MEDIAL FEMORAL CONDYLE – WHAT AND HOW TO TREAT
Lisa A. Fortier, DVM, PhD, DACVS
Department of Clinical Sciences, Cornell University, Ithaca, New York

Management of medial femoral condyle osteochondral lesions (OCL; aka subchondral bone cysts) should encompass medical, surgical, and rehabilitation therapies. Proper management requires an accurate diagnosis including intra-articular anesthesia and radiographs at a minimum. A minimum of 3 radiographs should be obtained (Ca-Cr, lateral, CaLat-CrMed projections) to ascertain the 3D configuration of the OCL. OCLs can be primary in origin, or secondary to osteoarthritis (OA). Lesions can be bilateral, so both femorotibial joints should be radiographed. Horses with advanced OA, as indicated by osteophyte formation on the proximal-medial tibia and distal-medial femur, +/- joint space narrowing, and mineralization of the menisci, were previously not considered candidates for surgery. However, newer biological grafting techniques are beginning to challenge this paradigm.

The majority of surgical treatments for OCL and cartilage lesions have centered on arthroscopic enucleation or removal of the necrotic tissue and debridement to healthy underlying subchondral bone. Other treatment options include corticosteroid injection into the cyst lining and cartilage grafting procedures.

**Arthroscopic enucleation:** The first retrospective describing arthroscopic debridement of OCL was from Howard in 1995.1 Complete follow-up information was obtained for 39 horses; 22 (56%) had a successful result and 17 (44%) had an unsuccessful result. In a separate analysis excluding horses with unsuccessful results because of factors not directly attributable to the subchondral cystic lesion of the medial femoral condyle, 23 of 31 (74%) horses had a successful result and 8 of 31 (26%). Quarter horses had a less than typical favorable outcome, but the numbers were small. Clinical impression prevailed that horses greater than 2 or 3 years of age, large breed horses, and upright horses such as western performance horses, did not do as well as young Thoroughbreds. Smith nicely supported some of these clinical impression in a study where horses were separated by age.2 He found that older horses (>3 years) were less likely to return to soundness (P = 0.02) or to work (P = 0.04) than younger horses (< or = 3 years). Of 39 horses age 0-3 years, 25 (64%, 95% CI 49-79%) returned to soundness. Of 46 horses age >3 years, 16 (35%,95% CI 21-49%) returned to soundness. In addition, cartilage damage at sites other than the OCL negatively affected prognosis (P = 0.05).

**Intralesional corticosteroid injection:** Injection of corticosteroids into the lining of OCLs is gaining in popularity. The potential advantages of this technique include a shortened duration of anesthesia and perhaps less disruption of the articular cartilage covering the OCL opening; however, the amount of cartilage removed in simple debridement procedures is surgeon-dependent. Early clinical impressions are favorable and have been reported by Walls et al.3 Thirty-five of 52 (67%) cases were classified as successful involving 73 SCLs of which 56 (77%) were classified as successful. These results appeared comparable to those reported by Howard.1 In Wall’s study, there was no significant association between age group (age<or=3 years vs. >3 years) and outcome, or cyst configuration and outcome. Similar to the Howard study, upright, western breed horses had a decreased change of success. The disparity in age-associated outcomes between the Smith and Walls study is unclear, but could be due to age-distribution where more of the horses in the Walls study were equal to or closer to 3yrs of age.
than in the Smith study. In addition, the breed distributions were different with Thoroughbred and western performance horses predominating the Walls study and Warmblood breeds primarily representing the Smith population. Many clinicians are injecting OCL using ultrasound guidance, but there are no comparison studies available to determine if this is as effective as arthroscopic application of intralesional corticosteroids.

**Articular cartilage grafting procedures:** For upright horses, aged horses, and those with arthritis of meniscal lesions, treatment in addition to enucleation seems warranted. Several iterations of articular cartilage grafting procedures have been performed at Cornell University (Nixon and Fortier). The grafts have been biphasic in nature and have progressed from use of cancellous bone to B-TCP or HA-TCP bone substitutes in the base of the defect covered with cartilage grafts including neonatal chondrocyte/autologous fibrin/insulin-like growth factor-I, mesenchymal stem cells/autologous fibrin, or bone marrow concentrate. Recently Ortved reported on 48 horses and 65 SBCs treated with arthroscopic cyst debridement followed by filling of the cyst with either autogenous cancellous bone (44 horses) or tricalcium phosphate (3 horses) and covering with allogeneic chondrocytes/fibrin/IGF-I with 3 years follow-up. A successful outcome was achieved in 35/47 horses (75%) while 43/47 horses (91%) were improved following surgery. These results suggest that growth factor enhanced chondrocyte grafting may improve repair of OCLs in mature horses and those with early osteoarthritis through superior cartilage resurfacing.

**Post-operative rehabilitation:** Regardless of the therapy applied, a controlled exercise program with regular radiographic recheck examinations is required. Recent evidence would suggest that intra-articular injection of mesenchymal stem cells might improve clinical outcome after surgery of the medial femoral condyle. Clients must be clearly informed that any stage might be prolonged based on the outcome of recheck examinations. Progression from one level of exercise to the next is based primarily of formation of a subchondral plate across the defect.

**References:**