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What's New in Sports Medicine

Sinus Tarsi Syndrome

By Dr. William Renner

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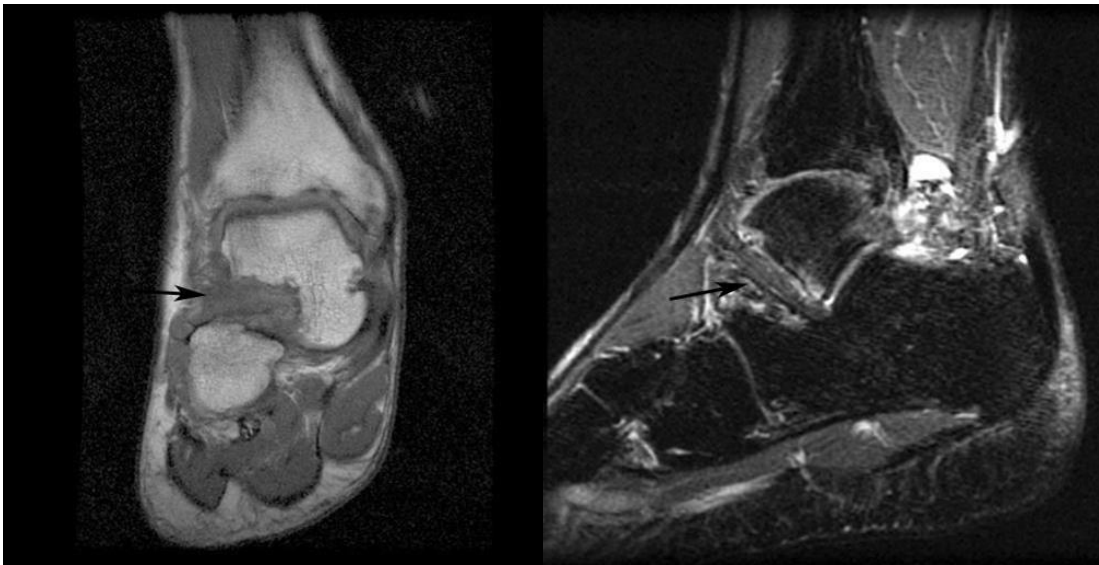
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Coronal T1 and Sagittal T2 of ankle:

Sinus tarsi reveals obliteration of normal fat on T1 and low signal on T2 consistent with arthrofibrosis. The cervical and interosseous ligaments are obscured.

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The sinus tarsi syndrome is not new, it was described in by Denis O'Connor in 1958. However, the arthroscopic treatment of sinus tarsi is relatively new. The surgical treatment of sinus tarsi syndrome is arthroscopic debridement of the posterior subtalar joint and sinus tarsi. 94% were improved at 1-8 years follow-up although half had some residual symptoms.

Sinus tarsi syndrome:

Sinus tarsi syndrome is an inflammatory condition causing lateral hindfoot pain and instability. The most common cause for the syndrome is ankle trauma (about 70%) in particular an inversion injury, which can be treated with steroid injection into the sinus tarsi. A more serious cause of sinus tarsi syndrome is posterior tibial tendon dysfunction and spring ligament tears which frequently lead to the syndrome.

Sinus Tarsi Syndrome - Arthroscopic Path Findings:

Tear of Interosseous ligament 88%

Tear of Cervical ligament 33%

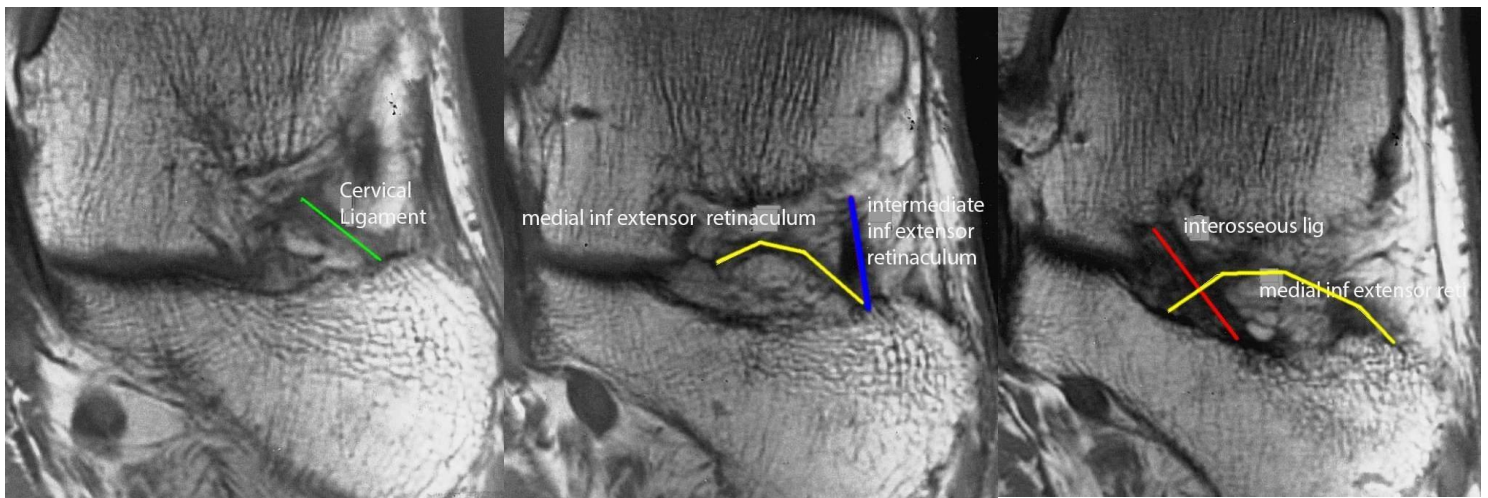
Synovitis 55%

Arthrofibrosis 24%

Soft Tissue Impingement 21%

Obliteration of fat that reaches the

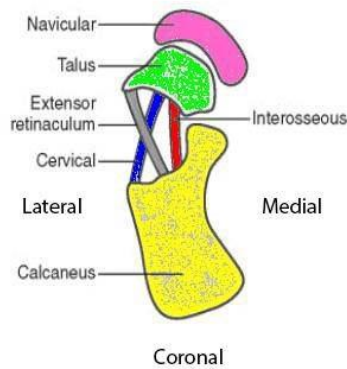
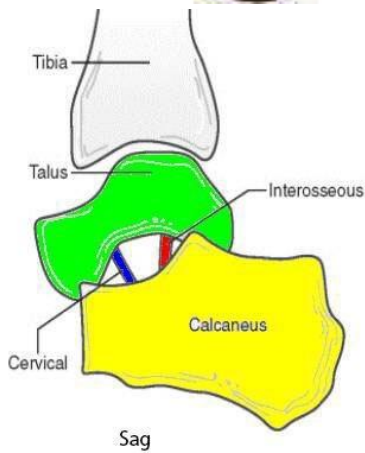
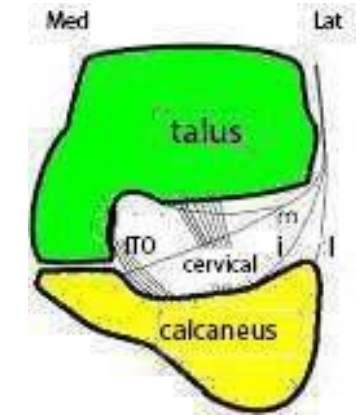
critical angle of gissane



Coronal T1 tarsal sinus of a male cadaver in which ligaments are easier to see than in most MR scans. Anterior portions of the sinus tarsi the cervical ligament is seen as an oblique band extending from the talus to the calcaneus.

Coronal T1 image thru middle portion of tarsal sinus. The medial band and intermediate band of the inferior extensor retinaculum is seen.

Coronal T1 image thru more posterior portion on of tarsal sinus. The interosseous ligament extends obliquely from the inferior surface of talus to superior surface of the calcaneus



The sinus tarsi contain the **cervical ligament** and the **intraosseous ligament**, and the 3 roots of the inferior extensor retinaculum (medial, intermediate and lateral). The **cervical ligament** is the thickest and anterior-lateral to the **intraosseous ligament (ITO)**. In between the cervical ligament and the intraosseous ligament are the 3 roots of the inferior extensor retinaculum which make up most of the ligamentous structures within the sinus tarsi. The roots act as a sling to hold the extensor digitorum longus and peroneus tertius tendons against the talus and calcaneus.

Oblique coronal CT images through the hindfoot, posterior to anterior to demonstrate sinus tarsi



This plane best profiles the posterior facet of the subtalar joint (*red arrow*)

The ankle mortise (*yellow line*) can be appreciated in the oblique coronal plane but would be better profiled in the mortise coronal plane

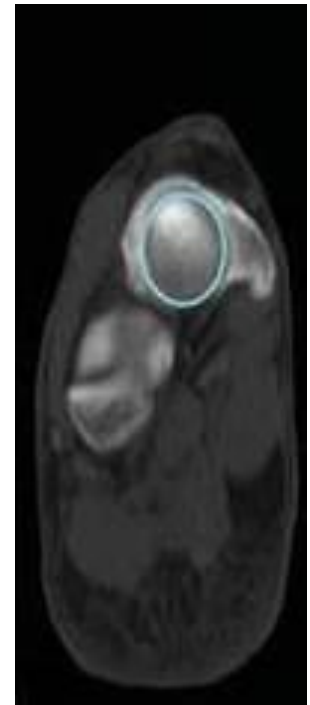


This oblique slice is just anterior to the ankle joint, where the posterior facet of the subtalar joint is ending (*red arrow*) and the middle facet is beginning (*blue arrow*)



The oblique coronal slices are angled correctly if the middle facet of the subtalar joint (*blue arrow*) has a horizontal orientation

The cone of soft tissues lateral to the middle facet is the sinus tarsi (*asterisk*)



The junction of the hindfoot and midfoot is at the round head of the talus at the talonavicular joint (*circle*)



On MRI, findings suggestive of sinus tarsi syndrome include:

Obliteration of the fat by intermediate to low T1 and variable T2 signal intensity tissue

Tears of the interosseous and cervical ligaments

Cystic change along the roof and posterior subtalar joint osteoarthritis

MR shows inflammatory and fibrotic changes well. MRI is good for diagnosing sinus tarsi fat alterations and synovial thickening. MR is okay for accurate for diagnosing cervical ligament tear (sensitivity of 73% and specificity of 89%) but less so for interosseous ligament tear (sensitivity of 44% and specificity of 60%).

Non-surgical management includes control of pain and inflammation with analgesics, an inflammatory medication and steroid injections into the sinus tarsi with about 90% improved with this treatment.

The surgical treatment of sinus tarsi syndrome is arthroscopic debridement of the posterior subtalar joint and sinus tarsi. 94% were improved at 1-8 years follow-up although half had some residual symptoms.

In addition, surgical treatment may be indicated for concomitant ankle synovitis, subtalar instability or posterior tibial tendon dysfunction and spring ligament tears.