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Open Access Case Report

Surgical Management of Peroneal Spastic Flatfoot With an Accessory Anterolateral Talar Facet in an Adolescent Patient: A Case Report and Narrative Review of the Literature

Review began 10/15/2026
Review ended 10/26/2026
Published 11/02/2026

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DOI: 10.7759/cureus.118983

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Abstract

Peroneal spastic flatfoot with an accessory anterolateral talar facet is a rare but challenging condition in adolescents, and limited literature documents comprehensive surgical outcomes. While isolated accessory facet resection has been reported, this case provides thorough documentation of exceptional radiographic correction achieved through combined surgical interventions that address all deformity components simultaneously.

A 15-year-old patient presented with a one-year history of severe right foot pain and functional disability following failed conservative treatment. Clinical examination revealed a rigid flatfoot deformity with peroneal muscle spasm and marked sinus tarsi tenderness. Radiographic evaluation demonstrated severe structural abnormalities with Meary's angles of 15° anteroposteriorly and 20° laterally, and a calcaneal pitch of 14°. Magnetic resonance imaging confirmed focal abutting bone marrow edema with an enlarged accessory anterolateral talar facet causing mechanical impingement. Surgical intervention included a sinus tarsi approach for complete accessory facet excision, a medial sliding calcaneal osteotomy with 1-cm displacement, and peroneus brevis-to-longus tenodesis for dynamic stabilization.

This case demonstrates that exceptional radiographic correction with Meary's angles of 1° in both planes and outstanding functional recovery with an American Orthopaedic Foot & Ankle Society (AOFAS) score of 100 are achievable through surgical intervention. The absence of subtalar joint degeneration at two-year follow-up confirms the safety of this approach. Our findings significantly advance surgeons' awareness of a rare flatfoot type and our knowledge of surgical management strategies for adolescent peroneal spastic flatfoot, and validate the superiority of combined procedures over isolated interventions.

Categories: Orthopedics
Keywords: flatfoot, peroneal tendon instability, rigid flatfoot, spastic muscle overactivity, tarsal coalition surgery

Introduction

Peroneal spastic flatfoot is a rare combination of rigid pes planus deformity and involuntary peroneal muscle spasm [1]. It is mostly found in adolescents and has an estimated prevalence of up to 2%, though high misdiagnosis rates make the actual rate unknown [2].

In patients with an enlarged accessory anterolateral talar facet (AATF), talocalcaneal impingement during the valgus hindfoot gait phase results in pain and subsequent AATF enlargement against Gissane's angle [3]. In adolescents, this can result in protective peroneal spasm and secondary flatfoot deformity [4]. This sequela leads to rigid flatfoot deformity with palpable peroneal spasticity on clinical examination.

Peroneal spasticity can be either idiopathic or result from local conditions, most commonly tarsal coalition [5]. Although coalition impingement is a reproducible phenomenon due to abnormal osseous interconnections and consequent deterioration of subtalar joint range of motion, AATF impingement is dynamic and additionally affected by the relative position of the calcaneus to the talus. This can potentially explain why patients with bilateral AATF experience pain in only one foot.

Diagnostic evaluation requires a systematic multimodal imaging approach to identify the underlying pathology and guide treatment decisions. Although plain radiographs confirm medial arch collapse, computed tomography (CT) scanning offers superior visualization of osseous anatomy and can definitively identify accessory talar facets, tarsal coalitions, and other bony abnormalities. In addition, magnetic resonance imaging (MRI) plays a significant role in demonstrating focal abutting bone marrow edema (FABME), which strongly correlates with symptomatic impingement [6].

How to cite this article
Rozis M, Varsamos I, Stavridis E, et al. (November 02, 2026) Surgical Management of Peroneal Spastic Flatfoot With an Accessory Anterolateral Talar Facet in an Adolescent Patient: A Case Report and Narrative Review of the Literature. Cureus 18(11): e118983. DOI 10.7759/cureus.118983

Surgical treatment is required in all cases with a failed conservative approach, including insoles, anti-inflammatory medication, and activity modifications [7]. Niki et al. were the first to report pain resolution with isolated AATF resection [4]. Nevertheless, in chronic cases with an established rigid flatfoot, simple resection may not lead to concomitant deformity correction, requiring combined interventions [8]. Further offloading of the sinus tarsi by calcaneal tubercle medialization seems a logical supplement.

We present the results and outcomes of a patient with secondary spastic flatfoot due to an AATF who was treated with combined osseous and soft tissue surgery, managing all the manifestations simultaneously.

Case Presentation

A 15-year-old male patient presented with a year-long history of progressive right foot pain and gait difficulty that had not responded to conservative management, including insoles and occasional anti-inflammatory medication. He had no history of trauma or previous foot pathology and could participate in sports.

On clinical examination, a clear asymmetry between the feet was noted. His right foot demonstrated severe flatfoot deformity with medial arch collapse, stiff hindfoot valgus, and concomitant forefoot abduction. Palpable peroneal muscle spasm was present along the lateral malleolus, with pain elicited during manual forefoot adduction. Subtalar joint range of motion (ROM) was limited and could not be clearly evaluated due to pain. Tenderness was elicited over the sinus tarsi and peroneal tendons. His Silfverskiöld test was normal, indicating no gastrocnemius tightness. Finally, neurological evaluation was unremarkable, demonstrating normal reflexes bilaterally.

Radiographs confirmed a subtle deformity. On the anteroposterior view, Meary's angle measured 13.6°, and on the lateral view, -6° (Figures *1*, *2*). His MRI evaluation revealed extensive bone marrow edema and an evident, enlarged AATF. Peroneal tendons were borderline thickened due to chronic irritation, while there was no evidence of any type of coalition.



FIGURE 1: Preoperative anteroposterior weight-bearing roentgenographic view.

Significant forefoot abduction (abnormal Meary's angle between the blue and red lines) with an abnormal Kite angle (green and blue lines) is observed. Blue line: talus longitudinal axis. Red line: first metatarsal longitudinal axis. Green line: calcaneus longitudinal axis.



FIGURE 2: Profile preoperative roentgenography view.

Meary's angle (blue/red lines) reveals a subtle sagittal imbalance. Red line: talus longitudinal axis. Blue line: first metatarsal longitudinal axis.

Due to failure of nonoperative measures and progressive symptoms, surgical treatment was indicated. The goals were to remove the accessory facet causing mechanical impingement, correct hindfoot valgus, and address forefoot abduction. In the lateral decubitus position and under general anesthesia, increased flexibility of the foot confirmed that spasm had masked the underlying deformity. We began with sinus tarsi offloading with a calcaneal osteotomy via an oblique incision, using a titanium step-cut plate with 1 cm of translation. Intraoperative evaluation confirmed the correction of hindfoot valgus, but the forefoot deformity remained subtle. Thereafter, through a sinus tarsi approach, we revealed the AATF and removed it with chisels until there was no evident impingement when the subtalar joint came into valgus (Figure *3*). Finally, we made a third retromalleolar incision to expose the peroneal tendons. Despite anesthesia, the peroneus brevis was significantly tighter than the peroneus longus (Figure *4*). We initially performed the tenodesis with Vicryl suture at maximal tension with the foot in inversion to maximize the peroneus brevis tensioning. Thereafter, we dissected the peroneus brevis distally. Final radiological evaluation confirmed optimal forefoot correction only after soft-tissue management. At that time, we deemed a lateral column lengthening osteotomy unnecessary.

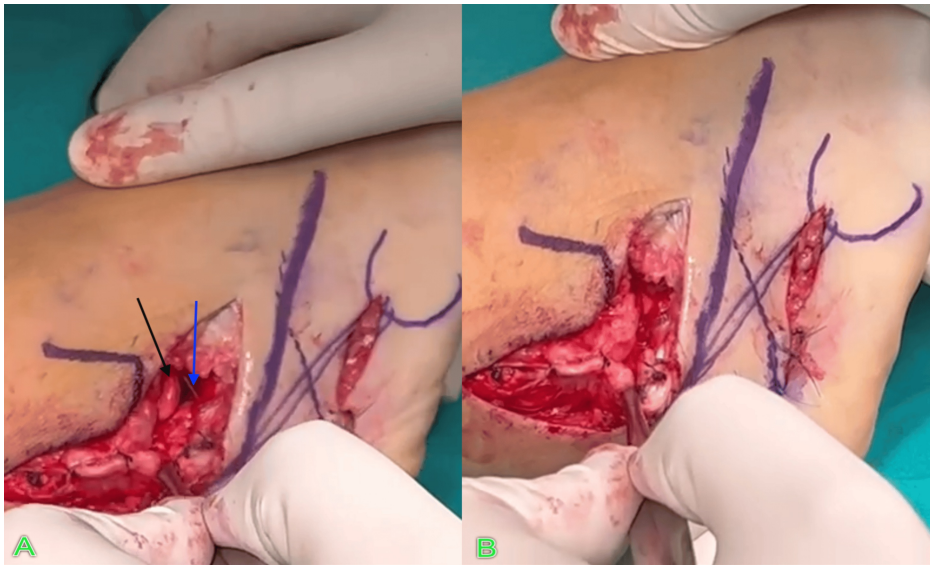


FIGURE 3: (A) Clinical appearance of the AATF (black arrow) impinging on the calcaneus, deteriorating the sinus tarsi space (blue arrow). (B) Full hindfoot valgus after AATF removal, with no signs of impingement.

AATF: accessory anterolateral talar facet.

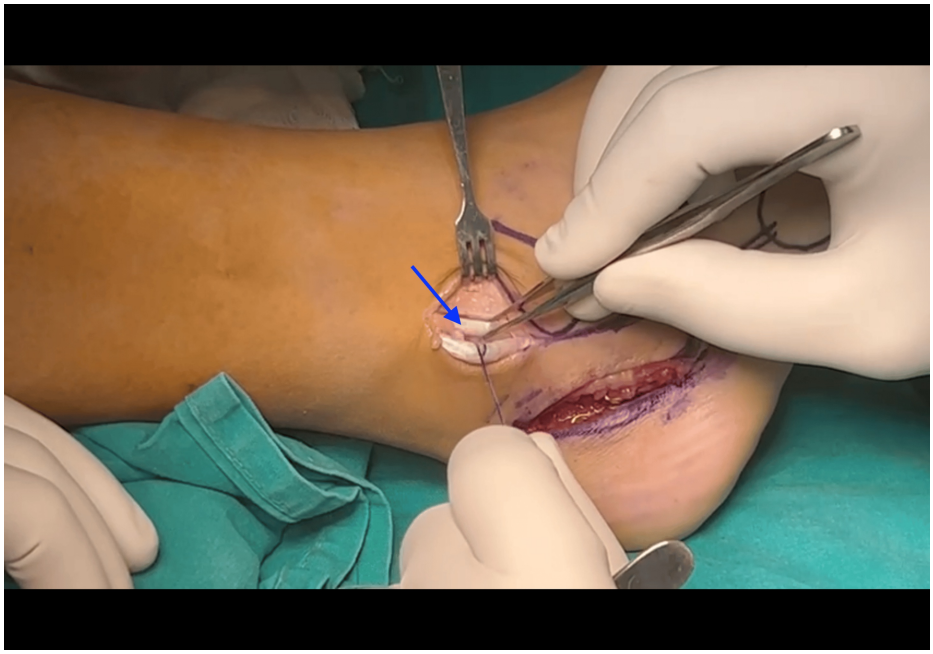


FIGURE 4: Peroneal tendon exposure.

Notice the tight peroneus brevis and the relatively loose peroneus longus (sutured). The tenodesis was performed before the peroneus brevis dissection to retain the proper tendon tension. Blue arrow: tight peroneus brevis tendon.

The patient was maintained non-weight-bearing for six weeks before gradual progression to full weight-bearing in a boot. Pain resolved quickly, and by four weeks, the characteristic sinus tarsi pain and peroneal spasm were absent. At the same time, radiographs confirmed progressive healing of the osteotomy with excellent correction: Meary's angle was reduced to normal, and calcaneal pitch was restored to 15° (Figure *5*). Range of motion improved steadily with physiotherapy, reaching dorsiflexion of 15°, plantarflexion of 45°, and inversion/eversion of 15°/8° by three months. Functional gains were significant, and by six months, the patient could perform a single-limb heel rise, walk unlimited distances, and return to full sporting

activity without pain.

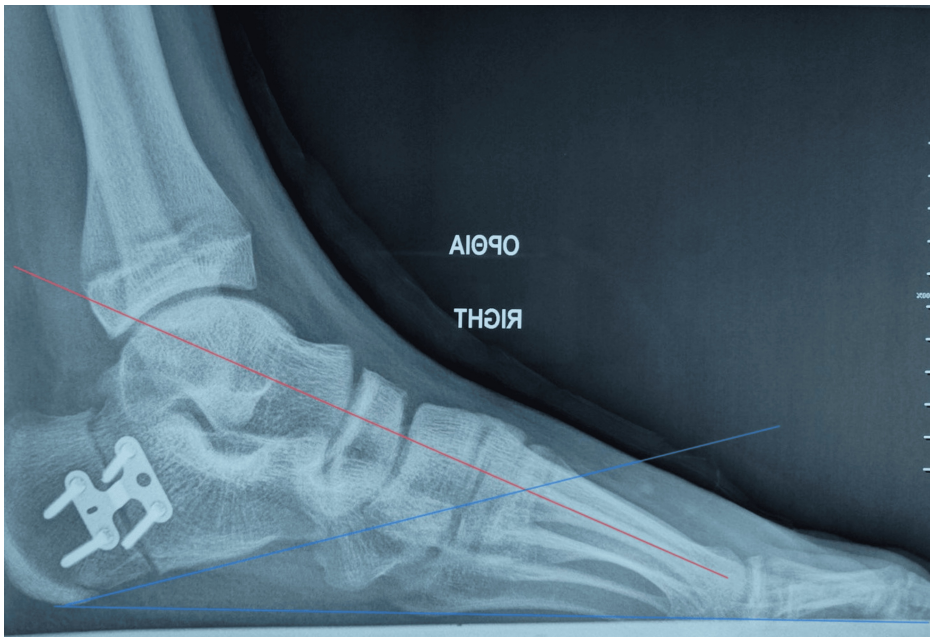


FIGURE 5: Postoperative weight-bearing lateral roentgenography view.

The calcaneal pitch angle (blue) is normal, and Meary's angle is measured at 0°. Red line: the talus and first metatarsal longitudinal axes coincide. Blue angle: calcaneal pitch angle.

At final follow-up two years postoperatively, clinical outcomes remained excellent. Nevertheless, the correction had a slight relapse. Although the Kite angle confirmed the retained varus correction of the hindfoot (17.4° from 35° preoperatively), Meary's angle was -3° (from -6° preoperatively). On the anteroposterior view, the same angle was measured at 0° from 13.6°, but the forefoot showed an adaptive translational deformity (Figures *6*, *7*).



FIGURE 6: Postoperative anteroposterior roentgenographic view of the forefoot at two years after surgery.

The hindfoot correction is retained, as seen by the Kite's angle (blue/green lines). The Meary's angle is measured at 0°. Nevertheless, the talus and first metatarsal axes are translated between them, showing a persistent forefoot abduction. Medial blue line: talus longitudinal axis. Lateral blue line: first metatarsal longitudinal axis. Green line: calcaneus longitudinal axis.

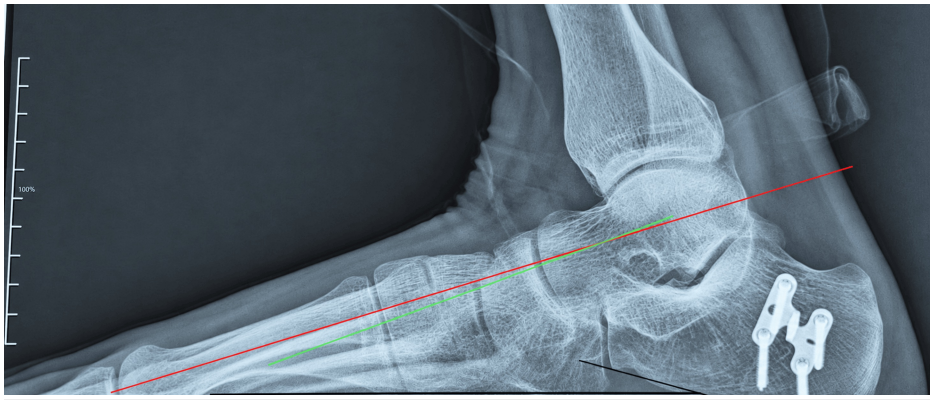


FIGURE 7: Profile roentgenography view two years after surgery.

The calcaneal osteotomy is healed. The calcaneal pitch is normal, but Meary's angle has a slight relapse (red/green lines). This is primarily attributed to the persistent forefoot abduction. Black angle: calcaneal pitch angle. Red line: first metatarsal longitudinal axis. Green line: talus longitudinal axis.

The patient reported a full return to sports, absence of symptoms, and high satisfaction. His AOFAS ankle-hindfoot score improved from 41 preoperatively to 100 at two years, indicating complete recovery [9]. No complications were encountered throughout the postoperative course.

Discussion

We presented the results of multimodal surgical treatment for a patient with spastic peroneal flatfoot due to an AATF. This case presents several unique features that distinguish it from previously reported cases in the literature. The radiographic correction achieved represents a greater degree of correction than that documented in the literature for this condition. Niki et al., in their seminal 2015 study of 12 adolescent patients with peroneal spastic flatfoot secondary to AATF, reported successful resolution of peroneal spasm in all cases following isolated accessory facet resection but did not document radiographic measurements or perform concurrent reconstructive procedures [4]. Their series demonstrated the mechanical etiology of the condition through immediate resolution of spasm under anesthesia, similar to our findings, but lacked the comprehensive approach achieved in our case. Similarly good results were also reported by Neumann et al., but again, the authors did not report any adjuvant procedures [10]. Ford et al., in their 2022 comprehensive review of adolescent stiff flatfoot management, emphasized the importance of addressing all components of the deformity for optimal outcomes [2]. However, their review did not refer only to patients with an accessory AATF. Our case validates their recommendation for concomitant correction of all deformity components, showing that a multimodal approach is safe and essential in preserving excellent long-term results.

Radiological confirmation of the AATF is highly reliable and reproducible and was also the cornerstone for the diagnosis and our preoperative planning [11]. Aydingoz et al. defined the anatomical correlation between the AATF and Gissane's angle, indicating impingement in cases with smaller angles [12]. Additionally, Kurashige et al. described the importance of focal abutting bone marrow edema (FABME) on MRI as a predictor of symptomatic impingement [3]. Our case confirms this correlation, with the 8 mm accessory facet demonstrating clear FABME that resolved following surgical resection.

The surgical approach employed in this case represents an evolution of techniques described in the literature, combining established principles with innovative application. We proceeded with an open AATF excision through a sinus tarsi approach, although Nehme et al. also reported successful and adequate resection with sinus tarsi arthroscopy [8].

Uçan et al., in their 2023 retrospective series of idiopathic peroneal spastic flatfoot, reported good outcomes with various surgical approaches but did not specifically address AATF cases [5]. The 1 cm medial displacement achieved in our case resulted in proper hindfoot alignment, suggesting this technique may be utilized in cases with significant hindfoot valgus secondary to accessory facet impingement. Step-cut plates not only provide precise calcaneal tubercle translation but also respect the open physes of adolescents.

The peroneus brevis-to-longus tenodesis performed as the third component of our comprehensive approach represents an innovative application of established tendon transfer principles. While peroneal tendon procedures have been described for various flatfoot conditions, the specific application in accessory anterolateral talar facet cases has not been previously reported. This technique provided dynamic medial column stabilization and contributed to the excellent functional outcomes achieved, with complete restoration of single-limb heel rise capability and return to competitive sports participation. Nevertheless, a

type of Z-deformity resulted. Although intraoperative views confirmed the correction of forefoot abduction after the calcaneal osteotomy and the tenodesis, weight-bearing resulted in abduction relapse. The translation between the longitudinal axes of the talus and the first metatarsal seems to be an adaptive change driven by the tenodesis, although this was insufficient to secure a permanent reduction. In this case, this finding could be attributed to concomitant insufficiency of the tibialis posterior, although the patient never reported pain on the medial side. Nevertheless, even in cases where lateral column lengthening is required for abduction correction, we consider the peroneus brevis-to-longus tenodesis a powerful component of the procedure.

The functional outcomes in this case significantly exceed those reported in the existing literature for similar conditions. The AOFAS score improvement from 41 to 100 points substantially exceeded the minimal clinically significant difference of 9 points for this outcome measure, placing our patient in the "excellent" outcome category [2]. Nevertheless, since our surgical approach included several components (osseous and soft tissue interventions), we cannot be sure to what degree each component contributed to the optimal final outcomes. In addition, the AOFAS score has the inherent vulnerability of being a non-patient-reported outcome, which is a significant limitation. Xu et al., in their 2015 case report and literature review, described conservative management approaches including botulinum toxin injection combined with cast immobilization [7]. Although they reported good short-term outcomes with conservative management, their case lacked any morphological or structural etiology that acted as the triggering spasticity factor. Our case demonstrates that in patients with structural deformities, surgical intervention can achieve superior and durable outcomes when conservative management fails, with maintained correction at two-year follow-up.

The radiographic results we obtained in this case are acceptable. Achieving a Meary's angle of -3° in the sagittal plane reflects a level of surgical precision that is hard to achieve in complex foot reconstructions. Mehdi et al. have highlighted the difficulties of attaining optimal alignment in patients with tarsal coalitions when utilizing joint-preserving surgical approaches [1]. Our case demonstrates that exceptional correction is possible in adolescents when comprehensive surgical planning addresses all deformity components simultaneously. Nevertheless, we should note that lateral column lengthening osteotomies should be utilized even when there is suspicion of incomplete AP reduction of the forefoot. In those cases, soft tissue management alone seems insufficient to retain the correction under weight-bearing conditions.

Finally, a critical finding in our case is the complete absence of subtalar joint degeneration at two-year follow-up, addressing a major concern in the surgical management of these conditions. Jara, in his 2017 review of Evans osteotomy complications, highlighted the risk of adjacent joint arthritis following flatfoot reconstruction procedures [13]. Our case demonstrates that comprehensive surgical correction, when performed with appropriate technique and indications, might not increase the risk of subtalar joint degeneration and may actually prevent long-term joint damage by eliminating pathological impingement. The maintenance of excellent functional and radiographic outcomes at two-year follow-up provides confidence in the durability of the surgical correction achieved.

Conclusions

This case report highlights the importance of comprehensive surgical management in patients with spastic peroneal flatfoot due to an AATF. A combination of essential and patient-tailored procedures can deliver excellent, long-lasting results. Peroneal spasticity should raise a high index of suspicion for local triggering factors that can be identified radiologically, and soft tissue balancing can be beneficial in those cases. Nevertheless, although we selected this operative approach with combined osseous and soft tissue interventions for this specific patient, we cannot conclude that it should be routinely used in every case. Persistence of forefoot abduction highlights that peroneal tenodesis has limited potential to retain the correction in the long term. Broader studies are required to evaluate the direct effect of each procedure separately.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Meletis Rozis, Spyros G. Pneumaticos

Acquisition, analysis, or interpretation of data: Meletis Rozis, Iordanis Varsamos, Eleftherios Stavridis, Eleftherios Mandragos, Spyros G. Pneumaticos

Drafting of the manuscript: Meletis Rozis, Iordanis Varsamos

Critical review of the manuscript for important intellectual content: Meletis Rozis, Eleftherios Stavridis, Eleftherios Mandragos, Spyros G. Pneumaticos

Supervision: Spyros G. Pneumaticos

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Mehdi N, Bernasconi A, Lintz F: Tarsal coalition in adults. Orthop Traumatol Surg Res. 2024, 110:103761. 10.1016/j.otsr.2023.103761
2. Ford SE, Zide JR, Riccio AI: Evaluation and management of adolescents with a stiff flatfoot . J Am Acad Orthop Surg. 2022, 30:757-66. 10.5435/JAAOS-D-21-00448
3. Kurashige T: Accessory anterolateral talar facet impingement with tibialis spastic varus foot . SAGE Open Med Case Rep. 2017, 5:2050313X17745210. 10.1177/2050313X17745210
4. Niki H, Aoki H, Hirano T, Akiyama Y, Fujiya H: Peroneal spastic flatfoot in adolescents with accessory talar facet impingement: a preliminary report. J Pediatr Orthop B. 2015, 24:354-61. 10.1097/BPB.0000000000000178
5. Uçan V, Demirel M, Aliyev O, Yıldız F, Uzer G: Surgical management and outcomes of patients with idiopathic peroneal spastic flatfoot: a retrospective case series. J Am Podiatr Med Assoc. 2023, 113:10.7547/21-210
6. Vossen JA, Abbassi M, Qian Y, Hayes CW, Haar PJ, Hoover KB: Correlation between the accessory anterolateral talar facet, bone marrow edema, and tarsal coalitions. Skeletal Radiol. 2020, 49:699-705. 10.1007/s00256-019-03335-5
7. Xu J, Muhammad H, Wang X, Ma X: Botulinum toxin type A injection combined with cast immobilization for treating recurrent peroneal spastic flatfoot without bone coalitions: a case report and review of the literature. J Foot Ankle Surg. 2015, 54:697-700. 10.1053/j.jfas.2014.03.008
8. Nehme AH, Bou Monsef J, Bou Ghannam AG, Imad JP, Moucharafieh R, Wehbe J: Arthroscopic resection of a bilateral calcaneonavicular coalition in a child. J Foot Ankle Surg. 2016, 55:1079-82. 10.1053/j.jfas.2015.07.021
9. Kitaoka HB, Alexander IJ, Adelaar RS, A Nunley J, Myerson MS, Sanders M, Lutter LD: Clinical rating systems for the ankle-hindfoot, midfoot, hallux, and lesser toes. Foot Ankle Int. 1997, 18:187-8. 10.1177/107110079701800315
10. Neumann JA, Mannava S, Gross CE, Wooster BM, Busch MT: Arthroscopic debridement of pediatric accessory anterolateral talar facet causing impingement. Arthrosc Tech. 2016, 5:e413-7. 10.1016/j.eats.2016.01.019
11. Jibri Z, Foster R, Meulenkamp B, Rakhra KS: Accessory anterolateral talar facet: analysis of the morphologic features on MRI. Surg Radiol Anat. 2020, 42:1145-51. 10.1007/s00276-020-02435-5
12. Aydıngöz Ü, Topcuoğlu OM, Görmez A, Cankurtaran T, Topcuoğlu ED, Ergen FB: Accessory anterolateral talar facet in populations with and without symptoms: prevalence and relevant associated ankle MRI findings. AJR Am J Roentgenol. 2016, 207:846-51. 10.2214/AJR.16.16056
13. Jara ME: Evans osteotomy complications. Foot Ankle Clin. 2017, 22:573-85. 10.1016/j.fcl.2017.04.006