

Morphology of the digital sheath in horses

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Introduction: The digital sheath is located in the palmar (plantar) face of the distal limb. It consists of a synovium, divided into intimate and vascularised supportive layers, and ligaments that strengthen the tendon sheath in its palmar (plantar) face.

The synovium surrounds the digital flexor tendons during their passage within the sheath. The synovium fluid, produced by the filtering of the blood and by the intima cells, allows lubrication within the sheath.

Lameness, originating from digital sheath pathology is not rare, and it is important, for any equine practitioner, to know its normal morphology.

The aim of this study is to precise the morphology of the digital sheath, particularly its synovium because the literature is not unanimous.

Methods: The digital tips of 7 "sound" horses were collected. Samples were taken within the 3 annular ligaments (Proximal, Digital Proximal, Digital Distal). The digital flexor tendons were sampled with the visceral sheath of the synovial membrane at the level of the proximal sesamoid bones and just proximal to the medium scutum. All these samples were embedded in tissue-tek and frozen for cryosectioning. The proximal and distal recessus of the synovial membrane were also sampled, fixed in formalin and embedded in paraffin. Sections were stained with haematoxylin/eosin. One sample of the synovial membrane was taken for electronic microscopy and embedded in?

Results: Annular ligaments are composed of dense connective tissue but are transversal strengthening of the fascia rather than true ligaments. The digital flexor tendons showed the typical organisation of the collagen network. Type III fibrocytes were observed within the deep digital flexor tendon. The synovial membrane showed two layers: an intima (with visceral and parietal sheath) with fibroblast-like cells and macrophagic cells, and a sub-intima composed of fibrous tissue that was sometime so thickened that it was difficult to cut! The recessus contained large synovial fringe with adipose tissue.

Conclusion: This study permitted to precise the morphology of the digital sheath in horse which may help to better understand the pathological changes.