

## A Case Report of a Nine Toes Mirror Foot and Literature Review

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### Abstract

Mirror foot is an uncommon abnormality and considered as a form of congenital duplication. Only few cases are published. We report a case of a 6-month-old patient with preaxial mirror left foot. The wedge surgical resection of the three duplicated rays was performed. After four years of follow-up, the cosmetic and functional result was good. Surgical treatment must be required before walking age and has both functional and aesthetic implications and gives fewer complications than that of the equivalent of upper limb.

**Keywords:** Mirror foot; Classification; Surgical treatment

### Introduction

Preaxial mirror polydactyly of foot, also called “Mirror Foot” is a rare congenital anomaly. In the literature, we found less than 40 cases reported till now, and only for few cases, the surgical treatment was performed [1-3]. Mirror Foot has a controversial definition: Some called Mirror Foot as “a mirror-image polydactyly”, but the true mirror image was shown only in few cases [3]. Mirror Foot may occur as an isolated deformity [4,5] or as part of a syndrome of multiple congenital abnormalities [1,3]. The functional and cosmetic discomfort of this condition usually requires surgical treatment. We reported an isolated left Mirror Foot surgically treated with a good outcome.

### Case Report

A 6-month-old child with preaxial polydactyly of the left foot was referred to our out-patient department. He was born at full term out of a non-consanguineous marriage. Antenatal history was eventful and family history was negative. He was born with macrosomia. No other abnormality was detected.

Clinically, there were nine toes with a duplicated hallux (Figure 1). Tibia, fibula, and ankle were normal. The radiograph showed no supernumerary tarsal bone, there were eight metatarsals with hypoplastic 8<sup>th</sup> metatarsal and 9 phalanges. Only the phalange of the hallux was duplicated (Figure 2).

Surgical excision and reconstruction was performed under general anesthesia and tourniquet control. The medial three rays were excised by a medial longitudinal approach (Figure 3). Excised accessory tendons were used to reinforce the ligaments of the medial arch.

After a follow up of 4 years, the child was without any discomfort while walking or wearing shoes and the parents are satisfied by the cosmetic result (Figure 4). The X-ray control showed a 15 degree of Hallux varus proposed for correction. Actually, the child's parents refuse the surgery as long as there is no functional discomfort and the patient is monitored with annual checks.



**Figure 1:** Clinical view of the left foot showing nine toes.



**Figure 2:** X-ray of the left foot: Eight metatarsals with hypoplasia of the medial and duplication of the hallux.



**Figure 3:** Post operative view: The preaxial rays were excised using a medial longitudinal incision.



**Figure 4:** Clinical and radiographic results after a follow up of four years.

## Discussion

Preaxial Mirror polydactyly is still without strict definition [1,3]. The true definition is author dependent and there is no general classification [3,6,7]. Sudesh, et al. [1] stated that we should differentiate between Mirror foot and polydactyly by the presence of accessory tarsal bone. Watanabe, et al. [8] have added Foot Mirror Duplication to the spectrum of preaxial polydactyly. Belthur, et al. [9] suggested that Mirror Foot is “an extreme form of preaxial polydactyly” and can be considered as an additional type of preaxial polydactyly. Verghese, et al. [10] proposed the term “Preaxial Mirror Polydactyly” which includes feet with supernumerary rays medially

situated to the first ray with characteristic of post axial toes. The tarsal duplication was not included due to its variability.

Mirror Foot is an extremely rare condition. According to Fukazawa, et al. review of the English literature [3], only 28 cases of Mirror Feet have been reported until 2009, and the surgical treatment has been for only 7 cases. Tibial and fibular abnormalities, anomalies of hind foot, midfoot and fore foot were variably expressed [6]. The association with mirror hands has also been described with or without syndactyly [2]. Mirror hands have seven or eight digits and no thumb. Mirror Foot is more variable and may have no obvious hallux or a fused central hallux and seven or eight digits [3,11,12]. A literature research revealed only few reports about treatment of Mirror Foot [1]. Mc Carthy, et al. [13] and Galois, et al. [14] described the complexity of the surgical treatment of these abnormalities and stated that the long result had been poor. However, it is less complex than that of its upper limb equivalent due to the difference between hand and foot function [2]. Every case has been treated with an individualized approach but most patients have undergone surgery during childhood, before or after walking age [3,6,13]. According to some authors, surgical treatment should be delayed until ossification for a better anatomic assessment [15].

The usual surgery described is excision of the preaxial rays with an acceptable cosmetic outcome in those cases where only preaxial ray duplication is present without any talar or calcaneal duplication [1]. Karchinov [16] insisted on the excision of supernumerary tarsal bones for a successful treatment of Mirror foot. After 7,5 years gap, Vlahovic, et al. [6] showed the insufficiency of the isolated excision of supernumerary rays of Mirror feet with the supernumerary tarsal bones and the improvement of outcomes after the total excision of the supernumerary bones.

The reconstruction should anticipate hallux varus and persistent widening of the forefoot, as is seen in preaxial polydactyly of the foot, these two anomalies may require further correction, the same for the tibial discrepancy. Despite the good functional and aesthetic outcome, follow up should continue within a multidisciplinary team. Early and regular gait assessment by Physiotherapist and occupational therapist prevent, identify and improve any abnormalities [2].

## Conclusion

Mirror Foot is a rare congenital abnormality that may be isolated or in association with multiple congenital anomalies. There is no exact definition due to clinical variability. Adequate and planned surgical treatment improves the functional and the cosmetic outcomes. It consists in reduction of the supernumerary rays and tarsal bones. Follow up is required to detect and treat any further abnormalities on time.

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