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Peroneal Ridge Syndrome, An Uncommon Etiology of Lateral Ankle Pain and Tendon Impingement: A Case Report

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Abstract

Peroneal ridge syndrome is a rare condition in which the peroneal tendons become irritated or trapped by a bony projection on the fibula known as the peroneal ridge. This can lead to chronic lateral ankle pain and tendon dysfunction and is often mistaken for other, more common lateral ankle issues. We report the case of a 51-year-old woman who experienced persistent pain and discomfort in her left ankle for six months, worsened by weight-bearing activities. On examination, there was tenderness over the lateral aspect of the ankle. MRI revealed a prominent peroneal ridge causing mechanical impingement and inflammation of the peroneal tendons. Initial management with non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapy, and activity modification offered limited relief. Due to ongoing symptoms, surgical excision of the bony ridge and decompression of the tendons was recommended. This case highlights the importance of recognizing peroneal ridge syndrome as a potential cause of chronic lateral ankle pain. MRI plays a critical role in diagnosing and treatment planning. Early identification and appropriate intervention, including surgical options when conservative treatment fails, can significantly improve patient outcomes and restore ankle function.

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Introduction

Peroneal ridge syndrome is an uncommon but significant cause of lateral ankle pain. It occurs when the peroneal tendons, specifically the fibularis longus and fibularis brevis, become mechanically irritated or compressed by a bony ridge on the fibula. This can lead to tendon inflammation, pain, and functional limitation, particularly during movement or when bearing weight [1]. The peroneal tendons play a key role in foot eversion and ankle stabilization. Repetitive friction against the prominent peroneal ridge can cause chronic irritation or even tearing of these tendons. Diagnosis may be challenging, as symptoms often overlap with other lateral ankle pathologies. Studies suggest that only about 60% of peroneal tendon disorders are accurately diagnosed during the initial clinical evaluation [3]. MRI is the most reliable tool for diagnosing peroneal tendon issues, as it provides detailed imaging of both tendon pathology and surrounding anatomical structures. This makes it particularly useful for distinguishing peroneal ridge syndrome from other causes of ankle pain [4]. Recognizing this rare pathology is essential for accurate diagnosis and effective management of chronic lateral ankle pain.

Case Presentation

Patient details

A 51-year-old woman presented to the orthopaedic outpatient clinic with a six-month history of left ankle pain. She described the pain as gradually worsening, especially with weight-bearing activities such as walking or standing for prolonged periods. She denied any history of trauma, chronic illness, or allergies. Her lifestyle is sedentary, and there is no family history of similar complaints.

Clinical presentation

The patient presented with chronic left ankle pain, which was aggravated on weight bearing and walking. On examination, there was localized tenderness over the lateral aspect of the ankle, behind the fibula. There was mild swelling of the ankle, but no prominent erythema or warmth. There was mild pain on forced eversion with preservation of the full range of motion. The peroneal tendons were intact, and dynamic examination demonstrated unambiguously no evidence of subluxation or dislocation.

MRI imaging

An MRI of the left ankle showed an enlarged peroneal ridge on the fibula with mechanical impingement of the peroneal tendons. It demonstrated mild inflammation surrounding the peroneal tendons with increased signal intensity on T2-weighted images consistent with peroneal tenosynovitis. The peroneal ridge was demarcated with its bony prominence, proving its contribution to the clinical picture (Fig. 1).

Diagnosis and proposed management

The diagnosis of Peroneal Ridge Syndrome with associated peroneal tenosynovitis due to mechanical impingement by the bony ridge was made based on clinical presentation and imaging. The patient was educated about the condition, and she started conservative management comprising rest and activity modification, pain relievers (non-steroidal anti-inflammatory drugs or NSAIDs), ankle stabilization, and mobility physiotherapy. Considering the patient's persistent symptoms despite conservative measures, we performed surgical excision of the peroneal ridge and decompression of tendons. The patient gave written informed consent for the study. This study was approved by the Institutional Review Board of Nanjing First Hospital.

Discussion

Peroneal Ridge Syndrome is a rare entity and often underdiagnosed with mechanical irritation or impingement of the peroneal tendons against the peroneal ridge. Accurate diagnosis can be difficult because this syndrome appears like other lateral ankle pathologies, for example, peroneal tendinitis, lateral ankle sprains, or peroneal tendon subluxation. A high level of clinical suspicion in conjunction with advanced imaging led to the accurate diagnosis of the syndrome [1, 2].

Foot eversion and stabilization of the ankle involve the fibularis longus and brevis muscles and the peroneal tendons. In other cases, this is because of anatomical variation, such as prominent peroneal ridges, which subject those tendons to chronic friction. These microtears and chronic irritation cause the tendons to become inflamed. This highlights the importance of diagnosing these anatomical anomalies, which may cause lateral malleolar pain, with the failure to diagnose this having potentially significant therapeutic implications at the later stages [3]. The

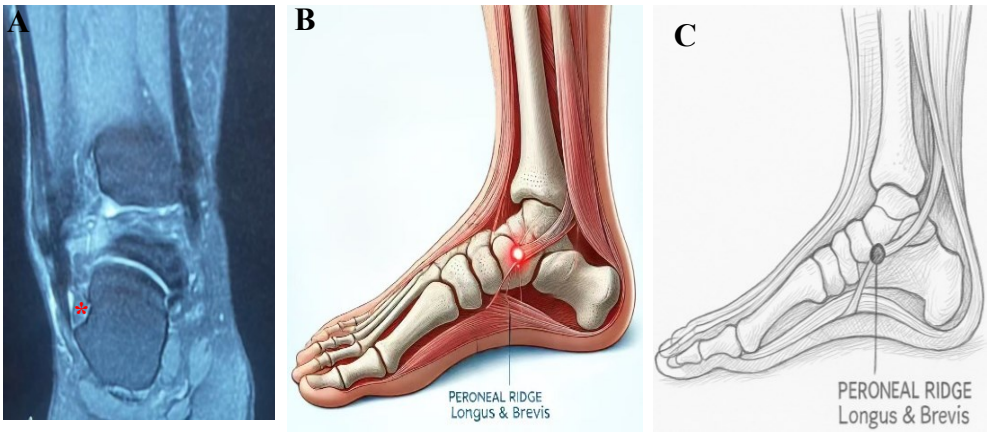

Fig. 1 T2-weighted MRI image demonstrating a prominent peroneal ridge and associated (*) peroneal tendon inflammation. Each panel shows anatomical prestation of the peroneal ridge.

MRI was key in establishing a diagnosis in this case. It illustrated the peroneal ridge and the inflammation of the tendons consistent with tenosynovitis. This underscores the key role of advanced imaging in differentiating peroneal ridge syndrome pathology from other lateral ankle pathologies. MRI is excellent for detecting tendon abnormalities, and includes bony prominences not easily visualized on standard radiographs and physical examination [4].

Conservative treatment is typically used for peroneal ridge syndrome. Rest, activity modification, NSAIDs, and physiotherapy are the initial management. However, surgery is indicated when symptoms are severe or affect function. Surgical management is directed at the removal of the peroneal ridge and tendon decompression, which alleviates the mechanical impingement, restoring ankle function in this scenario. When pain is unresponsive to non-surgical management, the literature supports surgical decompression as an effective surgical approach for pain relief and functional improvement [5]. This case also serves to remind the clinician assessing the patient with chronic lateral ankle pain that peroneal ridge syndrome must remain on the differential diagnosis. A comprehensive clinical evaluation and timely imaging should be performed to inform the choice of appropriate management. An early diagnosis and treatment can prevent the development of more severe tendon pathology and improve the patients' quality of life.

Conclusions

The current case report demonstrates the need to include Peroneal Ridge Syndrome among the differential diagnoses in patients presenting with lateral chronic ankle pain, especially in individuals with similar descriptions of symptoms despite conservative measures. MRI is useful for an accurate diagnosis of this syndrome and allows clinicians to administer appropriate treatment. Rest, NSAIDs, activity modification, and physiotherapy are included in initial management. Refractory symptoms prompted consideration of surgical management. Surgical excision of the peroneal ridge and tendon decompression alleviates mechanical irritation, restores function, and improves patients' quality of life. Peroneal Ridge syndrome is a rare but clinically pertinent problem and should be considered in the differential diagnosis of chronic lateral ankle pain. This case illustrates the importance of clinically relevant imaging in the timely diagnosis of this syndrome and aiding optimal management.

Acknowledgments

The authors gratefully acknowledge all staff involved with the care of the patient. The anatomical diagram displayed in this article was AI-generated (DALL·E, OpenAI) and styled according to this study's results and context. Everything posted has been vetted for accuracy and relevance to the case.

Conflict of Interest

The authors had no conflicts of interest to disclose.

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