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Re: Pure Peroneal Intraneural Ganglion Cyst. Hindsight is 20/20

Saf Peroneal İntranöral Ganglion Kisti. Geçmiş %100 Bilinebilir

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To the Editor:

Since the time of the submission of the manuscript "Pure peroneal intraneural ganglion cyst ascending along the sciatic nerve,"(1) another paper has been published which explains not only the formation but also the propagation of this unusual cyst (2). With this new information, reinterpretation of the nuances of the MRIs in this original case provides additional evidence to support the proposed pathoanatomic mechanism.

Because of the longitudinal extent of the cyst as seen in the original published figure, the full proximal and distal extents of the process cannot be feasibly obtained at a single setting, and are incompletely visualized due to the limits of the field of view on MRI (Figure 1A). Despite the limitations of the imaging obtained in this case, the cyst origin from the superior tibiofibular joint could be seen on several images in 2 separate planes (Figure 1B, C). Furthermore, there was evidence of descent into the tibial nerve on the originally published coronal image (1) as seen in a contiguous image (Figure 1D); unfortunately, the axial images did not include the area of the distal sciatic nerve or bifurcation which could have helped to confirm this prospectively. The images provided by the authors of the original report were available for review on hard copy only with film markings obscuring portions of the anatomy of interest (Figure 1A). The only axial images included were obtained using a gradient echo sequence and included only a 3 cm segment including the distal femoral condyles with no visualization of either the sciatic nerve or even the knee joint. The imaging parameters were appropriate with excellent in plane resolution, however the field of view was truncated, limiting identification of the typical imaging signs of the cyst origin from the joint with extension into the articular branch. This area, the fibular neck, was not included on any of the 6 series provided.

This "extreme" cyst follows the same principles outlined previously (3) for the most common example, that occurring within the common peroneal nerve but which has more extensive extent. Consistent with the unifying theory (4), an articular branch connection of the peroneal intraneural cyst to a degenerative superior tibiofibular joint can be seen and is the origin of the process. Joint fluid exits the joint through a capsular rent following the path of least resistance. The consistency of the fluid transforms slightly when it is isolated from the joint, and becomes cyst fluid. The cyst ascends within the common peroneal nerve. Due to increased intra-articular pressures, the cyst propagates extensively. At the sciatic bifurcation, the cystic expansion is seen. Cross-over occurs whereby cyst fills the common epineurial sheath. Depending on pressures and fluxes, the cyst can either ascend further or descend. This process explains the presence of a primary peroneal intraneural cyst descending in the proximal portion of the tibial nerve in the popliteal fossa. This theory is universal and applies to any synovial joint.

Understanding this mechanism simplifies and directs surgical intervention. In this example, surgical exposure could be limited to the proximal leg to address the articular branch and the superior tibiofibular joint rather than the thigh. Cyst decompression by itself (without addressing the joint of origin and/or its conduit for propagation of the cyst) can result in recurrence. In contrast, intraneural recurrence is eliminated by disconnecting the articular branch connection (3, 4). Surgery need not attempt to resect the cyst which would be impractical in such an extensive cyst and risky given its intraneural dissection.

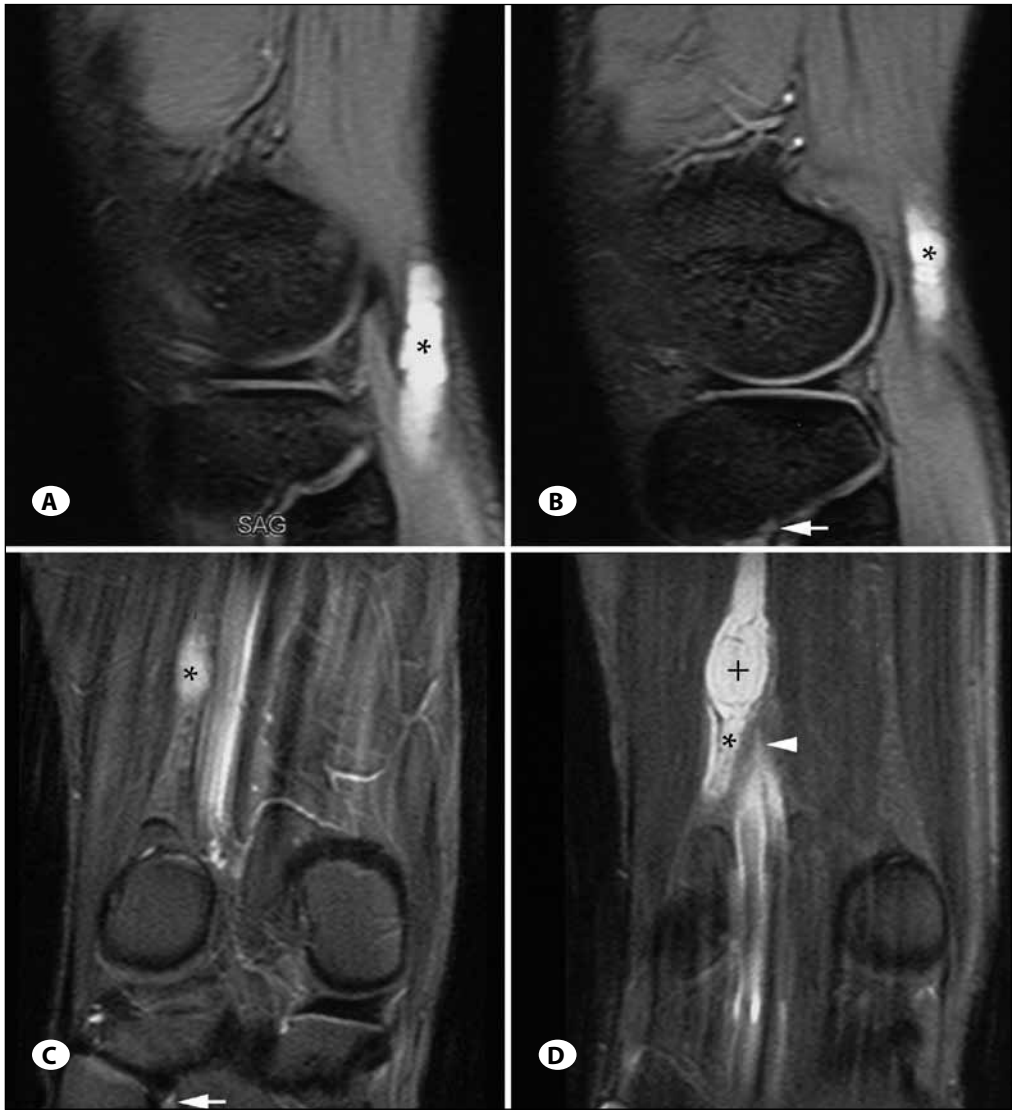

Figure 1: MRIs of the extreme peroneal intraneural ganglion cyst. **A)** Sagittal T2-weighted gradient echo MR image. This is the most lateral sagittal image in this series. The joint connection is visualized but largely obscured by the overlying markings on the film (SAG). The peroneal intraneural cyst is seen on this image (asterisk). **B)** Sagittal T2-weighted gradient echo MR image just medial to **A** demonstrating the peroneal intraneural cyst (asterisk) and its joint connection to the intraneural cyst at the superior tibiofibular joint (arrow) at the very edge of the image. **C)** Coronal short tau inversion recovery (STIR) image shows the peroneal intraneural cyst in the distal thigh (asterisk) as well as a small amount of fluid in the superior tibiofibular joint at the origin of the intraneural cyst (arrow). **D)** Coronal STIR image of the distal thigh and knee showing the intraneural cyst in the distal sciatic (plus sign) and common peroneal (asterisk) nerves as well as a small amount of cyst in the proximal portion of the tibial nerve consistent with cross-over and descent.

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