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Beyond The Sprain, Unmasking a Rare Anterolateral Ankle Pathology in a Young Athlete

Girish Motwani[1], Shubham Kalnawat[1], Khanjan Ahir[1], Kanishk Bhandari[1]

Learning Point of the Article:

Chronic anterolateral ankle pain in young athletes should not always be attributed to common conditions such as sprains or ligament injuries. Careful clinical examination and appropriate imaging can reveal rare underlying pathologies such as tarsal coalition or soft-tissue tumors. The coexistence of a calcaneonavicular coalition and superficial ankle lipoma is extremely rare, and simultaneous surgical excision through a single approach with extensor digitorum brevis interposition can provide excellent functional outcomes and allow early return to sports.

Abstract

Introduction: Chronic anterolateral ankle pain in young athletes is commonly attributed to ligament sprains, stress injuries, or tendinopathies. However, uncommon underlying pathologies may occasionally be responsible for persistent symptoms. Calcaneonavicular coalition is a congenital condition that can lead to chronic ankle pain and restricted hindfoot motion. The coexistence of calcaneonavicular coalition with a superficial ankle lipoma is extremely rare.

Case Report: An 18-year-old female cricket athlete presented with gradually progressive swelling and pain over the anterolateral aspect of the right ankle for 5 years, affecting her sports performance. Clinical examination revealed a soft swelling with terminal restriction of dorsiflexion and limited hindfoot movements. Plain radiographs were obtained and demonstrated a calcaneonavicular coalition. Magnetic resonance imaging confirmed the presence of a superficial ankle lipoma along with the coalition. Surgical excision of the lipoma and resection of the calcaneonavicular coalition were performed through a single anterolateral approach. The extensor digitorum brevis muscle was interposed between the calcaneum and navicular to prevent re-ossification. Postoperatively, the patient regained full pain-free ankle motion and returned to sports within 12 weeks.

Conclusion: Persistent anterolateral ankle pain in young athletes should be carefully evaluated to rule out rare conditions such as tarsal coalition and soft-tissue tumors. Early diagnosis and appropriate surgical management can result in excellent functional recovery and return to athletic activity.

Keywords: Calcaneonavicular coalition, ankle lipoma, anterolateral ankle pain, tarsal coalition, young athlete.

Introduction

We often come across athletes presenting with anterolateral ankle pain, which is usually due to ligament injuries, sprains, stress reactions, or tendinopathies. One such patient presented to our outpatient department with anterolateral ankle swelling and pain. On clinical examination, we initially suspected that the pain was due to a recurrent lipoma, as she had a history of lipoma at the same site. However, while assessing her hindfoot movements, we noticed a restriction in movements compared to the opposite side. This finding made us suspect a possible

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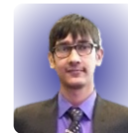
Author's Photo Gallery

Dr. Girish Motwani

Dr. Shubham Kalnawat

Dr. Khanjan Ahir


Dr. Kanishk Bhandari

[1]Department of Orthopedics, Suyog Hospital, Nagpur, Maharashtra, India.

Address of Correspondence:
Dr. Shubham Kalnawat,
Department of Orthopedics, Suyog Hospital, Nagpur, Maharashtra, India.
E-mail: shubham.kalnawat@gmail.com

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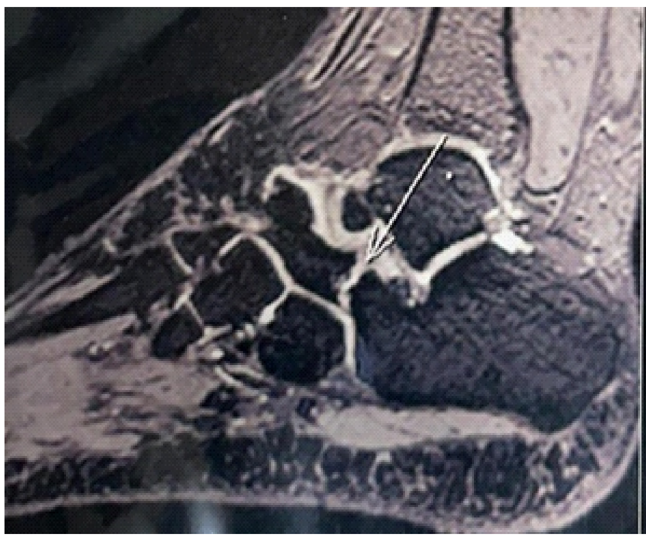

Figure 1: Calcaneonavicular coalition.

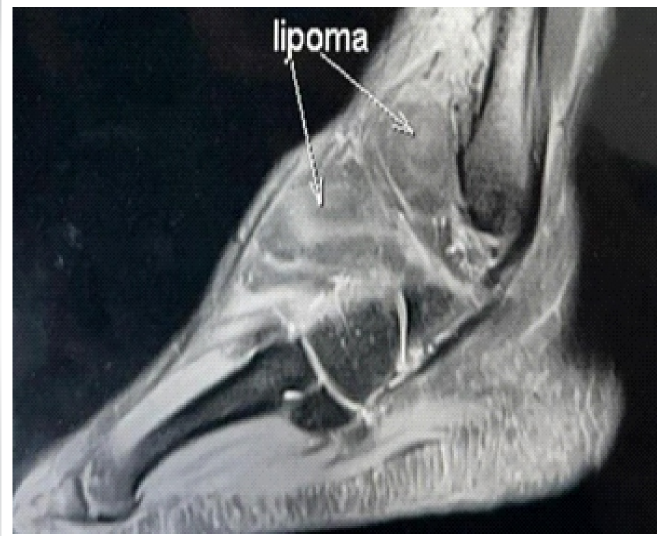

Figure 2: Lipomatous tissue over the anterolateral aspect of the ankle.

underlying bony pathology [1]. To confirm this, we advised magnetic resonance imaging (MRI), which surprisingly revealed a calcaneonavicular coalition [2]. This case turned out to be a rare presentation of anterolateral ankle pain in a young athlete caused by the coexistence of a recurrent lipoma and a calcaneonavicular coalition.

Case Report

An 18-year-old female cricket athlete presented with a gradually increasing swelling and pain over the anterolateral aspect of the right ankle for 5 years. She had a history of a lipoma on the dorsum of the foot 5 years prior. Pain was aggravated during running and dorsiflexion, limiting sports activity. On examination, a soft, non-tender swelling was palpable over the anterolateral ankle with restriction of dorsiflexion, terminally with restricted hindfoot movements. On local examination, a soft, non-tender, well-defined swelling measuring approximately 6 × 3 cm was noted over the anterolateral aspect of the right ankle. The overlying skin was normal with no signs of inflammation. There was a terminal restriction of dorsiflexion as well as inversion–eversion. Distal neurovascular examination was normal. X-rays were taken for further evaluation, which showed calcaneonavicular coalition (Fig. 1).

To confirm our diagnosis, we went for further investigation with an MRI to get an exact diagnosis and to rule out any soft-tissue malignancy. MRI of the right ankle revealed a well-encapsulated, homogeneously hyperintense lesion on both T1-

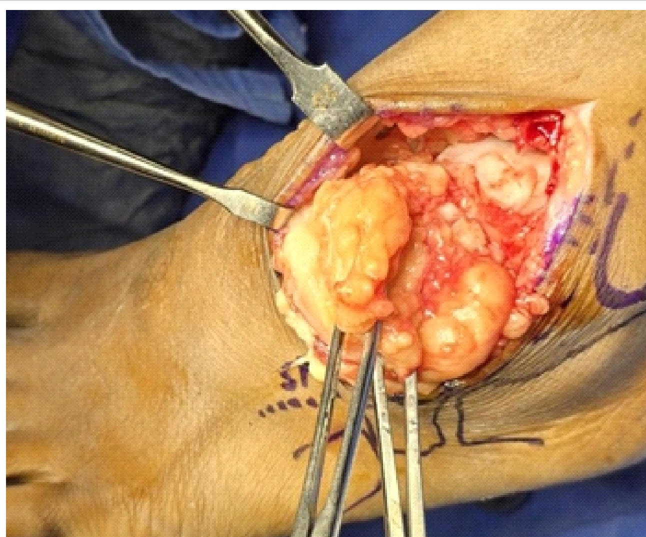

Figure 3: Incision showing lipomatous tissue surrounding the ankle.

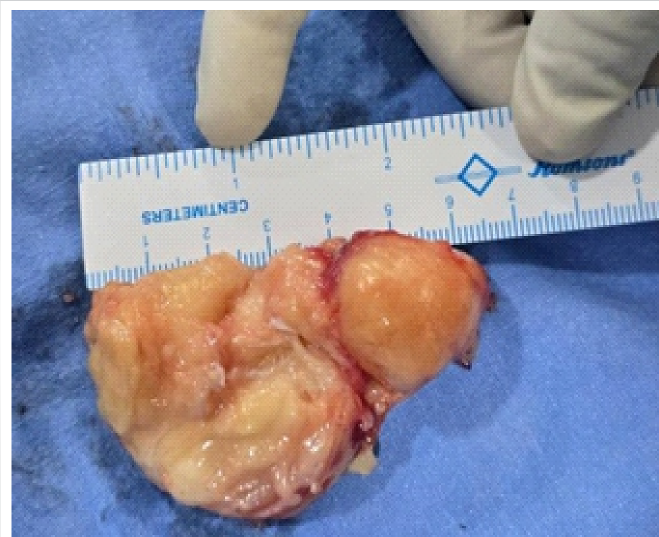

Figure 4: Lipoma size approximately 6 by 3 cm.

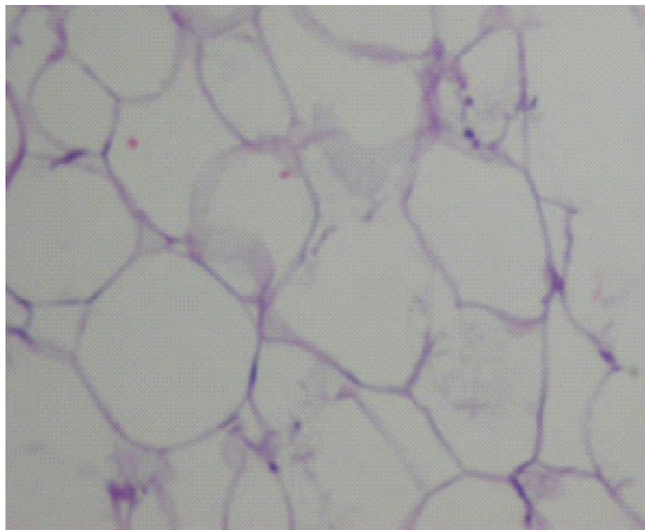

Figure 5: Histopathology of tissue showing adipocytes.

and T2-weighted sequences, consistent with a lipoma (Fig. 2), located superficial to the anterior capsule and deep to the inferior extensor retinaculum. There was no intra-articular extension.

A calcaneonavicular coalition was identified, appearing as a fibro-osseous connection between the anterior process of the calcaneum and the lateral aspect of the navicular bone. Surgery was performed under spinal anesthesia with the patient in the supine position and a pneumatic tourniquet applied to the thigh. An anterolateral incision was made, centered over the swelling and extending from the lateral malleolus toward the sinus tarsi. The superficial peroneal nerve was identified early

HISTOPATH (HISTOPATHOLOGY)

Investigation	Value
SLIDE & BLOCK NUMBER	AP/2115/25,A
SPECIMEN	Excision of lesion over anterolateral aspect of ankle
GROSS	Received greyish yellow soft tissue piece measuring 4x3x1cm Cut section is yellow and greasy
MICROSCOPIC EXAMINATION	Section shows well circumscribed tumor comprising of Adipocytes with mild change in size. Nuclei are bland. They are arranged in nodules separated by thick fibrocollagenous tissue sparse chronic inflammatory infiltrate are seen. No evidence of any lipoblast.
IMPRESSION	Features are consistent with lipoma.
NOTE	2 slide & block enclosed

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Figure 6: Lipoma size approximately 6 by 3 cm confirmed with histopathological examination.

and carefully protected within the skin flap throughout the procedure. Dissection was carried out through the subcutaneous tissue and the deep fascia. The extensor digitorum brevis (EDB) muscle belly was encountered and divided to expose deeper structures. The inferior extensor retinaculum was incised longitudinally to improve visualization.

A well-encapsulated, yellowish, lobulated mass was identified, adherent to the anterior capsule of the ankle joint but with no intra-articular extension. The capsule was preserved. The lesion, measuring almost 6 × 3 cm, was meticulously dissected off the capsule and adjacent tissues and excised en masse (Fig. 3 and 4). Intraoperatively, the anterior talofibular and anteroinferior tibiofibular ligament and talar cartilage were normal. Hemostasis was achieved with bipolar cautery. The mass was sent for histopathological examination, which

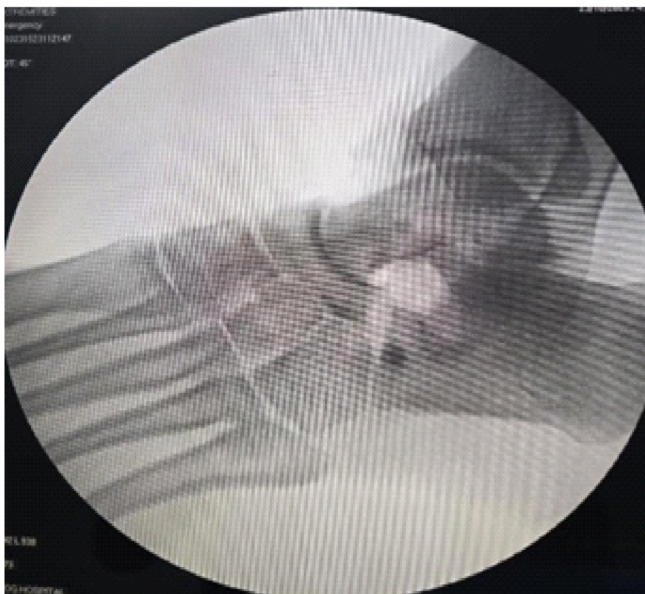

Figure 7: Intraoperative image showing a clear calcaneonavicular space after coalition excision.

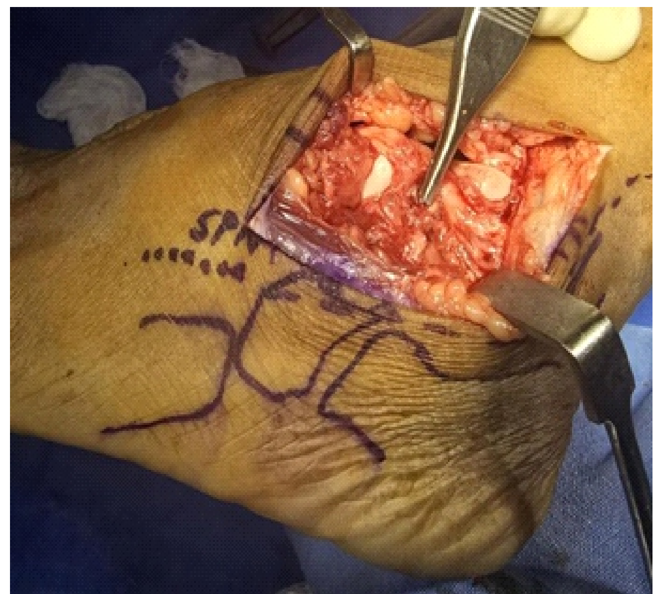

Figure 8: Extensor digitorum brevis muscle interposed between the calcaneum and naviculum.

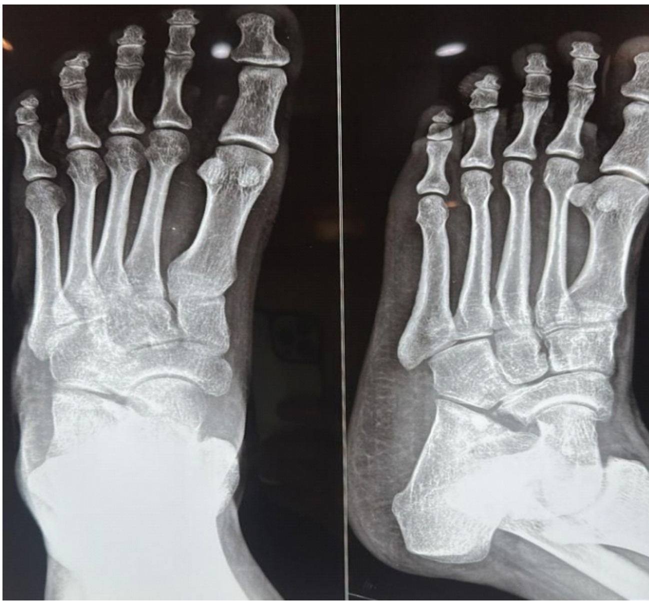

Figure 9: 12 months follow-up X-ray of the foot showing maintained space between calcaneum and naviculum.

confirmed a benign lipoma composed of mature adipose tissue (Fig. 5 and 6). Attention was then directed to the calcaneonavicular coalition. Through the same approach, the fibro-osseous bridge from calcaneum to navicular of size approximately 3×2 cm was exposed and excised completely (Fig. 7). After coalition excision, there was improvement in hindfoot movements. To prevent re-ossification, the cut belly of the EDB muscle was interposed between the calcaneal and navicular surfaces and sutured in position with absorbable material [3] (Fig. 8). After thorough irrigation, the wound was closed in layers: Deep fascia and retinaculum were approximated, subcutaneous tissue closed with absorbable sutures, and skin with interrupted non-absorbable sutures. A below-knee posterior slab was applied in neutral ankle position for 2 weeks. The post-operative course was uneventful. The patient was started on toe-touch walking the next day, immediately followed by gradual ankle mobilization and physiotherapy [4]. By 3 weeks, she achieved a full, pain-free range of motion, and by 12 weeks, she returned to sports training. There was no recurrence at 6-month and 1-year follow-ups (Fig. 9).

Discussion

Common causes of anterolateral ankle pain in young athletes include ligament injuries, cartilage lesions, and tendinopathies. Lipomas of the ankle are rare, likely due to the limited amount of adipose tissue in this region [5]. They may present as painless swellings or may cause discomfort due to compression of adjacent structures or mechanical restriction. In athletes, such swellings can significantly affect sports performance. In addition, the presence of a calcaneonavicular coalition can contribute to chronic ankle pain and altered hindfoot biomechanics. The coexistence of these two conditions is extremely rare and, to the best of our knowledge, has not been widely reported in the literature. MRI is the investigation of choice for differentiating soft-tissue masses and identifying associated pathologies such as tarsal coalition. Surgical excision of calcaneonavicular coalition with interposition of the EDB muscle is a well-established technique that reduces the risk of re-ossification and improves functional outcomes [6]. Surgical excision remains the preferred treatment for symptomatic calcaneonavicular coalition, particularly in young and active individuals who fail conservative management. Resection of the coalition has been shown to provide significant pain relief and restoration of hindfoot mobility in symptomatic patients [7]. To reduce the risk of recurrence and re-ossification following coalition excision, various interposition materials have been described in the literature. These include fat grafts, EDB muscle, and other soft-tissue barriers that help maintain separation between the calcaneum and navicular surfaces [8]. Among these, interposition of the EDB muscle is a commonly employed technique and has demonstrated favorable outcomes in preventing reformation of the coalition. Several studies have reported good long-term functional outcomes following coalition excision with soft-tissue interposition, particularly in young and active patients, enabling return to sports and normal daily activities [9]. Early physiotherapy also plays a crucial role in restoring full ankle range of motion and function after surgery [10].

Conclusion

Calcaneonavicular coalition is an important cause of chronic ankle pain and restricted hindfoot movement, particularly in young athletes. Early recognition through imaging and timely surgical excision can restore full functional mobility. Interposition of the EDB muscle between resected surfaces is crucial to prevent re-ossification and recurrence. While the incidental lipoma in this case contributed to the presentation, the primary source of mechanical limitation was the coalition. Successful management allowed complete recovery and return to competitive activity, underscoring the effectiveness of combined coalition excision and soft-tissue interposition.

Clinical Message

Persistent anterolateral ankle pain with swelling in young athletes warrants thorough evaluation beyond routine ligament injuries. Advanced imaging, such as MRI, is essential to detect associated conditions such as tarsal coalition or soft-tissue masses. Surgical excision of calcaneonavicular coalition with interposition of the extensor digitorum brevis muscle effectively prevents recurrence and restores hindfoot mobility. Early diagnosis and appropriate surgical management enable complete recovery and successful return to athletic activity.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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