Bilateral Post-Axial Polydactyly in Monozygotic Twins

A Case Report and Results of Operative Treatment

Background/Patient Demographics

Although polydactyly in twins has been noted in conjunction with clinical syndromes, this condition is rarely seen in otherwise healthy monozygotic twins. The authors present a unique case of normal male monozygotic twins with bilateral post-axial polydactyly with Y-shaped metatarsals who underwent successful resection of the excess digits. A retrospective chart, radiographic and photographic review of male Hispanic 13 year-old monozygotic twins was performed. Objective and subjective clinical data was collected through 11 months of follow-up.

Pre-Operative

Post-Operative

Pre-Operative

Post-Operative

Diagnosis: Monozygotic Twins with Bilateral Post-Axial Polydactyly with Y Shaped Metatarsals

Literature Review

Polydactyly is a congential disorder characterized by supernumerary digits of either the hands, feet, or both. These supernumerary digits run a spectrum from complete fully formed rays to hypoplastic soft tissue digits.[1] A number of classification systems have been proposed for polydactyly. The simplest divides polydactyly into three categories: pre-axial or tibial (hallux side), central (middle digits), and post-axial or fibular (lateral digit).[2] Post-axial is the most common (79%), followed by pre-axial (15%) and finally central (6%).[3] A morphological classification system was developed by Venn-Watson based on the presentation of the metatarsal: normal metatarsal with distal phalanx duplication, Y metatarsal, T metatarsal, wide metatarsal head, and complete duplication.[1]

Polydactyly appears to have no sex predilection, but does display a racial predilection with rates ranging from 3.6 to 13.9 per 1000 black births and 0.3 to 1.3 per 1000 white births.[4,5]

While polydactyly may be seen as a component of an established congenital syndrome, it more often presents in otherwise normal individuals as an isolated trait with an autosomal dominant inheritance pattern with variable expression.[2] While a gene has been implicated for radial hand polydactyly, none have yet been indicated for foot polydactyly.[6]

Treatment

Following evaluation of supernumerary digits, a single stage resection of the most lateral digit was performed bilaterally through racket-type incisions. Procedures included removal of duplicated distal metatarsal flush with diaphyseal shaft as well as soft tissue reconstruction.

Follow-Up

Patients tolerated procedures well and were allowed to weight-bear to tolerance immediately. Incisions healed without incident and patients relate decrease in painful irritation with shoe gear as well as satisfaction with cosmesis.

Discussion

Polydactyly, although one of the more common congenital conditions of the foot and ankle, is still rare with a reported incidence between 0.3 and 13.9 cases per 1000 live births. Polydactyly as an isolated deformity presents an autosomal dominant inheritance pattern with variable expression, but is rarely reported in otherwise healthy monozygotic twins.

In treating polydactyly it is essential to review radiographs to define bony anatomy and review orientation of the physis. Selection of the digit to be excised is determined by the development of the digit, as well determining which excision will allow normal contour. To achieve the best results, it is also important to repair the capsule and reinsert tendons in an accurate manner.[7]

With careful evaluation and surgical planning resection of the supernumerary digit can yield excellent function and cosmesis.

References:

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