

Bursoscopy is a commonly used term to describe intrathecal endoscopy of synovial bursae. The navicular bursa is a closed sac, interposed between the dorsal surface of the distal part of the deep digital flexor tendon and the palmar surfaces of the navicular bone, impar ligament and collateral sesamoidean ligaments.

Bursoscopy of the podotrochlear bursa was first described by Wright et al. (1999) for endoscopic treatment of septic bursitis following contaminated iatrogenic or traumatic puncture of the navicular bursa<sup>1</sup>. Horses were positioned in lateral recumbency with the affected limb uppermost. A 5 mm skin incision was made proximal to the lateral collateral cartilage on the abaxial margin of the deep digital flexor tendon (DDFT), axial to the palmar digital neurovascular bundle. The arthroscope cannula with a conical obturator was then introduced through the skin wound and advanced distally and axially dorsal to the DDFT to enter the bursa at approximately the midpoint of the middle phalanx. Following entry into the bursa the obturator was withdrawn and replaced by a 4 mm 25o forward oblique arthroscope. Instrument portals were created either in a similar position to the arthroscopic portal on the medial side of the DDFT or through the solar puncture wound in open cases. Following treatment, 10/16 animals with puncture wounds of the navicular bursa were sound and returned to their pre-injury use while 6 had persistent lameness. The authors concluded that bursoscopic technique was less invasive, and allowed simpler post operative care with better results than the traditional 'street nail' procedure. Cruz et al. (2001) suggested the use of a similar technique for diagnosis of early abnormalities associated with podotrochleosis<sup>2</sup>. However, the authors pointed out that evaluation of the bursa on the side ipsilateral to the arthroscope portal was difficult and that complications of the technique included inadvertent penetration of the distal interphalangeal joint and the digital flexor tendon sheath, and superficial scoring of the navicular bone fibrocartilage.

Rossignol and Perrin (2003) used an alternative technique on 8 live horses suspected of navicular bursa disease, using both 4-mm or 2.7-mm scopes and standard arthroscopic instruments<sup>3</sup>. Horses were placed in dorsal recumbency with the distal limbs maintained in extension. A 5-mm skin incision was made 2.5 cm further proximal to the lateral collateral cartilage on the abaxial margin of the DDFT, palmar to the palmar digital neurovascular bundle. A blunt tendon knife was used to penetrate the digital flexor tendon sheath following which the arthroscope cannula with a conical obturator was advanced from within the digital flexor tendon sheath distally and slightly axially dorsal to the DDFT to enter the bursa. This technique allowed for near complete examination of the navicular bursa, including part of the impar ligament, with less restriction of movement of the arthroscope than the direct approach<sup>1,2</sup>. An instrument portal was created medial to the DDFT for fibrocartilage curettage, adhesion debridement, cyst curettage and debridement of tendinous fibrillation. The technique was further adapted by McIlwraith (2005)<sup>4</sup> and by Smith et al. (2007)<sup>5</sup> for debridement of intrabursal lesions of the DDFT, by creating lateral and medial transthecal portals at the dorsal margin of the DDFT through the distal reflection of the digital flexor tendon sheath and the palmar surface of

the T ligament. With horses in dorsal recumbency, limbs were positioned with the carpus flexed at approximately 90° and the distal limb in a semi-flexed position. It was found that arthroscopic manipulations were more easily performed with the surgeon standing cranial to the flexed carpus and facing caudally. When necessary, arthroscope and instrument portals were interchanged to optimize accessibility of lesions for assessment and treatment. Access to the bursa could further be increased by using a conical beaver blade to dissect the tissues in the distal reflection of the digital flexor tendon sheath dorsal to the DDFT and palmar to the collateral sesamoidean ligaments more widely from medial to lateral, essentially connecting the medial and lateral portals. This increased the visibility and maneuverability in the bursa when compared with the traditional technique of insertion<sup>6</sup>.

However, the authors warned that it would be advisable to confine the dissection to the central area of the tendon sheath reflection in order to minimize the occurrence of inadvertent penetration of the distal interphalangeal joint. With the increasing frequency of MR diagnosis of tendinopathy of the distal part of the DDFT<sup>7</sup>, endoscopy of the navicular bursa has become the treatment of choice for debridement of intrabursal tears of the DDFT<sup>5,8,9</sup>. According to Smith et al<sup>5</sup> 9/15 of horses (60%) were able to return to their original level of performance following bursoscopic debridement of DDFT lesions. Similar observations were made in a more recent multicenter study involving 79 horses from 4 hospitals<sup>9</sup>. Greater than 6 months follow-up was available for 62/79 cases (56 of which follow-up was >12 months). 60% were sound and 58% were in work at the time of follow-up. 48% were working at levels equal or better than before the injury was sustained. Horses with extensive DDFT injuries had worse outcomes (46% sound and working) than those with mild injuries (87% sound and working) ( $P < 0.05$ ). Further subdivision of mild injuries revealed excellent outcomes for horses with DDFT splits and DDFT fibrillation (100% sound and working). Other indications for bursoscopic treatment may include restrictive adhesion formation in the proximal recess of the bursa and degenerative fibrocartilage lesions on the palmar surface of the navicular bone.

## References

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