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Treatment of Congenital Hallux Varus with Polydactyly and Syndactyly in an adolescence - A Case Report

Orthopaedic

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DR.K.P. MEENA MBBS, MS ORTHOPAEDICS

DR.R.C.BANSHIWAL PROF. ORTHOPAEDICS SMS HOPITAL &MEDICAL COLLEGE JAIPUR RAJASTHAN

ABSTRACT

Introduction-Congenital hallux varus of secondary type is associated with polydactyly, syndactyly or other congenital deformities of the foot. Such congenital deformities can be addressed in childhood with soft tissue reconstructive procedures. In adulthood, treatment of these deformities is challenging because of soft tissue contractures and rigid bony deformities. To our knowledge, this is the rare case report demonstrating the management of neglected secondary congenital hallux varus in young. **Case Report**- We present here a case of a 17 years old male patient who presented to us with untreated congenital hallux varus of secondary type. Patient had an extra great toe (polydactyly) with syndactyly. We have treated this patient in two stages. First stage consisted of excision of the extra great toe and k wire fixation of MTP joint . After 10 days k wire removed and gradual correction of great toe by distractor. We have follow up of this case for more than 6 month. **Conclusion:** Severe neglected congenital deformities presenting in adulthood have unique problems of softtissue contractures and permanent bony deformities. Congenital neglected hallux varus with polydactyly and syndactyly is a rare deformity. Its correction was challenging as patient presented to us in adolescence. A staged approach consisted of excision of the extra great toe and gradual correction of great toe by distractor has resulted in satisfactory aesthetic and functional outcome

Introduction

Hallux varus deformity is rare and less common as compared to hallux valgus. Different etiological factors have been explained in the literature for the development of hallux varus. Causes include congenital, idiopathic , spontaneous , post-traumatic and inflammatory arthropathies. Congenital hallux varus is less commonly noted than the acquired type and is best addressed in infancy. Congenital hallux varus are three types [13]- 1). Primary type is not associated with any other deformity. 2) Secondary type is associated with anomalies like polydactyly, syndatyly, metatarsus adductus, clubfoot etc [6,10,15]. 3) Tertiary type is associated with severe deformities like diastrophic dwarfismThe most common variety is due to surgical over-correction of hallux valgus[3]. In the developing countries, untreated severe congenital deformities are seen due to socioeconomic issues. While treating neglected hallux varus deformity in adults the issues are soft tissue contractures, bony deformities and arthritis of joints. In the case presented here give successful outcome.

Case Report

A 17-year-old male patient presented with right great toe congenital hallux varus polydactyly and syndactyly from birth. patient complains are bad cosmetic appearance, unable to wear shoes and had difficulty in pulling the jeans up in his routine life. There was no past history of any surgery or trauma to right foot. Clinical Examination: Patient had polydactyly with syndactyly(complex) of right great toe. These two great toes were almost at right angle to the first metatarsal. Plantar flexion 30 and dorsiflexion of 20 degrees each was possible at first metatarsophalangeal (MP) joint. Other than foot, there was no musculoskeletal or neurological abnormality.

Radiological Evaluation: anteroposterior, oblique and lateral radiographs of right foot were taken Radiographs showed short first metatarsal with deformed head. Each great toe had proximal and distal phalanges. Only one sesamoid was present at MP joint. proximal phalange of both were articulating with medial aspect of first metatarsal head.

Other Investigations: Portable Audio Doppler study of right foot was performed that demonstrated better vascularity of great toe.

Treatment: We planned treatment in two stages to avoid neurovascular compromise. First Stage: medial great toe redundant soft tissue needed to be excised as it was smaller than the lateral and fix MTP joint by k-wire in achieved corrected position. Second stage – gradual correction of great toe was planned with gradual soft tissue distraction using external fixator. distractors were placed at MP joint.

Technique: Surgery was performed under spinal anesthesia. Right foot was prepared with liquid betadine and sterile draped. Dorsal incision of approximately 6 cm was taken on lateral great toe centering head of first metatarsal. medial great toe consisting of proximal and distal phalanges was excised and redundant soft tissue laterally also removed. K-wires was inserted from distal to proximal phalanx to metatarsal of great toe. After 10 day one 1.8mm K-wires were inserted horizontally in the first metatarsal and one more 1.8mm K- wires were inserted horizontally in proximal phalanx of great toe after removal of longitudinal k-wire. Distractors were applied. Distraction of 1mm per day started at MP joints. The patient was discharged on next postoperative day with loose dressing without slab. The patient was taught the procedure of external fixator distraction and did the distraction in increments of 1mm per day at distarctors. He was also supervised every week in the outpatient department. During the period of distraction, patient was kept non-weight bearing and care was taken to avoid pin tract infection. Distraction was continued for four weeks. Significant correction of deformity was achieved without neurovascular compromise. After 4 weeks, the external fixator was removed and Patient was kept non weight bearing for one months. After correction, patient was painless on weight bearing and can carry out all daily activities without discomfort. Unlike preoperative status, now he can wear regular shoes and pull the trousers up without difficulty .This has improved his social activities. At present he is actively participating in sports activities like cricket. There is no recurrence of the deformity.

Discussion

This deformity can be addressed in childhood with soft tissue procedures like **Kelikian and Farmers technique** [14]. When neglected, they present in adulthood with severe and rigid deformity with soft tissue contractures, bony deformities and arthritis. A single stage correction of such deformity can cause neurovascular compromise. Hence stepwise approach and gradual correction of the deformity is a safe method. This can be achieved with distraction using an external fixator. It works on the principle of distraction histiogenesis [12].

Dumbre Patil S , Parekh H, Dumbre Patil V, Joshi K. 2014 [15] A case of a 23 year old male. His great toe deformity was neglected and rigid. It was so disfiguring that he came for amputation of the great toe. But we offered him the option of correction of deformity and kept amputation as a salvage procedure. We excised the lateral great toe

and used external fixator for gradual correction of medial great toe. Two distractors were used in the external fixator assembly; one to correct hallux varus deformity at MP joint and other to correct metatarsus adductus deformity at TM joint. Satisfactory correction of the deformities was achieved in six weeks. During this time, soft tissues on the medial aspect of foot were stretched gradually; hence this case did not require any plastic surgery for the coverage. As metatarsal head was deformed, MP joint fusion was done at second stage. After correction, the great toe was shorter compared to normal side due to congenitally hypoplastic and deformed first metatarsal.

We have used this principle of histogenesis in a case of a 17 year old male. His great toe deformity was neglected and mobile. We excised the medial great toe and used external fixator for gradual correction of great toe. Distractors were used in the external fixator assembly to correct hallux varus deformity at MP joint. Satisfactory correction of the deformities was achieved in 4 weeks.. After correction, patient was painless on weight bearing and can carry out all daily activities without discomfort. Unlike preoperative status, now he can wear regular shoes and pull the trousers up without difficulty .This has improved his social activities. At present he is actively participating in sports activities like cricket. There is no recurrence of the deformity.

Conclusion

Management of hallux varus by gradual distraction using external fixator and a stepwise approach has resulted in satisfactory correction and excellent functional outcome in a neglected congenital hallux varus with polydactyly and syndactyly in adulthood.

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