NAVICULAR BURSOSCOPY FOR THE MANAGEMENT OF CONFIRMED ADHESIONS CHARACTERIZED BY MRI AND THEIR RESPONSE TO SURGICAL TREATMENT

José M. García-López, VMD, DACVS; Maureen Holowinski, VMD; Mauricio Solano, MV, DACVR
Tufts University Cummings School of Veterinary Medicine, North Grafton, Massachusetts

Key Points:

- During MRI examination of the foot, a focal discontinuity in the navicular bursa fluid signal between two structures with well-defined extraneous tissue between the structures is diagnostic for a navicular bursa adhesion.
- If well-defined tissue is not seen, the diagnosis of adhesion should be made with caution.
- Horses suffering from confirmed navicular bursa adhesions have a good prognosis to return to soundness following endoscopic debridement.

Adhesions occur in the navicular bursa between the deep digital flexor tendon (DDFT) and multiple other structures, including the collateral sesamoidean (suspending) ligament (CSL), the flexor surface of the navicular bone, and the distal sesamoidean impar ligament (DSIL). The appearance of navicular bursa adhesions on MR images has been described, but only a limited number of cases described in the literature were confirmed using navicular bursoscopy and information with regards to the response or outcome to surgical debridement using bursoscopy is lacking.

The purpose of this presentation is to describe the appearance of navicular bursa adhesions on MR images using navicular bursoscopy as the gold standard for diagnosis, to determine the occurrence of other lesions of the podotrochlear apparatus in conjunction with navicular bursa adhesions, and to describe the response of horses with navicular bursa adhesions to surgical debridement.

Methods

Sixteen limbs from 14 horses were included in the study. Horses that had undergone MR imaging of the foot and subsequent navicular bursoscopy within 1 week were eligible for inclusion. All horses had lameness that was localized to the affected foot using diagnostic analgesia. On MRI, adhesions were assigned grade 1 when they were characterized by a focal discontinuity in the navicular bursa fluid signal between two structures (Figure 1), grade 2 when the navicular bursa fluid signal was disrupted and ill-defined extraneous tissue was present between the 2 structures (Figure 2), and grade 3 when the fluid signal was disrupted and well-defined tissue was present (Figure 3).
present between the 2 structures (Figure 3). Navicular bursoscopy was performed using one of two previously reported approaches\textsuperscript{11} and debridement of the adhesions was performed using a combination of motorized resectors and radiofrequency probes (Figure 4). Horses were shod following surgery with egg bar shoes and 3-5° heel wedges which were gradually decreased as recovery progressed. Follow-up information was acquired by standardized telephone interviews with the owners and/or trainers of the horses and by follow-up examination at our hospital.

Results

Twenty-eight adhesions were suspected on MR images, 21 (75%) of which were confirmed at surgery. Of these 21 confirmed adhesions, 15 (71%) were confirmed between the DDFT and the CSL, 4 (19%) between the DDFT and the navicular bone, and 2 (10%) between the DDFT and the T ligament. No adhesions were visualized at surgery that was not suspected on MR images. Adhesions were subjectively best visualized on transverse PD and STIR images. The positive predictive value was 43% for grade 1 adhesions, 57% for grade 2 adhesions, and 100% for grade 3 adhesions. Of the 7 adhesions that had been suspected on the MR images and not confirmed at surgery, 4 (57%) were considered grade 1 and 3 (43%) were grade 2. Other abnormalities were detected in the navicular bursa in 15 limbs; DDFT in 13, navicular bone in 15, CSL in 9, and DSIL in 8.

At the time of follow-up, 10 of 14 (71%) horses were sound and 4 (29%) remained lame following treatment. Of the 10 horses that became sound, 5 (50%) were performing at the same or higher level than before the injury, 1 (10%) was performing at a lower level, 3 (30%) had been retired or sold, and 1 (10%) was still undergoing post-surgical rehabilitation.

Discussion/Conclusions

A focal discontinuity in the navicular bursa fluid signal between two structures with well-defined extraneous tissue between the structures is diagnostic for a navicular bursa adhesion. If well-defined tissue is not seen, the diagnosis of adhesion should be made with caution. Adhesions between the DDFT and another navicular apparatus structure were noted in all horses and in most horses additional lesions within the navicular bursa were observed. Horses with navicular bursa adhesions respond favorably to endoscopic surgical debridement.


