella and free floating osteochondral debris in the femoro-patellar joint.

Presently the relationship between the presence of intra-articular OCF and early development of degenerative joint disease is unclear, and we can not accurately predict which fragments are benign or not. We do know that some fragments can seriously affect the athletic career of sport horses (i.e. stifle OCD, large proximal P1 fragments in the fetlock, large extensor process fragments in the DIP joint) whereas others are very unlikely to cause lameness (i.e. proximoplantar P1 fragments in the fetlock). There is a large grey area where nobody can predict the significance and impact of those fragments on an athletic career.

Answering the question “Is preventive removal of osteochondral fragments before starting an athletic career recommended?” is not easy, and is certainly based on personal subjective experience rather than hard scientific evidence. However there is one thing we have to remember. If we wait to remove the OCF until the horse shows clinical signs (joint distension, stiffness, lameness, poor performance), we are often too late to save the joint.

Unlike racing Thoroughbreds, show jumpers and dressage horses will often continue working with cartilage damage, without showing a lot of clinical signs. Sometimes clinical symptoms will not be seen until they reached “the point of no return”. At this stage a well developed degenerative joint disease
is often present. The “waiting attitude“ and replacing preventive arthroscopic surgery by curative surgery is dangerous, because of the extensive secondary changes that might already be present in the joint caused by the OCF. In many joints the advantages of a preventive arthroscopic surgery outweigh the possible disadvantages of leaving the fragment in place.

During this lecture several types of OCF in the fetlock, stifle, DIP joint and hock joint will be shown, and their clinical relevance will be discussed.
Commonly encountered intra-articular OCF in the fetlock joint:

- Proximo-dorsal P1 fragments
- OCF in the synovial plica of the fetlock joint (dorso-proximal in the fetlock joint)
- Sagittal ridge OCD
- Proximo-plantar P1 fragments
- Apical sesamoid bone fragments
US image of plica fragments in the fetlock

Proximal P1 fragments

Medial proximo-plantar OCF

DMP or PL dist Oblique view

LM view
Commonly encountered intra-articular OCF in the DIP joint:

- Extensor process fragments
- Palmar DIP fragments
Commonly encountered intra-articular OCF in the hock joint:
- OCD of the intermediate ridge of the distal tibia
- OCD of the distal 1/3 of the lateral talus ridge
- OCD of the medial malleolus
Note only a small fibrous band attaching OCD fragment with tibia

Note osteo-chondral debris free floating in the joint caused by a detached OCD fragment

Large free floating OCD fragment in the hock joint.

OCD of the medial malleolus, note the wear-lines caused by this fragment
OCD intermediate ridge distal tibia +
OCD distal 1/3 lateral talus ridge
Commonly encountered intra-articular fragments in the stifle joint:

- OCD of the lateral femur ridge
- OCD of the medial femur ridge
- OCF cranial or caudal in femorotibial joint
OCD lateral femur ridge: all fragments are detached and free floating

Large cartilage erosion on the articular facet of the patella caused by stifle OCD

Large free floating OCD fragment in stifle joint (FP)

Arthroscopic view of a large free floating OCD fragment in the supra-patellar pouch of the stifle joint (FP)
Unhealthy fibrillated cartilage in the stifle caused by chronic synovitis due to lateral femur ridge OCD

Severe cartilage erosions in the stifle (FP) joint caused by lateral femur ridge OCD