Use of Magnetic Resonance Imaging to Diagnose Oblique and Straight Distal Sesamoidean Ligament Desmitis

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High field-strength magnetic resonance imaging (MRI) is an effective method for diagnosing injury to the oblique and straight distal sesamoidean ligaments in horses. In this study, a treatment program, consisting primarily of a 6-mo rest and rehabilitation program, allowed 76% of horses to successfully resume performance. Authors’ addresses: Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Washington State University, Pullman, WA 99164 (Sampson, Schneider, Tucker, Gavin); Oakridge Equine Hospital, 6675 East Waterloo Road, Edmond, OK 73034 (Zubrod); and California Advanced Imaging at Atherton, 3301 El Camino Real, Atherton, CA 94027 (Ho); e-mail: sarahs@vetmed.wsu.edu (Sampson). © 2007 AAEP.

1. Introduction

Injury to the distal sesamoidean ligaments is recognized as a cause of lameness in horses. Initially, diagnosis relied on observations of swelling over the palmaroproximal aspect of the digit or on ruling out other causes of lameness in the area with radiographs. The use of ultrasonography improved the ability to make a diagnosis of distal sesamoidean ligament desmitis. However, ultrasound evaluation of these ligaments is more complicated than that of other soft tissue structures in the distal limb. The straight distal sesamoidean ligament has a central anechoic area proximal to its insertion on the middle phalanx that can be misinterpreted. The oblique distal sesamoidean ligaments are oriented at an oblique angle to the long axis of the limb, making it difficult to follow them with the ultrasound probe. In addition, these ligaments are deep to the digital flexor tendons, and edge enhancement from the overlying tendons impairs the quality of the ultrasound image. Proximally, these ligaments are difficult to evaluate with ultrasound because of the ergot interfering with the scanhead/skin contact. As a result, it can be difficult to get a clear sono- graphic image of pathologic change in the ligament.

The distal sesamoidean ligaments act as part of the suspensory apparatus and provide resistance to extension of the metacarpo/metatarsophalangeal joint during the stance phase. The ligaments function to hold the proximal sesamoid bones to the
proximal and middle phalanges. The distal sesamoidean ligaments include the straight, the paired oblique, the paired cruciate, and the paired short distal sesamoidean ligaments. All of these originate proximally from the base of the proximal sesamoid bones and the intersesamoidean ligament.\textsuperscript{1} The straight distal sesamoidean ligament originates from the base of the proximal sesamoid bones and the intersesamoidean ligament. It courses distally to join the axial and abaxial ligaments of the proximal interphalangeal joint and the branches of the superficial digital flexor tendon as they insert on the proximal and palmar/plantar aspects of the middle phalanx.\textsuperscript{6,8} The straight distal sesamoidean ligament participates in sagittal stabilization of the metacarp/o/metatarsophalangeal and proximal interphalangeal joints.\textsuperscript{1,6,8}

The paired oblique distal sesamoidean ligaments originate from the base of the proximal sesamoid bones and form a V-shape as they travel distally and axially to become a single band where they attach to a roughened area on the palmar/plantar aspect of the distal one-third of the proximal phalanx.\textsuperscript{8} They are closely associated with the abaxial surface of the palmar/plantar proximal border of the proximal phalanx. The pair of oblique distal sesamoidean ligaments are important in limiting the rotational and abaxial movements of the metacarpo/metatarsophalangeal joint.\textsuperscript{1,8}

The cruciate distal sesamoidean ligaments cross from their origin on the base of the proximal sesamooids to the contralateral aspect of the collateral tubercles of the axial portion of the palmar/plantar aspect of the proximal phalanx.\textsuperscript{8} The cruciate distal sesamoidean ligaments form the palmar/plantar wall of the distopalmar synovial recess of the metacarp/o/metatarsophalangeal joint.\textsuperscript{8} The short distal sesamoidean ligaments extend from the dorsal aspect of the base of the proximal sesamoid bone to the palmar/plantar margin of the articular surface of the proximal phalanx.\textsuperscript{8} These are covered by a synovial membrane and are the most difficult to visualize. They are also much smaller than the straight or oblique distal sesamoidean ligaments and have a reduced role in supporting forces transferred to the suspensory apparatus during weight bearing.

Injury to the suspensory ligament, the proximal structure of the suspensory apparatus, is well recognized.\textsuperscript{4,9–14} The distal sesamoidean ligaments are the distal structures in the suspensory apparatus and seem to have the same opportunity for overload injury as the suspensory ligament during hyperextension. However, comparatively few injuries to these ligaments have been described, and the prognosis varies from guarded to good.\textsuperscript{3,15–17}

Magnetic resonance imaging (MRI) allows for evaluation of bone and soft tissue structures in the distal limb of the horse.\textsuperscript{8,18–23} MRI is valuable in human patients with musculoskeletal injuries, because doctors can make specific diagnoses of both bone and soft tissue problems.\textsuperscript{24–26} It is also proving to be valuable in the horse with lameness problems in the distal limb.\textsuperscript{27–39}

Identification of the cause of lameness localized to the metacarpophalangeal or metatarsophalangeal joint can be difficult when radiographs are normal. The objective of this paper was to report on the use of MRI to assess injury to the straight and oblique distal sesamoidean ligaments in horses with performance-limiting lameness. Additionally, this paper describes the clinical signs, the response to diagnostic local anesthesia, and the response to rest and rehabilitation in horses with this injury.

2. Materials and Methods
Medical records of all horses examined at the Washington State University Veterinary Teaching Hospital between July 1998 and September 2004 in which an injury of the oblique or straight distal sesamoidean ligament was diagnosed using MRI were reviewed. Breed, gender, age, affected limb(s), duration of lameness, severity of lameness, response to hooftesters, response to distal-limb flexion tests, response to diagnostic local anesthesia, radiographic findings, ultrasonographic findings, and treatment were obtained from the medical records. All horses were anesthetized, and either the digit and metacarpophalangeal joint of forelimbs or digit and metatarsophalangeal joint of hindlimbs were placed into a 1.0-Tesla Philips Gyroscan magnet (Table 1).\textsuperscript{8} The areas of interest were imaged in transverse, sagittal, and dorsal planes using proton-density (PD), T2-weighted (T2), short tau inversion recovery (STIR), and three-dimensional gradient-echo T1-weighted (3D GE) sequences. A double-echo sequence was used to obtain the PD and T2 sequences. On all horses, images were taken of either both front-digit regions or both rear-digit regions with the exception of two horses in which all four digit regions were imaged. To determine normal oblique distal sesamoidean ligament measurements, 22 limbs without lameness were imaged, and cross-sectional area measurements of each transverse slice of the medial and lateral oblique distal sesamoidean ligament were obtained.\textsuperscript{b} Each medial and lateral oblique distal sesamoidean ligament from the non-lame horses was divided into thirds (proximal, midbody, and distal), and the area measurements from slices of each region were averaged (mean ± SD) to provide information on the cross-sectional area of normal oblique distal sesamoidean ligaments as visualized with MRI. These were compared with cross-sectional area measurements of the same regions in horses diagnosed with oblique distal sesamoidean desmitis.

The approach used to inject the digital flexor tendon sheath in this study allowed accurate injection of both local anesthetic and anti-inflammatory medications into sheaths that were not distended with synovial fluid. The injection site was below the distal border of the palmar/plantar annular ligament.
along the lateral edge of the superficial digital flexor tendon. The distal limb is held in mild flexion, and a 3-cm, 18-gauge needle is inserted proximally along the edge of the superficial digital flexor tendon into the sheath. Landmarks include the base of the proximal sesamoid bone proximally and the palmar digital triad abaxially; the needle is inserted ~5 mm axial to the triad. Synovial fluid is frequently obtained, but when it is not, the ease of injection assures accurate placement of the needle into the sheath. Eight milliliters of mepivcaine hydrochloride was injected to anesthetize the sheath. Skin sensation over the digit distal to the block was evaluated to be sure that the palmar/plantar digital nerve was not desensitized by local anesthetic that leaked subcutaneously after injection of the sheath.

Ligament splitting was performed on anesthetized horses using ultrasound guidance to direct the percutaneous stab incisions into the region where lesions were detected on MRIs. A tendon-splitting knife was used to split the ligament at 1-cm intervals in the core lesions running parallel to the long axis of the fibers. A sterile bandage was applied to the lower limb after the procedure.

The rest and rehabilitation program consisted of 30 days of stall confinement followed by another 30 days of stall confinement with hand walking that was gradually increased to 30–40 min/day. At 60 days after diagnosis, the horses began jogging in hand and were also turned out into a small paddock (30 × 30 ft) for another 60 days. After 60 days of small paddock turnout, reevaluation of lameness was performed, and if the horse was sound, light riding (walk/trot) was initiated. Light riding was continued for another 60 days before the horse was returned to a regular exercise or training program. Follow-up was obtained by phone interview of the owner, trainer, or veterinarian or by follow-up evaluation of the horse at the hospital.

3. Results
Twenty-seven horses with an injury to the oblique or straight distal sesamoidean ligament met the criteria for inclusion in this study. There were 9 thoroughbreds, 9 Warmbloods, 5 Quarter Horses, 1 Arabian, 1 Hackney, 1 Lusitano, and 1 Appaloosa. Age ranged from 2 to 13 yr with a mean of 6.7 yr (median = 6.5 yr). Fifteen were geldings, nine were mares, and three were stallions. The horses were used for a variety of performance events: jumping (10), dressage (5), racing (3), Western pleasure (3), barrel racing (1), reining (1), pole bending (1), English pleasure (1), and driving (1). The use of one horse was not known.

All horses were examined because of lameness. Six horses had lameness for <4 mo, 19 had lameness for >4 mo, and 2 had lameness for an unknown period of time. Ten horses had forelimb lameness: right forelimb lameness (4), left forelimb lameness (2), and bilateral lameness (2). Seventeen horses had hindlimb lameness: right hindlimb lameness (5), left hindlimb lameness (6), and bilateral hindlimb lameness (6). All horses were lame at a trot on admission. Ten horses had a consistent, mild lameness graded as 2 of 5 at a trot. Sixteen horses had a consistent, moderate lameness graded as 3 of 5 at a trot. One horse had severe lameness graded as 4 of 5 at a trot. This horse was able to support weight on the limb at a walk but was severely lame at a trot. Lameness in all horses was exacerbated by firm flexion of the distal limb; the toe was pulled caudally and proximally to flex the interphalangeal and the metacarpophalangeal joints.

None of these horses had palpable enlargement or swelling of the limb, except for one horse that had soft tissue enlargement over the palmar aspect of the proximal phalanx. All but one horse required the use of diagnostic local anesthesia to localize the problem to the proximal aspect of the digit. Twenty-six horses had a combination of nerve, tendon sheath, or joint blocks performed to localize the lameness. After injury to the distal sesamoidean ligaments was detected in the MRIs, digital flexor tendon-sheath anesthesia was used in 14 horses to determine the response of these horses to local anesthetic in the sheath. No lesions were seen associated with the digital flexor tendon sheath in any of these horses. The lame-

### Table 1. MRI Sequences Used for Evaluation of the Metacarpophalangeal/Metatarsophalangeal and Proximal Digit Regions of the Horse Using a 1.0-T Gyroscan Magnet

<table>
<thead>
<tr>
<th>Image Orientation</th>
<th>Sequence</th>
<th>TR (ms)</th>
<th>TE (ms)</th>
<th>FA</th>
<th>FOV/rFOV</th>
<th>Matrix Size</th>
<th>Slice #/Width (mm)</th>
<th>Gap (mm)</th>
<th>Time (min)</th>
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<tr>
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<tr>
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<td>10.5</td>
<td>90</td>
<td>15/12</td>
<td>256 × 512</td>
<td>30/4.5</td>
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<td>1:57</td>
</tr>
<tr>
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<td>1725</td>
<td>35</td>
<td>90</td>
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</tr>
<tr>
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<td>110</td>
<td>90</td>
<td>14/12</td>
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<td>2:22</td>
</tr>
<tr>
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<td>13.8</td>
<td>90</td>
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<td>25</td>
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<td>192 × 256</td>
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TSE, turbo spin echo; T2, T2-weighted; PD, proton density; STIR, short tau inversion recovery; 3D GE, three dimensional gradient echo; TR, repetition time; TE, echo time; FA, flip angle; rFOV, relative field of view.
ness was improved 70–80% in all 14 horses that had this procedure performed.

Twenty of twenty horses had marked improvement in lameness after a low four-point nerve block (medial and lateral palmar/plantar nerves and medial and lateral palmar/plantar metacarpal/metatarsal nerves). Lameness in four of four horses improved after the metacarpophalangeal joint was injected with local anesthetic; 14 of 14 horses improved after injection of local anesthetic into the digital flexor tendon sheath. Lameness in 3 of 24 horses was eliminated after a palmar digital and dorsal branch nerve block, and 2 of 2 horses had marked improvement after an abaxial sesamoid nerve block. Local anesthetic blocks were not performed on the one horse with soft tissue swelling palmar to the proximal phalanx.

Three of the twenty-seven horses had ultrasonography of the palmar/plantar distal limb performed at Washington State University; one of the three horses was diagnosed with mild hypoechoic areas associated with insertion of the straight distal sesamoidean ligament onto the middle phalanx, which is suggestive of desmitis. This horse was subsequently diagnosed with definitive lesions within its straight distal sesamoidean ligament after MRI was performed. All other horses had ultrasonography performed by the referring veterinarian before presentation to Washington State University. One of the twenty-four horses had lesions seen on ultrasound that were suggestive of oblique distal sesamoidean desmitis, and this horse was referred for MRI evaluation to confirm the diagnosis and further evaluate the injury and any other associated injuries. The other 23 horses had no ultrasonographic abnormalities diagnosed.

Oblique distal sesamoidean ligament lesions were observed in MRIs as areas of diffuse or discrete increased signal intensity with enlargement of the ligament. Comparing the medial and lateral oblique distal sesamoidean ligaments on the same limb with the oblique distal sesamoidean ligaments on the contralateral limb was helpful in identifying abnormalities. Cross-sectional area measurements of the medial and lateral oblique distal sesamoidean ligament on each transverse image in horses with oblique distal sesamoidean desmitis were also compared with measurements obtained from 22 normal limbs. Straight distal sesamoidean ligament lesions were identified by signal-intensity comparison between contralateral limbs and comparison with normal limbs of normal horses. The average cross-sectional oblique distal sesamoidean ligament area measurements in normal horses and in horses with enlarged oblique distal sesamoidean ligaments are listed in Table 2. The axial images, especially PD sequences, were the most useful in detecting size and signal abnormalities in the oblique and straight distal sesamoidean ligament.

Two horses had diffuse disruption of fibers with a focal area of increased signal intensity (Fig. 1) similar to a core lesion. Five horses had discrete areas of increased signal intensity either centrally (Fig. 2) or at the perimeter of a ligament with localized enlargement. Other horses had diffuse enlargement of the ligament as well as a discrete area of increased signal intensity (Fig. 3) at some region in the ligament. Both medial and lateral oblique distal sesamoidean ligaments were abnormal in nine horses. Abnormalities were more common in the oblique distal sesamoidean ligament than in the straight distal sesamoidean ligament in this study. All nine straight distal sesamoidean ligament lesions were identified by increased signal intensity either lateral or medial of midline at or near the insertion of the ligament onto the middle phalanx (Fig. 4) that was separate from the normal high-signal intensity seen on midline near its attachment to the middle phalanx.

Abnormally increased signal within the oblique or straight distal sesamoidean ligament on PD, T2-weighted, and STIR sequences was a consistent abnormality observed in all horses in the study. Of the 24 horses with an oblique distal sesamoidean ligament injury, 22 had enlargement of one or both branches, and all injured branches had diffuse or discrete areas of high-signal intensity. Injury to the oblique distal sesamoidean ligament usually involved the whole or proximal one-half of the medial or lateral oblique distal sesamoidean ligament. The entire medial or lateral oblique distal sesamoidean ligament was involved in 28 injuries, the proximal one-half was involved in 12 injuries, and the midbody was involved in 1 injury. Lesions present in both medial and lateral oblique distal sesamoidean ligaments tended to be in the same location and of similar severity, and the majority had lesions involving the entire medial or lateral oblique distal sesamoidean ligament. Severity of the lesion was determined by the enlargement or the size of the area of increased signal intensity. Enlargement of the straight distal sesamoidean ligament was not present in any of the horses in this study. Of the 27 horses in this study, 3 (11%) had lesions localized to the straight distal sesamoidean ligament, 6 (22%) had lesions in the straight and oblique distal sesamoidean ligaments, and 18 (67%) had lesions in the oblique distal sesamoidean ligament. No other limb lesions were found.

In all horses, treatment consisted of rest to allow the injured ligament to heal and a 6-mo rehabilita-
tion program. In 22 horses, the digital flexor tendon sheath was injected with hyaluronic acid (20 mg) and methylprednisolone acetate (100 mg) after diagnosis. Two horses had ligament splitting performed: one with bilateral forelimb straight distal sesamoidean ligament insertion lesions, and one
with core defects in both medial and lateral oblique distal sesamoidean ligaments.

All six horses with a recent onset of lameness (<4 mo) were sound on follow-up (1–3 yr after diagnosis). Of the 12 horses with chronic lameness with follow-up (1–6 yr from diagnosis), 8 (67%) were sound. Ten (37%) horses in this study had lesions shown on MRI that were classified as mild, and follow-up was available on five of these horses, four of which (80%) were sound. Fourteen (52%) horses in this study had lesions shown on MRI that were classified as moderate, and follow-up was available on 13 of these.
horses, 10 of which (77%) were sound. Three (11%) horses in this study had lesions shown on MRI that were classified as severe, and follow-up was available on all these horses, two of which were sound (67%).

Follow-up information was obtained for 21 (78%) horses that were between 12 and 72 mo (mean = 27.6 mo) from the date of diagnosis. Sixteen (76%) of these horses were competing at the same or a better level of performance after their injury; none were being medicated for this injury while in performance. Five (24%) of these horses were lame and had been retired from performance.

4. Discussion

MRI can be used to diagnose injury of the straight and oblique distal sesamoidean ligaments as shown by the horses in this study. MRI has improved the assessment of both bone and soft tissue structures in the extremities of humans and horses. This technology has allowed specific diagnoses to be made that were not possible using other imaging techniques.

Normal ligaments have relatively low signal (grey or black) on all MRI sequences, although there is some variation in appearance and in signal heterogeneity depending on the specific ligament being imaged. Injuries affecting ligaments either cause changes in shape and size of the ligament (e.g., enlargement) or cause changes in signal within the ligament (e.g., fiber disruption, increased fluid, or scar-tissue formation). Increased signal intensity within a ligament in areas that are not normally heterogeneous or in a larger area than is normally present denotes abnormal fluid or tissue in an area that normally is of more uniformly low signal (dark). Abnormal high signal denotes areas of inflammation and are thought to signify acute or ongoing inflammatory processes; enlarged ligaments with little or no high signal are more likely chronic lesions that have less acute inflammation. In our experience, enlargement of the ligament does not always coincide with abnormally high signal within a structure as it does with the straight distal sesamoidean ligament lesions in this study. This may be related to the severity of the lesion and possibly, the location within the ligament. Further evaluation and a larger population are necessary to determine the significance of this finding.

There is variation among individuals in the amount of heterogeneity in the ligaments, but contralateral limbs can be used for comparison if the horse is not bilaterally lame. Also, images from normal, non-lame horses were used to distinguish normal variation. There is always more heterogeneity within the oblique distal sesamoidean ligament as it courses proximally on the limb, and the greatest heterogeneity is present at its insertion onto the base of the proximal sesamoid bones. When either the medial or lateral ligament is affected in the oblique distal sesamoidean ligament, the other side on the same limb can be used for comparison. The straight distal sesamoidean ligament is known to have a hypoechoic region on ultrasound (high-signal intensity region on MRI) on midline near its insertion onto the middle phalanx, and this knowledge is helpful in determining if a high signal is an abnormality. The straight distal sesamoidean ligament lesions diagnosed in the horses in this study had abnormally high signal intensity not associated with this normal high-signal area on midline.

The abnormalities in the distal sesamoidean ligaments observed with MRI in the horses in this study allow an accurate diagnosis to be made in a horse with a performance-limiting lameness. Abnormally high signal within the oblique distal sesamoidean ligament and enlargement of the oblique distal sesamoidean ligament (Figs. 1–3) were both observed in the horses in this study. The abnormalities found in these horses have not been observed in normal horses. Abnormally high signal within the straight distal sesamoidean ligament was observed in all horses diagnosed with straight distal sesamoidean desmitis (Fig. 4).

Desmitis of the oblique and/or straight distal sesamoidean ligament may be a more common cause of lameness than previously reported. One purpose of this study was to report the use of MRI to diagnose injury to these ligaments in performance horses. Distal sesamoidean ligament desmitis has long been recognized, but reports assessing treatment and prognosis are lacking. Previously, diagnosis had relied on detection of local soft tissue swelling. On finding bone proliferation at the ligament attachment sites on the proximal phalanx, or on detection of fiber disruption with ultrasound, high-field strength MRI allows an accurate diagnosis to be made. The difficulties of imaging these ligaments with ultrasound have been described. We found that many horses can have injury to the distal sesamoidean ligaments that are not visible with ultrasound (25 of 27 horses). These horses underwent MRI, because definitive diagnosis could not be made with radiography and ultrasonography. If a diagnosis cannot be made from radiographs and ultrasound, high-field strength MRI should be considered in horses with lameness problems that localize to the area of the metacarpophalangeal or metatarsophalangeal joint. The number and variety of athletic endeavors of the horses in this study indicate that injury to the oblique or straight distal sesamoidean ligament may be relatively common.

Diagnostic local anesthesia was necessary to determine the source of the lameness in the horses in this study; local swelling was observed in only one horse, although swelling may have been observed in more horses if they were examined at the time of the initial injury. The lack of abnormalities observed in the distal limbs in the study horses emphasizes the importance of performing diagnostic local anes-
In evaluating lameness in horses, it is necessary to perform a low four-point nerve, abaxial nerve, metacarpophalangeal/metatarsophalangeal joint, or digital flexor tendon shear block to eliminate the lameness in these horses.

Injection of the digital flexor tendon sheath with local anesthesia was performed in 14 horses after MRI. This procedure was used to confirm that desmitis of the oblique or straight distal sesamoidean ligament was the cause of the lameness. Injection of this synovial structure when excess fluid is not present is most easily accomplished distal to the annular ligament at the base of the proximal sesamoid bone. Injection of this sheath does not desensitize the palmar/plantar digital nerve unless there is leakage along the needle puncture in the sheath. This can be accurately detected by evaluating skin sensation over the palmar/plantar surface of the metacarpophalangeal/metatarsophalangeal joint and proximal aspect of the digit. This intra-synovial block improved the lameness in the horses in which the procedure was performed. Although improvement in lameness after this procedure cannot be used to make a specific diagnosis of desmitis of the oblique or straight distal sesamoidean ligament, it can be used to localize the lameness to soft tissue structures that can be partially desensitized when local anesthetic is absorbed from the synovial space of the digital flexor tendon sheath.

Injection of local anesthetic into the digital flexor tendon sheath has not been frequently used to localize lameness problems in horses. Local anesthetic in the sheath eliminated most of the lameness after 30 min in every horse that was injected. Experience with this diagnostic procedure in horses in this study has proven it to be a valuable technique that can help veterinarians localize lameness to soft tissue structures desensitized when local anesthetic is absorbed from the synovial sheath.

In two horses, injection of local anesthetic into the metacarpophalangeal/metatarsophalangeal joint improved the lameness of proximal oblique distal sesamoidean ligament lesions. The midline palmar or plantar extension of the joint pouch extends distally along the dorsal aspect of the oblique distal sesamoidean ligament, and local anesthetic can be absorbed into the ligament from the joint space.

Injury to the oblique distal sesamoidean ligaments was most commonly observed in an entire branch or the proximal one-half of a branch. Only one horse had an oblique distal sesamoidean ligament branch injury that did not involve either the origin or the insertion of the ligament. More horses with injury to the oblique distal sesamoidean ligament will have to be evaluated with MRI before the incidence and significance of abnormality location can be accurately determined.

A 6-mo rest and rehabilitation program was the primary treatment used for horses in this study. In addition, the digital flexor tendon sheath of 22 horses was injected with hyaluronic acid and methylprednisolone acetate to decrease inflammation and swelling in the injured ligament at the start of the rest and rehabilitation program. Anti-inflammatory medications are partially absorbed by the soft tissue structures through the synovial lining of the sheath. Decreasing inflammation in the ligament will result in less fibrous tissue in the ligament as it heals. Ligament splitting was performed in two horses with core defects in the oblique and straight distal sesamoidean ligament because of the beneficial response to this technique in horses with acute tendinitis in the superficial digital flexor tendon.

The ability of most of these horses to return to athletic performance indicates that the prognosis is not as poor as previously reported. High-field strength MRI is capable of early diagnosis of distal sesamoidean ligament injury, and appropriate treatment soon after injury may provide a better prognosis for returning to performance.

It has been previously reported that the oblique sesamoidean ligament is more commonly injured than the straight distal sesamoidean ligament. This was supported by the MRI observations in this study. Twenty-four (89%) of the horses had involvement of the oblique sesamoidean ligament. It has also been reported that the medial oblique distal sesamoidean ligament branch sustains injury more often than the lateral branch and that injury to these ligaments is more common in the forelimb.

This was not supported in this study. We found that the hindlimb was affected more often (16 of 24, 67%) than the forelimb (8 of 24, 33%) and that the number of injuries to the medial branch was the same as the number of injuries to the lateral branch when comparing all limbs. However, the medial branch was involved more often than the lateral branch in the forelimbs (87%), and the lateral branch was involved more often in the hindlimbs (71%). More horses need to be evaluated before the incidence and location of lesions can be accurately determined.

Injury to the oblique or straight distal sesamoidean ligaments can occur without palpable abnormalities in the region. Injury to the distal sesamoidean ligaments does not need to be severe to cause performance-limiting lameness in athletic horses, and it should be considered in the differential diagnosis when examining horses with lameness that blocks out in the area of the pastern or metacarpophalangeal/metatarsophalangeal region. Injection of local anesthetic into the digital flexor tendon sheath can help localize the lameness to soft-tissue structures desensitized by this technique. MRI with a high-field strength magnet provided an accurate diagnosis to the oblique and straight distal sesamoidean ligaments. The 6-mo
rest and rehabilitation program allowed most of these horses (76%) to return to their intended use.

References and Footnotes


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*Joseph Knife, Sontec Surgical Instruments, Englewood, CO 80112.
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