

The collateral ligaments of the distal interphalangeal joint: Magnetic resonance imaging and *post mortem* observations in 25 lame and 12 control horses

S. DYSON*, T. BLUNDEN† and R. MURRAY

Centre for Equine Studies; and †Centre for Preventive Medicine, Animal Health Trust, Lanwades Park, Kentford, Newmarket, Suffolk CB8 7UU, UK.

Keywords: horse; foot; lameness; desmopathy; histopathology; osseous cyst-like lesion

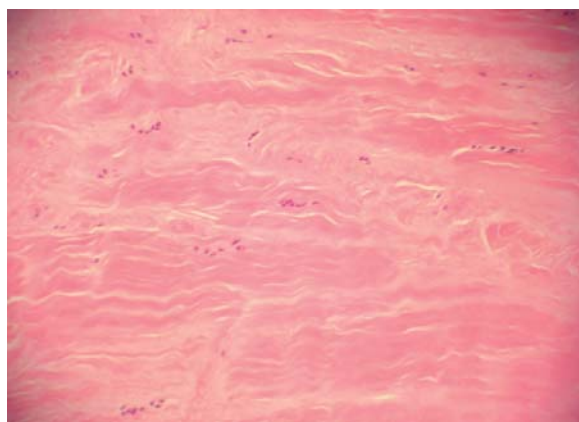


Fig o1: Sagittal section through the distal aspect of a collateral ligament of the distal interphalangeal joint. There are bands of pallor between normal collagen fibres. Under polarised light there was obvious loss of the normal linear arrangement of collagen fibres. Within the abnormal tissue are clusters of fibroblasts. This represents an earlier stage of damage than Figure 3 (H&E x40).

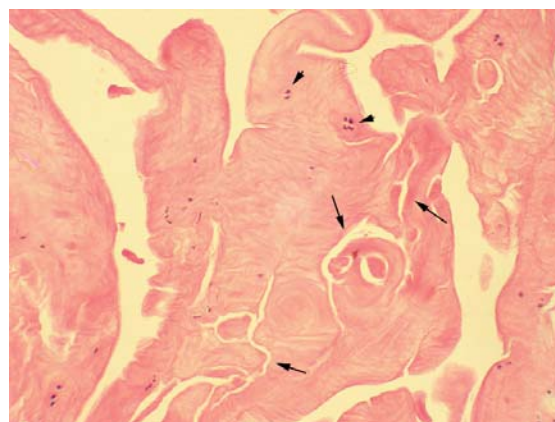


Fig o3: Sagittal section through the distal aspect of a collateral ligament. There is severe fissuring (arrows), chondrocyte cluster formation (arrowheads) and chondroid metaplasia. The tortuous nature of the fissures and regular smooth margins support these as genuine lesions and not processing artefacts. Localised alterations in tissue architecture due to degeneration of the ligament are likely to result in localised changes in mechanical properties. Stress on the palmarodistal aspect of the altered ligament through normal loading may lead to tissue failure (H&E x 40).

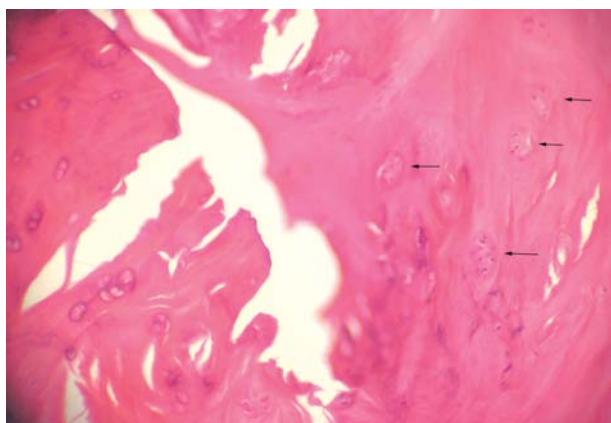


Fig o2: Sagittal section through the distal aspect of a collateral ligament of the distal interphalangeal joint. Proximal is to the lower left and distal to the upper right. There is complete loss of normal architecture, with hyalinisation. There are multiple large chondrones (arrows) near the ligament's insertion (H&E x100).

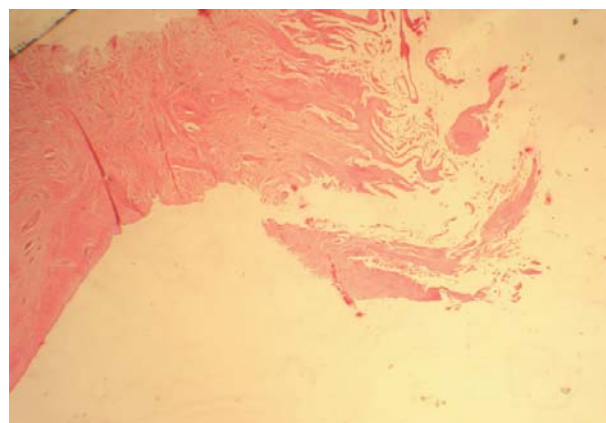


Fig o4: Sagittal section through the distal aspect of a collateral ligament of the distal interphalangeal joint, adjacent to the joint. Axial is to the right and abaxial to the left. The joint cavity is beneath the ligamentous tissue and to the right. There is multiple degenerative fissuring that extends into the joint cavity. The synovial membrane was lost during processing (H&E x10).

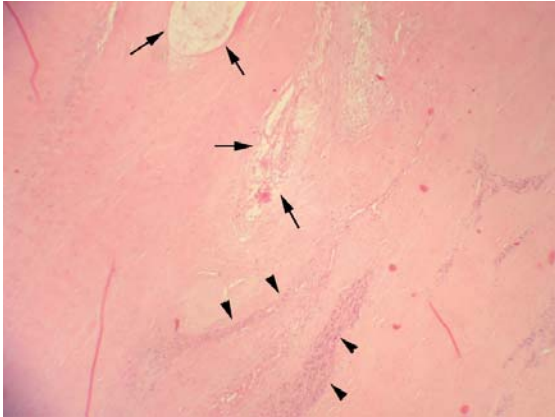


Fig 05: Sagittal section through the distal aspect of a collateral ligament of the distal interphalangeal joint. Proximal is to top right and distal lower left. The cavitated areas (arrows) represent degenerate tissue. There is widespread hyalinisation of collagen and focal chondroid metaplasia, with groups of fibroblasts. In the lower half of the image there are bands of revascularisation and dense fibroblasts (arrowheads). There are linear eosinophilic dense lines that represent wrinkles in the tissue and amorphous blobs that are artefacts (H&E x20).

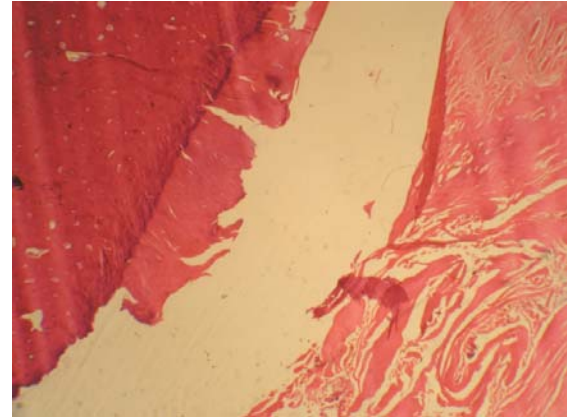


Fig 07: Sagittal section through the distal aspect of a collateral ligament of the distal interphalangeal joint at the bone ligament interface. Proximal is to the right and distal is to the left. There is fissuring degeneration of the ligament to the right. There is some ligamentous tissue attached to the calcified layer of the distal phalanx. The space represents genuine fibre disruption, but the size of the space was increased during processing (H&E x10).

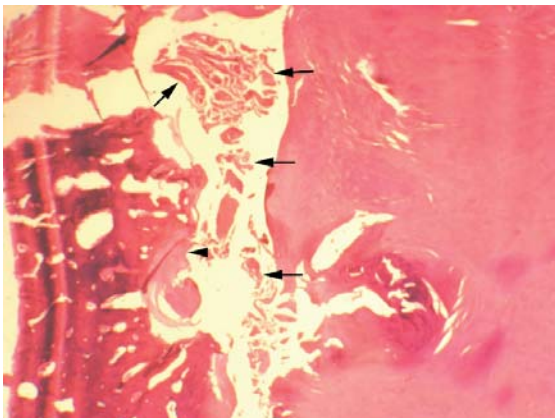


Fig 06: Sagittal section through the distal aspect of a collateral ligament of the distal interphalangeal joint. The ligament is hyalinised with no normal ligamentous architecture. There is chondroid metaplasia. There is a naturally occurring cleft between the ligament and the distal phalanx within which are clumps of fissuring degenerate ligamentous tissue (arrows). There is a small piece of ligament tissue attached to the cortical bone (arrowhead), below which is a cavity in the bone, a developing osseous cyst-like lesion. Bone architecture to the far left is normal (H&E x10).

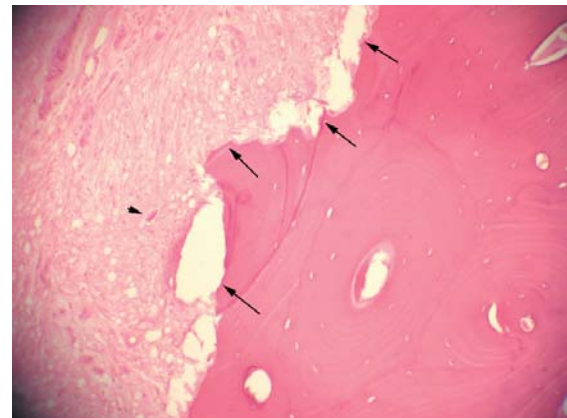


Fig 08: Sagittal section through the solar aspect of a distal phalanx. The solar aspect is to the upper left (at approximately 10 o'clock). To the right of the image there is normal lamellar cortical bone. There is an abrupt and irregular transition from bone (arrows) to abnormal fibrovascular tissue containing osteoclasts (arrowhead). This section was obtained directly distal to the site of insertion of the injured ipsilateral collateral ligament of the distal interphalangeal (DIP) joint. It is proposed that injury may result in altered stability of the DIP joint, predisposing to abnormal loading of the ipsilateral aspect of the distal phalanx, and secondary osseous changes (H&E x40).