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Talofibular Bony Impingement of the Ankle

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Summary
Talofibular bony impingement causes limitation of dorsiflexion and 3D CT is useful for diagnosis.

Introduction
We hypothesized that talofibular bony impingement can cause an obstruction to dorsiflexion and complete eversion of subtalar joint. This study was performed to demonstrate that a disease entity “talofibular bony impingement” can be a cause of limitation of ankle dorsiflexion and to investigate radiologic findings of talofibular bony impingement.

Methods
This study includes 20 consecutive patients (21 ankles), who have been surgically treated for talofibular impingement (male 20, female 1, 32.7 years, 14-51 years). Nineteen ankles of 19 patients with ankle instability without talofibular impingement were used as a control group for comparison of findings on plain radiograph and 3D-CT (male 13, female 6, 24.2 years, 15-57 years). Ankles with joint space narrowing from degenerative arthritis, tarsal coalition or history of fracture around ankle joint were excluded. Intraoperative demonstration of obstruction of dorsiflexion at talofibular area and increase of dorsiflexion after removal of talofibular impingement was diagnostic criteria of talofibular impingement. Spurs on talus and lateral malleolus were identified in most of cases, however impingement did not relieved after spur excision and it was completely relieved only after excision of normal looking area deep and posterior to the spur at the talar lateral process.

Range of dorsiflexion before and after removal of talofibular impingement was measured on photographs as an angle between the lines drawn on the lower leg and lateral border of the foot. Findings on plain radiographs and CT were compared between the groups. Distance between lateral malleolus to the tip of the lateral process of the talus on weightbearing anteroposterior radiograph of the ankle was measured. On 3D CT images, thickness of bony protrusion from the anterior part of lateral process of the talus, presence of spur at the lateral talus and lateral malleolus and possibility of talofibular bony impingement was assessed.

Results
Range of dorsiflexion increased by mean 7.4 degrees (range, 2-14 degrees) after excision of lateral impingement in impingement group. Mean distance between fibula and lateral process of the talus was shorter in impingement group compared to control group, which was 1.3mm (range, 0-4mm) and 3.2mm (1-4.5mm) respectively. Bony protrusion at the surface of the lateral process of the talus on axial CT image was present in 19 ankles in impingement group and mean length was 1.5mm (range, 0-6.5mm), in contrast it was present 6 ankles in control group and mean length was 0.6mm (range, 0-3mm). On coronal CT image, spur on the lateral process of the talus was found in 17 ankles in impingement group and spur on the fibular side was found in 17 ankles, while talar spur was found in three ankles and
fibular spur was found in one ankle in control group. On 3-D reconstruction image, talofibular impingement was suspected in 17 ankles of impingement group, while no ankle in control group.

**Conclusion**
Talofibular bony impingement causes limitation of dorsiflexion and 3D CT is useful for diagnosis.