International Journal of Research in Orthopaedics
Mistri S et al. Int J Res Orthop. 2026 May;12(3):821-824
http://www.ijoro.org

Case Report

DOI: https://dx.doi.org/10.18203/issn.2455-4510.IntJResOrthop20261239

Juvenile non-familial bilateral hallux valgus managed with bilateral chevron osteotomy: a case report

Sayan Mistri*, D. Ramkishan, Sateesh Chandra P., P. Neetha, K. Thulasiram

Department of Orthopaedics, Osmania Medical College and General Hospital, Hyderabad, Telangana, India

Received: 18 February 2026
Accepted: 25 March 2026

***Correspondence:**
Dr. Sayan Mistri,
E-mail: sayanmistri111@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Juvenile non-familial bilateral hallux valgus is an uncommon presentation of a progressive multiplanar forefoot deformity that may result in significant pain, functional limitation, and cosmetic concern. We report the case of a 17-year-old female who presented with bilateral medial forefoot pain aggravated by footwear and progressive deformity of both great toes over a two-year duration, without any history of trauma or family predisposition. Clinical examination revealed lateral deviation of both halluces with prominent medial eminence and tenderness over the first metatarsophalangeal (MTP) joints. Radiographic assessment demonstrated hallux valgus angles (HVA) of 39° on the left and 34° on the right, with intermetatarsal angles (IMA) of 15° bilaterally, consistent with moderate deformity. The patient underwent bilateral distal chevron osteotomy with medial capsulorrhaphy and Kirschner wire fixation. At one-year follow-up, she achieved complete pain relief, improved footwear tolerance, satisfactory cosmetic correction, and maintained radiographic alignment without recurrence. This case highlights that distal chevron osteotomy is an effective and reliable surgical option for symptomatic adolescent patients with moderate bilateral hallux valgus when appropriately selected and meticulously performed.

Keywords: Bilateral deformity, Chevron osteotomy, First metatarsal angle, Foot surgery, Hallux valgus, Juvenile hallux valgus

INTRODUCTION

Hallux valgus is a progressive 3-D deformity of the first ray characterized by lateral deviation of the hallux, medial deviation of 1st metatarsal, and displacement of sesamoid complex. Although it is commonly encountered in adults, particularly females, its occurrence in adolescents represents a distinct clinical entity with unique etiological and prognostic considerations. Juvenile hallux valgus (JHV) typically presents before skeletal maturity and differs from adult-onset deformity in both pathophysiology and natural history.[1,2] In adolescents, the deformity is more frequently associated with intrinsic structural abnormalities, including ligamentous laxity, pes planus, and metatarsus primus varus, rather than degenerative joint changes commonly observed in adults.[1] A genetic predisposition has been widely reported; however, bilateral nonfamilial presentation, as observed in the present case, is comparatively uncommon. Progressive deformity during skeletal growth may result in pain, intolerance to footwear, cosmetic dissatisfaction, altered forefoot biomechanics, and, if left untreated, secondary degenerative changes of the first MTP joint.[2] Radiographic evaluation is fundamental in assessing deformity severity and guiding surgical planning. Standard weight-bearing anteroposterior radiographs are used to measure the HVA and IMA, which serve as key parameters in operative decision-making.[3] Moderate deformity is generally characterized by an HVA greater than 30° and an IMA greater than 13°. Among the various surgical techniques described for correction, distal chevron osteotomy remains a widely accepted procedure for mild-to-moderate deformities because of its intrinsic stability and predictable outcomes.[4,5] In this report, we present a case of bilateral non-familial JHV successfully managed with bilateral

distal chevron osteotomy and medial capsulorrhaphy, highlighting the clinical presentation, radiographic findings, surgical management, and short-term outcomes.

CASE REPORT

A 17-year-old female student presented with bilateral pain over the medial aspect of the great toes, which was aggravated by shoe wear, along with progressive deformity over a duration of two years. There was no history of preceding trauma, systemic illness, connective tissue disorder, or family history of hallux valgus. On physical examination, both great toes exhibited lateral deviation with a prominent medial eminence over the first metatarsal heads. Localized tenderness was present at the medial aspect of the first MTP joints bilaterally. Medial angulation at the first MTP joints with lateral deviation of the great toes was observed (Figure 1).

Figure 1: Preoperative clinical photograph showing bilateral hallux valgus with medial eminence prominence (Black dots) and lateral deviation of the great toes (White arrows).

The deformity was flexible and reducible. Neurovascular examination of both feet was normal. Weight-bearing anteroposterior radiographs demonstrated a HVA of 39° on the left side and 34° on the right side. The IMA measured 15° bilaterally. Medial displacement of the sesamoid complex was also noted (Figure 2).

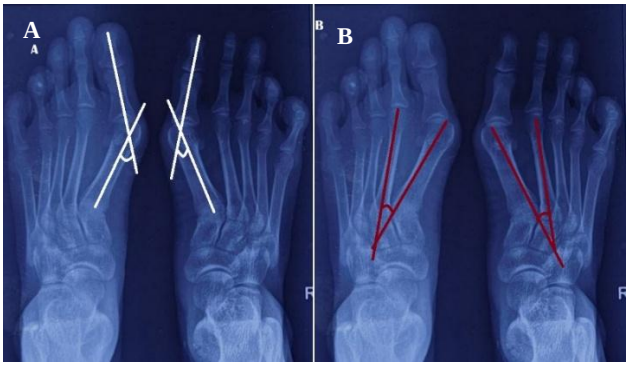

Figure 2 (A and B): Preoperative anteroposterior radiograph demonstrating increased HVA (39° left, 34° right) {A, White} and IMA (15° bilaterally) {B, Red} with medial sesamoid displacement.

Based on established radiographic criteria, these findings were consistent with moderate hallux valgus deformity.[3] After obtaining informed consent, surgical correction was undertaken under regional anesthesia using a tandard medial approach to the first MTP joint. Intraoperatively, a prominent medial eminence of both first metatarsal heads with relative lateralization of the sesamoids was identified. The procedure commenced with resection of the medial eminence. A V-shaped distal chevron osteotomy was subsequently performed at approximately 60°, as originally described by Austin and Leventen (Figure 3).[5]

Figure 3: Intraoperative image showing V-shaped chevron osteotomy indicating osteotomy limbs (White arrows).

The distal fragment was laterally translated to achieve correction and stabilized using Kirschner wires. Residual medial prominence was excised, and medial capsulorrhaphy was performed to restore soft tissue balance and optimize alignment. Immediate postoperative radiographs confirmed satisfactory lateral displacement of the distal osteotomy fragment with Kirschner wire fixation maintained in situ (Figure 4).

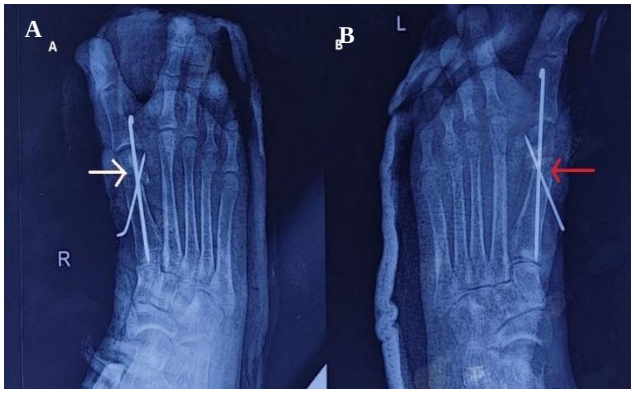

Figure 4 (A and B): Immediate postoperative radiograph showing lateral displacement of distal fragment (Red arrow) and K-wire fixation with correction of deformity.

Postoperatively, the patient underwent a period of immobilization followed by structured physiotherapy and gradual progression to weight-bearing as tolerated. At one-

year follow-up, she reported complete resolution of pain, improved tolerance to footwear, and high cosmetic satisfaction. Clinical examination demonstrated sustained correction, with a marked reduction in medial prominence and restoration of great toe alignment (Figure 5).

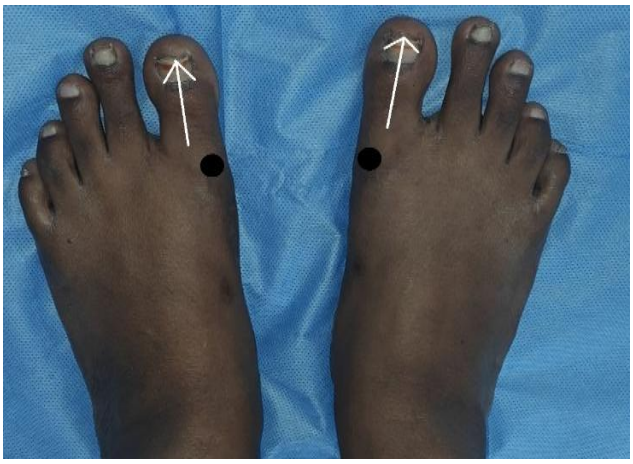

Figure 5: One-year follow-up clinical photograph demonstrating maintained correction and improved cosmetic alignment with reduced medial prominence (Black dot) and decreased lateral deviation of great toe (White arrows).

Follow-up radiographs demonstrated maintenance of correction without evidence of recurrence. The HVA measured 10° on the left side and 11° on the right side, while the IMA measured 11° on the left side and 12° on the right side (Figure 6).

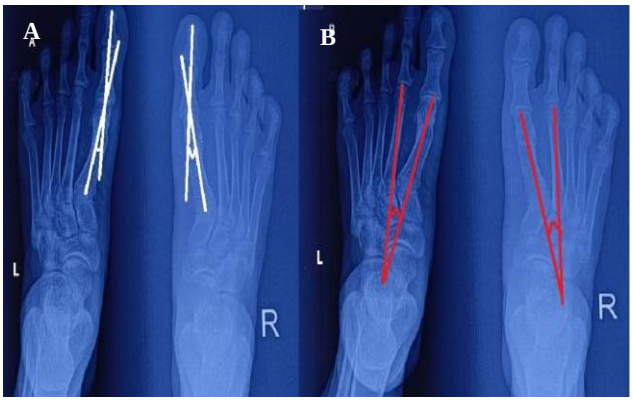

Figure 6 (A and B): One-year postoperative radiograph showing sustained correction without recurrence with post operatively HVA was noted to be reduced [White angle 10 degree (L) and 11 degree (R)] along with slight reduction in IMA [Red angle 11 degree (L) and 12 degree (R)].

DISCUSSION

JHV presents distinct biomechanical and clinical challenges compared with the adult form of the deformity. Unlike adult hallux valgus, which frequently develops secondary to degenerative joint changes and chronic mechanical overload, JHV is primarily attributed to intrinsic structural abnormalities and soft tissue imbalance.[1]

Contributing factors include ligamentous laxity, metatarsus primus varus, and pes planus, all of which promote progressive malalignment during skeletal growth. Radiographic evaluation remains essential for determining deformity severity and guiding operative planning. The HVA and IMA are reliable indicators of deformity magnitude and predictors of surgical outcome.[3] In the present case, preoperative HVA values of 39° and 34°, along with an IMA of 15° bilaterally, were consistent with moderate deformity and supported the decision for operative intervention. Surgical management in adolescents has historically been approached with caution because of concerns regarding recurrence. Reported recurrence rates in skeletally immature patients range from 10% to 30%, depending on surgical technique and residual growth potential.[2] For this reason, timing of surgery near skeletal maturity is considered critical to minimize the risk of recurrence and ensure durable correction.

Distal chevron osteotomy, first described by Austin et al, remains one of the most widely utilized procedures for mild-to-moderate hallux valgus deformity.[5] Its V-shaped configuration provides intrinsic stability and permits controlled lateral translation of the metatarsal head while preserving metatarsal length. Maintenance of first ray length is essential to prevent transfer metatarsalgia and to preserve normal forefoot biomechanics. When appropriately indicated, distal chevron osteotomy is associated with reliable angular correction and lower complication rates compared with proximal osteotomies.[4] In the present case, postoperative radiographic assessment demonstrated restoration of the HVA and IMA to near-normal values, indicating satisfactory realignment. Maintenance of correction at one-year follow-up suggests adequate stabilization of both osseous and soft tissue components. Medial capsulorrhaphy plays a critical role in restoring soft tissue balance, as hallux valgus deformity involves not only bony malalignment but also lateral capsular contracture. Inadequate correction of soft tissue imbalance may predispose to recurrence. An additional consideration in adolescent patients is the psychosocial impact of the deformity. Cosmetic dissatisfaction and difficulty with footwear can significantly affect quality of life. Bilateral involvement may further exacerbate functional limitation and self-image concerns. Therefore, surgical correction in symptomatic patients approaching skeletal maturity may provide both mechanical and psychological benefits. Long-term follow-up remains essential in juvenile cases to monitor for recurrence and potential degenerative progression. Early intervention in appropriately selected patients may prevent further deformity progression and reduce the risk of secondary osteoarthritic changes of the first MTP joint.[1,3] This case underscores the importance of careful patient selection, precise radiographic assessment, appropriate choice of

distal osteotomy for moderate deformity, and meticulous soft tissue balancing as key determinants of successful outcomes in adolescent hallux valgus.

CONCLUSION

Juvenile non-familial bilateral hallux valgus represents an uncommon yet clinically significant presentation that requires careful evaluation and individualized management. In symptomatic adolescents approaching skeletal maturity, distal chevron osteotomy combined with medial capsulorrhaphy provides effective and reliable correction for moderate deformity. In the present case, bilateral surgical correction resulted in substantial angular improvement, sustained pain relief, maintenance of radiographic alignment, and high cosmetic satisfaction, with no evidence of recurrence at one-year follow-up. These findings emphasize that appropriate patient selection, meticulous surgical technique, and structured postoperative rehabilitation are essential to achieving durable clinical and radiographic outcomes in adolescent hallux valgus.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Coughlin MJ. Roger A. Mann Award. Juvenile Hallux Valgus: Etiology and Treatment. Foot Ankle Int. 1995;16(11):682-97.
2. Palmanovich E, Myerson MS. Correction of Moderate and Severe Hallux Valgus Deformity with a Distal Metatarsal Osteotomy Using an Intramedullary Plate. Foot Ankle Clin. 2014;19(2):191-201.
3. Coughlin MJ, Jones CP. Hallux Valgus: Demographics, Etiology, and Radiographic Assessment. Foot Ankle Int. 2007;28(7):759-77.
4. Robinson AHN, Limbers JP. Modern concepts in the treatment of hallux valgus. J Bone Joint Surg Br. 2005;87(8):1038-45.
5. Austin DW, Leventen EO. A new osteotomy for hallux valgus: a horizontally directed "V" displacement osteotomy of the metatarsal head for hallux valgus and primus varus. Clin Orthop Relat Res. 1981:(157):25-30.

Cite this article as: Mistri S, Ramkishan D, Chandra SP, Neetha P, Thulasiram K. Juvenile non-familial bilateral hallux valgus managed with bilateral chevron osteotomy: a case report. Int J Res Orthop 2026;12:821-4.