Lateral Approach for Arthrocentesis of the Equine Coffin Joint

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The lateral approach for arthrocentesis of the coffin joint was associated with the inadvertent penetration of adjacent synovial structures 29% of the time. Authors’ addresses: Veterinary Medical Teaching Hospital (de Mercado) and Dept. of Anatomy, Physiology and Cell Biology (all other authors), School of Veterinary Medicine, University of California at Davis, Davis, CA 95616. © 1997 AAEP.

1. Introduction
The coffin joint is frequently affected with degenerative, inflammatory, and traumatic disorders that require arthropuncture for diagnosis and treatment. Traditionally, the coffin joint has been accessed through the dorsal or dorsolateral aspect of the dorsal joint pouch,1,2 but this approach is considered difficult by some veterinary practitioners.2 More recently a lateral approach for arthrocentesis of the distal interphalangeal (DIP) joint has been advocated3; a similar anatomic approach has been described for percutaneous injection of the navicular bursa.4,5 The objectives of this study were to determine (a) the anatomic landmarks for lateral percutaneous penetration of the proximopalmar pouch of the coffin joint, and (b) the likelihood of penetration of the coffin joint, navicular bursa, and digital flexor tendon sheath for the lateral and dorsal approaches.

2. Material and Methods
The boundaries of the coffin joint capsule were determined with positive contrast arthrograms, intra-articular casts,4 and manual dissections of cadaveric limbs. The dorsal and lateral approaches were compared by using paired forelimbs of eight cadavers and 12 horses. Radio-opaque materialb (8–10 ml) was injected and the synovial structures accessed were determined from dorsopalmar and lateromedial positive contrast arthrograms (high detail screens; at 500 mA, 0.02 s, and 80 kV with 40-cm focal film distance). The effect of approach (dorsal, lateral) on categorical variables was assessed with contingency tables and the sign test. A p value of p ≤ 0.05 was statistically significant, and 0.05 < p ≤ 0.10 was considered a trend.

3. Results
The site for percutaneous puncture of the proximopalmar pouch was bounded proximodorsally by the palmar border of the middle phalanx and ventrally by a depression in the proximal border of the lateral collateral cartilage located approximately 3/4 in. (~1.9 cm) dorsal to the palmar border of the cartilage. A 19-gauge 1½ in. needle was advanced distodorsomedially (approximately 20° dorsodistally in a sagittal plane; 45° distomedially in a dorsal plane) toward
the medial aspect of the solar surface of the hoof, a distance of approximately 1½ in.

The coffin joint contained contrast material in 85% of the limbs approached laterally, with 65% having contrast exclusively in the coffin joint and 20% having contrast in the coffin joint and navicular bursa (p = 0.065 for navicular bursa). The coffin joint in 100% of the limbs approached dorsally contained contrast exclusively (p = 0.065 for the coffin joint). The digital flexor tendon sheath contained contrast in 10% of the limbs injected laterally, but not in any limbs injected dorsally.

4. Discussion

The landmarks for percutaneous penetration of the proximopalmar aspect of the coffin joint (lateral approach) are distinctly palpable. The retrieval of synovial fluid was relatively easy compared with the dorsal approach, but the inadvertent penetration of the navicular bursa or digital flexor tendon sheath was a complication 29% of the time with the lateral approach. The dorsal approach was more reliable for exclusive access to the coffin joint. The lateral approach provides an additional portal for thorough and thorough lavage, arthroscopic access to the palmar portions of the coffin joint, and an alternative approach for horses with severe dorsal periarticular bone or soft-tissue production. Further technique refinement may enhance the sensitivity of the lateral approach for the coffin joint.

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References and Footnotes


Footnotes

aBatson’s No. 17 Plastic Replica and Corrosion Kit, Polysciences, Inc., 400 Valley Rd., Warrington, PA 18976-2590.
cMicrovision C, Du Pont Medical Products, 112 Clifton Ct., Folsom, CA 95630.