Short Communication on Diagnosis and Outcome Following Tenoscopic Surgery of the Digital Flexor Tendon Sheath in German Sports and Pleasure Horses

Andrea N. Cender*

Equine Clinic at the Faculty of Veterinary Medicine, Free University of Berlin, Berlin, Germany

Short Communication

Received: 15-Jan-2024, Manuscript No. JVS-24-125138; **Editor assigned:** 18-Jan-2024, Pre QC No. JVS-24-125138 (PQ); **Reviewed:** 01-Feb-2024, QC No. JVS-24-125138; **Revised:** 08-Feb-2024, Manuscript No. JVS-24-125138(R); **Published:** 15-Feb-2024, DOI: 10.4172/2581-3897.7.4.002

***For Correspondence:**
Andrea N. Cender, Equine Clinic at the Faculty of Veterinary Medicine, Free University of Berlin, Berlin, Germany
E-mail: andreanogcen@hotmail.com

Citation: Cender AN. Short Communication on Diagnosis and Outcome Following Tenoscopic Surgery of the Digital Flexor Tendon Sheath in German Sports and Pleasure Horses. J Vet Sci. 2024;7:002.

ABOUT THE STUDY

The Digital Flexor Tendon Sheath (DFTS) is a complex synovial structure of the equine distal limb containing the superficial (SDFT) and Deep Digital Flexor Tendons (DDFT) in their pass along the palmar/plantar aspect of the fetlock joint. The palmar and plantar annular ligaments help to hold the flexor tendons in the DFTS at the level of the metacarpophalangeal and metatarsophalangeal joints. Lesions of the DFTS and its related structures often result in lameness.

With a reported prevalence of 59% and 30%, respectively, DDFT and Manica Flexoria (MF) lesions are the most common causes of non-septic DFTS tenosynovitis in the horse [1].

The outcome after surgical treatment of non-septic DFTS tenosynovitis is variable and depends on the exact diagnosis. In general, lesions of the DDFT are associated with a poor outcome, whereas tenoscopic removal of the Manica Flexoria (MF) is associated with a good prognosis with 38% and 79% of horses returning to pre-injury level of ridden exercise, respectively [2,3]. However, the number of studies evaluating the outcome following DFTS surgery is limited, and most studies focus on a specific structure, such as the DDFT or the MF.

Thus, the objectives of this study were to

- Describe the prevalence of lesions in a large population of German horses with non-septic DFTS tenosynovitis,
- Determine the sensitivity and specificity of diagnostic imaging techniques,

- Explore associations between diagnosed lesions and signalment, purpose and limb affected
- Report the outcome following DFTS tenoscopy.

Medical records of 131 horses admitted for tenoscopic surgery of non-septic DFTS tenosynovitis between 2011 and 2020 were reviewed. The cases included 75 mares, 53 geldings and 3 stallions aged 1–23 years (median age: 13.2 years). Breeds consisted of 61 Warmbloods, 28 ponies, 17 Cob-type horses, 4 Standardbreds and 21 horses categorised as 'other'. Horses were used for showjumping (n=16), dressage (n=33), pleasure riding (n=70) and other purposes (n=12).

In total 145 limbs underwent diagnostic tensocopy. Lesions were most commonly diagnosed in the deep (55 limbs) and superficial (55 limbs) digital flexor tendons, followed by the MF (44 limbs). PAL constriction was diagnosed in 99 limbs. In 36 limbs, only one structure within the DFTS was injured, whereas in 109 limbs a combination of lesions was noted, the most common being a SDFT lesion with PAL constriction.

Sensitivity and specificity of ultrasonography and contrast tenography were determined using tenoscopic diagnosis as gold standard. For diagnosis of MF and DDFT tears, tenography was more sensitive (89%; 72%, respectively) than specific (64%; 53%, respectively) whereas ultrasonography was more specific (92%; 92%) with lower sensitivity (64%; 54%). For SDFT lesions, ultrasonography was highly specific (94%) with lower sensitivity (66%).

The tenoscopic diagnosis appears to be biased by the horses' age, breed and affected limb. Hind limbs were less likely to be affected by a DDFT lesion compared with forelimbs ($p<0.001$). SDFT lesions were seen more frequently in Cob-type horses ($p=0.004$). MF lesions occurred more often in hind limbs in this study population ($p=0.04$). The likelihood of PAL constriction increased with age ($p=0.005$); ponies were more affected ($p=0.004$) and hind limbs were significantly more at risk of PAL constriction compared with forelimbs ($p=0.02$).

Follow-up information following first surgery was obtained for 118 horses. Overall, the results of this case series show that 15% of horses remained chronically lame, 34% performed at a reduced level and 51% were able to return to the same or higher level of exercise compared with preinjury. Horses with DDFT lesions had the poorest outcomes with only 37% returning to the same or higher level of exercise, which is similar to the results reported by other authors [4,5]. Although our study population was fairly large, the large variation in lesion types and combinations precluded more formal analysis of outcome and this was limited to description only.

Our results are comparable to the outcome documented by Thünker et al., who reported 47.5% (19/40) of the horses treated tenoscopically returning to their original level of performance. Further research is needed to assess adjunctive treatment options, such as corrective shoeing or different types of postoperative intra-synovial medications (such as hyaluronic acid, platelet-rich plasma, autologous conditioned serum, mesenchymal signaling cells) in order to improve the outcome after tenoscopy.

In my personal experience, the best results are achieved whenever multiple treatment modalities are combined, such as tenoscopic debridement of a lesion in combination with a postoperative treatment of the DFTS with, for example, autologous conditioned serum. After the last treatment the horse is discharged home with at least 12 weeks of controlled exercise program (hand walking) and recommendations for trimming and if needed, corrective

shoeing. Then, horses are re-evaluated to decide how to continue the exercise program, based on the results of the clinical and ultra-sonographic examination.

In the current case series there was an unexpected high prevalence of SDFT lesions when compared to the available literature. Most part of these lesions were characterised by a superficial fibrillation and rough surface at the palmar/plantar aspect of the tendon. These lesions were present at the level of the PAL and were possible associated with the pressure exerted by the PAL over the tendon surface in cases with chronic thickening of the PAL. SDFT and PAL injury was the most common lesion combination in our population and we speculated that the higher prevalence of SDFT lesions seen in the current case series compared with previous reports might relate by the concurrent high level of PAL injury.

The main limitations of this study are its retrospective nature, the lack of a control group and reliance on owner-reported information for outcome assessment.

CONCLUSION

In conclusion, the overall prognosis for horses with non-septic tenosynovitis of the DFTS following tenoscopy is fair, with DDFT lesions having the poorest outcome. Retrospective analysis of DFTS tenoscopy identified a particularly high prevalence of SDFT lesions in combination with PAL constriction in this horse population. Intrasynovial lesions of the DDFT and MF were not consistently predicted during ultra-sonographic examination but the addition of DFTS contrast tenography as part of a routine investigation in horses with DFTS pathology improves the likelihood of lesion identification, particularly for the diagnosis of MF tears.

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