

Coalition of the medial portion of the talocalcaneal with the associated *Os sustentaculum* – An uncommon coalition

Coalizão da articulação talocalcaneana com *Os sustentaculum* -
Uma coalizão incomum

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Abstract

Introduction: The *Os sustentaculum* is a rare accessory bone located at the posterior end of the *sustentaculum tali*. The tarsal coalition can be considered a congenital anomaly that can become symptomatic. Often, CT or MRI is required to confirm the diagnosis of the talo-calcaneus coalition when the findings on radiographs are ambiguous. **Objective:** To report an unusual case of a coalition of the talocalcaneal joint with *Os sustentaculum*, diagnosed by imaging exams. **Case Report:** A 26-year-old woman with a “lump” in her right ankle for 10 years causing intermittent pain. She worsens when wearing heels - regardless of the time when walking or standing in an orthostatic position for more than 1 hour, referring to pain on palpation and irradiation to the foot. The right ankle radiograph shows an accessory ossicle in the medial portion of the talocalcaneal joint – *Os sustentaculum*, confirmed by computed tomography. Magnetic resonance imaging diagnoses extra-articular talo-calcaneus coalition with *Os sustentaculum*. **Conclusion:** It is important to emphasize that the *Os sustentaculum* is not just an accessory ossicle or an old fracture, it is a component of a type of extra-articular talo-calcaneus coalition, which makes this condition generally symptomatic. Therefore, if a patient with *Os sustentaculum* shows symptoms in the medial talo-calcaneus joint area, an extra-articular talo-calcaneus coalition with *Os sustentaculum* should be considered.

Keywords: Tarsal coalition, X-ray computed tomography, Magnetic resonance imaging, Radiography

Resumo

Introdução: O *Os sustentaculum* é um osso acessório raro localizado na extremidade posterior do *sustentaculum tali*. A coalizão tarsal pode ser considerada uma anomalia congênita que pode se tornar sintomática. Frequentemente, é necessária a TC ou a RM para confirmar o diagnóstico de coalizão talo-calcânea quando os achados nas radiografias são ambíguos. **Objetivo:** Relatar um caso incomum de Coalizão da articulação talocalcaneana com *Os sustentaculum*, diagnosticado por exames de imagem. **Relato do Caso:** Mulher de 26 anos com “caroço” no tornozelo direito há 10 anos promovendo dor intermitente. Apresenta piora ao usar salto – independentemente do tempo, ao andar ou ao ficar em posição ortostática por mais de 1 hora, referindo dor a palpação e irradiação para o pé. A radiografia do tornozelo direito apresenta ossículo acessório na porção medial da articulação talo-calcânea – *Os sustentaculum*, confirmada pela tomografia computadorizada. A ressonância magnética diagnóstica coalizão talo-calcânea extra-articular com *Os sustentaculum*. **Conclusão:** É importante ressaltar que o *Os sustentaculum* não é apenas um ossículo acessório ou uma fratura antiga, ele é um componente de um tipo de coalizão talo-calcânea extra-articular, o que faz com que essa condição seja geralmente sintomática. Portanto, se um paciente com *Os sustentaculum* apresentar sintomas na área articular talo-calcânea medial, uma coalizão talo-calcânea extra-articular com *Os sustentaculum* deve ser considerada.

Palavras-chave: Coalizão tarsal, Tomografia computadorizada por raios X, Imagem por Ressonância magnética, Radiografia

Introduction

The *Os sustentaculum* is a rare accessory bone located at the posterior end of the *sustentaculum tali*⁽¹⁾. It

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is usually connected to the calcaneus through fibrous or fibrocartilaginous tissue⁽¹⁾. The first account of this ossicle was published by Pfitzner in 1896⁽¹⁾. Pfitzner presented a case in which the *Os sustentaculum* was an independent ossicle and noted that this occurred in less than 1% of cases⁽²⁾. Since then, some case reports have appeared, dealing with the clinical manifestations and the simple radiographic characteristics of this condition⁽²⁾.

The tarsal coalition can be considered a congenital anomaly that can become symptomatic, it can be bony, cartilaginous or fibrous⁽³⁻⁴⁾. The congenital tarsal coalition likely results from the abnormal differentiation and segmentation of the primitive mesenchyme with the resulting lack of joint formation⁽⁴⁾. An autosomal dominant propagation pattern with variable penetrance, not nearly total, has been suggested⁽⁴⁾. The true prevalence of the tarsal coalition is not known; estimates range from less than 1% of the population to approximately 1%–2%⁽⁴⁾. There is likely a slight male predominance, and the condition is bilateral in approximately 50% of cases⁽⁴⁾. According to Yun et al⁽⁵⁾, the extra-articular talocalcaneal coalition with *Os sustentaculum* occurs in 16% of all coalitions in the foot and 24.1% of the talocalcaneal coalitions, being more common in men – 69.2%⁽⁵⁾.

The talocalcaneal coalition has been described in adolescents and adults, but it is less frequent during the prenatal period⁽³⁾. Research by Harris et al⁽³⁾ examined 20 patients aged 4 to 14 weeks and reported 4 patients (6, 7, 9, and 10 weeks) with the talocalcaneal coalition⁽³⁾.

This article aims to report the case of a patient with a bulging right ankle caused by a coalition of the talocalcaneal joint with *Os sustentaculum* evidenced by imaging exams.

Case report

The study was analyzed and approved by the Research Ethics Committee of Hospital São Rafael, n. 0002-2021.

A 26-year-old woman refers to a “lump” in her right ankle for 10 years causing intermittent pain. It worsens when wearing heels – when walking or standing in an orthostatic position for more than 1 hour, referring to pain on palpation and irradiation to the foot. She denies the use of medications, previous trauma, and previous surgery on the lower limbs. She has been practicing two hours of dance per week for over 10 years.

The physical examination shows prominence in the medial portion of the ankle, hardened and painful on palpation, without edema of the local soft tissues and alteration of the skin color. The patient has a body

mass index of 32.5 kg/m² and refers to pain of the subtalar joint mobility test. The patient reports the use of nimesulide when the pain is more intense, showing a slight improvement.

The radiograph (Figure 1) shows an accessory ossicle in the medial portion of the talocalcaneal joint – *Os sustentaculum*. Computed tomography scan (CT scan) (Figure 2) confirms the finding with degenerative changes in the pseudo-joint between the *Os sustentaculum* and the calcaneus bone. The “talar beak” was not evidenced.



Figure 1 - Radiography of the right ankle in profile view in A and AP view in B showing *Os sustentaculum* (white arrow).



Figure 2 - CT scan of the right ankle in the coronal section in A, a sagittal section in B, and axial section in C showing *Os sustentaculum* (white arrow).

Magnetic resonance imaging (MRI) (Figures 3, 4, and 5) shows a pseudo-articulation between the sustentaculum tali and *Os sustentaculum* and between the medial talar tubercle and *Os sustentaculum*, with the pseudo-joints showing degenerative changes, with subchondral edema in the calcaneus and *Os sustentaculum*. The findings are compatible with the talocalcaneal coalition with *Os sustentaculum*.

Treatment was started with physiotherapy for one hour a day, five times a week. Nine months later,

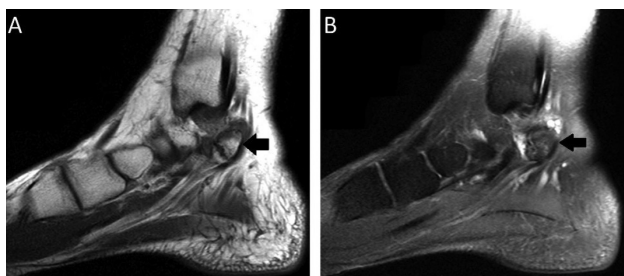


Figure 3 - MRI of the right ankle in the sagittal section at T1 sequence in A and T2 FAT SAT sequence in B showing a talocalcaneal coalition with *Os sustentaculum* (black arrows).

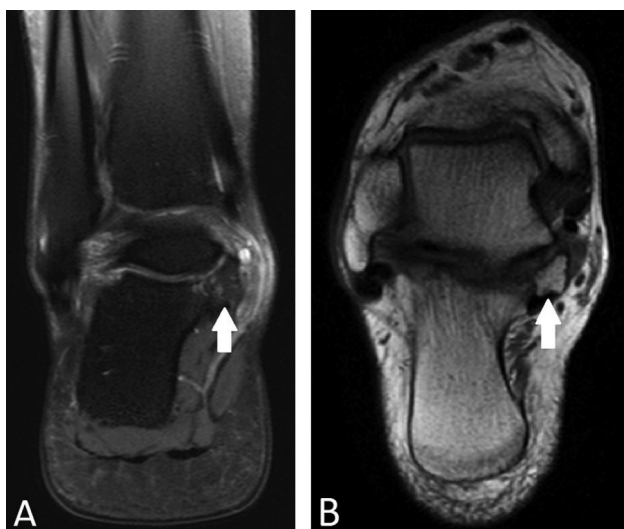


Figure 4 - MRI of the right ankle in the coronal section in the T2 FAT SAT sequence in A and coronal oblique in the T1 sequence in B demonstrating a talocalcaneal coalition with *Os sustentaculum*, with foci of edema associated (white arrows).

without the need for surgical and drug treatment, the patient had no symptoms.

Discussion

The talocalcaneal coalition, until the mid-1980s, was diagnosed using standard X-rays, equipment that is used today for screening⁽⁴⁾. However, the use of X-rays does not allow confirmation of the talocalcaneal coalition – it is more difficult than the merger in other locations⁽⁴⁾. In the study by Lim et al⁽⁶⁾, only 23% of coalitions could be diagnosed by X-rays⁽⁴⁾, as in our case. Even in these cases, subtyping or fracture detection was not possible⁽⁴⁾.

With the introduction of CT scans and MRI, it has been possible, through imaging modalities, to differentiate between bone and non-bone coalitions⁽⁵⁾. Imaging modalities also help to describe the extent of joint involvement and what are secondary degenerative changes, which are extremely important for

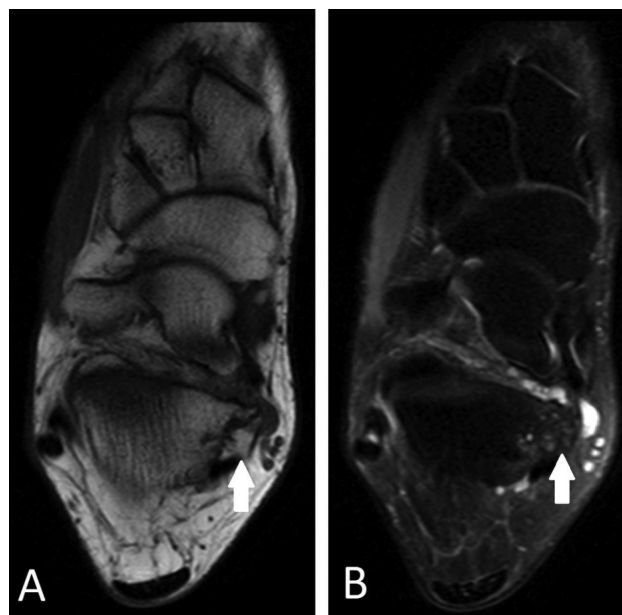


Figure 5 - MRI of the right ankle in the axial section in the T1 sequence in A and the T2 FAT SAT sequence in B showing a talocalcaneal coalition with *Os sustentaculum* (white arrows).

surgical planning⁽⁵⁾. It is noteworthy that the MRI with the STIR sequence helps to reveal the edema of the bone marrow along the margins of the abnormal joint, important information for the diagnosis⁽⁵⁾.

Often, a CT scan or MRI is required to confirm the diagnosis of a talocalcaneal coalition when radiographic findings are ambiguous⁽⁷⁾. Occasionally, the tarsus coalition may be found incidentally during the assessment of adolescent feet for other indications⁽⁷⁾. Arthroscopy provides the definitive diagnosis, but it is only performed when conservative treatment fails or when other diagnoses are considered⁽⁷⁾. The work developed by Lim et al⁽⁸⁾ analyzed the characteristics of the talocalcaneal coalition between 70 feet. The frequency of complete bone coalition was less than expected based on medical literature, particularly with adolescents⁽⁸⁾.

Conservative treatment is carried out for 4 to 6 months and consists of rest, avoiding high-impact activities, non-steroidal anti-inflammatory drugs, and physical therapy^(5,7,9). The injection of corticosteroids into the tarsal sinus is also an option for conservative treatment⁽⁹⁾. Patients with large lesions are referred for surgical treatment, which can be performed endoscopically, with resection of the coalition to restore subtalar kinematics, especially in pediatric patients^(5,7,9).

Conclusion

It is important to emphasize that *Os sustentaculum* is not just an accessory ossicle or an old fracture – it is

a component of a type of extra-articular talocalcaneal coalition, which makes this condition generally symptomatic. Therefore, if a patient with *Os sustentaculum* presents with symptoms in the medial talocalcaneal articular area, an extra-articular talocalcaneal coalition with *Os sustentaculum* should be considered.

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