

Morphology of the suspensory ligament (interosseous muscle III) of the horse

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Introduction: The injuries of the suspensory ligament (SL) are important causes of lameness and financial losses in the equine industry. Ultrasound examination permitted to visualize some parts of the SL. The significance of “abnormal” findings is however not sufficiently known. Until now, few studies described the relationship between the ultrasonographic appearance and the exact morphology in histological sections. The aim of this study is to develop good techniques for cutting and staining the SL and to improve knowledge about the normal morphology of the SL.

Methods: In this study, the SL of eight <sound> horses were collected. The body of the SL was divided in 3 thirds and sampling was realised within each third and between the thirds. The samples were embedded in paraffin or in Tissue-Tek for cryosections. The sections were stained with hematoxylin/eosin or Masson's trichrome. For 3 SL, ultrasounds were performed before sampling. The digital tip was maintained in physiological position owing to a press.

Results: Most of the paraffin sections were shredded because of the hardness of the tissue. Cryosection revealed a better preservation of tissues. Only some freezing artifacts (holes) appeared on a few sections. Muscles fibers surrounded by adipose tissue containing blood vessels were present mainly in the proximal and medium third of the SL whereas they were not found in the distal third. The remaining structure look like a tendon and was composed of collagen fibers, stained in green with the Masson's trichrome coloration.

Conclusions: This study permitted to develop cutting and staining techniques for the SL and helped to map the adipose, muscular and tendinous parts within the SL. It lays down the bases of subsequent studies that will concern ultrasonographically examined digital tips of sound and pathological horses of different breeds and ages.