

Little Finger Duplication

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Summary: Polydactyly is defined as an extra finger or toe that is present at birth. It is a congenital anomaly that can manifest as a single disorder or as a component of a syndrome. Treatment can be conservative or operative depending on the anticipated function of the extra digit. In this report, we describe a case of a bifid 5th digit on the right hand. The aim of this report was to report a new variant of type IIIB described by Duran (2015). This will possibly lead to the modification of the current classifications, which will improve the diagnosis and treatment of patients. (*Plast Reconstr Surg Glob Open* 2022;10:e4555; doi: [10.1097/GOX.0000000000004555](https://doi.org/10.1097/GOX.0000000000004555); Published online 23 September 2022.)

Polydactyly is one of the most common congenital hand deformities,¹ in which an extra finger or toe is present at birth. The extra digit is usually a small piece of soft tissue that is classified according to its location as preaxial (radial), central, or postaxial (ulnar), for instance.¹ There are various predisposing factors to this condition, such as genetics, race, ethnic background, and syndromes such as Down syndrome.²

Postaxial polydactyly is the most common type of polydactyly in African descendants,¹ whereas preaxial polydactyly is the most common among Japanese patients.³ This case is unique because it does not fit any of the current classification systems mentioned in the literature. Duran et al⁴ mentioned six classifications when referring to little finger duplication (Table 1). Pritch et al classification for type A ulnar polydactyly (specifically type IV) and the current classification (specifically type IIIA and IIIB) were the closest to resemble our reported case.⁴ All of the aforementioned classifications contain a spectrum, extending from a nubbin of soft tissue to a complete duplication of the 5th digit.⁴ However, the difference is that in our case, the proximal phalanx is normal, whereas the middle phalanx is duplicated.

CASE REPORT

A 11-year-old Saudi girl with B-cell acute lymphoblastic leukemia presented to King Fahad Medical City with a bifid 5th digit on her right hand (Fig. 1). No other medical complaints were reported. She was diagnosed with right postaxial type 4 polydactyly based on both the clinical presentation and radiographic images. She had a family history of polydactyly, and the rest of her history and physical examination results were unremarkable. The patient underwent investigations with multiple orthogonal view radiographs (AP, lateral and oblique) of both hands to determine polydactyly classification. Radiography of the right hand showed a unique form of polydactyly, where the 5th digit (the little finger) had a bifid middle phalanx and an intact proximal phalanx (Fig. 2).

On June 10, 2021, the patient was admitted to King Fahad Medical City for excision of the right postaxial type 4 polydactyly with K-wire fixation. The patient was taken to the operation room under aseptic precautions. A lazy large S incision was made, and neurovascular bundles and tendons were identified. Radial digits were excised instead of the ulnar digit, to maintain the integrity of the 5th digit ulnar collateral ligament. The collateral ligaments were reconstructed through skeletonization of the radial digit, using the remnant soft tissue for reconstruction, and interrupted sutures were implemented for closure. A 1.2mm K-wire, which is recommended for use in such procedures, was introduced retro-grade. We propose the use of this K-wire, especially in children, to maintain digital alignment postoperatively, and because there is reduced risk of joint fusion in children even if applied for 6 weeks. The skin was closed using Vicryl Rapide 4-0, and a cast was applied. Postoperatively, the patient was shifted to the recovery room in a conscious state, and the procedure was well tolerated. The K-wire was removed 6 weeks after the operation, and she had a full range of motion in both hands, doing well both esthetically and functionally. Furthermore, the suture

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Table 1. Previously Reported Classification Systems of Ulnar Polydactyly

Temtamye–McKusick Classification	Stelling Classification	Rayan–Frey Classification	Al-Qattan Modification of Rayan Classification	Pritsch et al Classification for Type A Ulnar Polydactyly	Current Classification
Type A: extra digit is well-formed and has an articulation	Type I: soft tissue only	Type I: soft tissue nubbin	Type I: small, soft tissue nubbin with no bone or nail	Type I: fully developed sixth ray that articulates separately with carpals	Type I (simple type): skin nub similar to a verruca that does not contain bone and nail or the nonfunctional digit that contains bone or nail, or both, and a small pedicle that does not articulate with the metacarpal
Type B: extra digit is poorly formed and is connected to hand by skin bridge	Type II: duplication of phalanges Type III: complete duplication of phalanges and metacarpal	Type II: pedunculated nonfunctioning digit Type III: well-formed functioning digit that is articulating with a bifid fifth metacarpal head or fused to the fifth metacarpal at a right angle or hypoplastic/ absence of proximal phalanx Type IV: complete duplication with separate sixth metacarpal	Type II: Pedunculated nonfunctioning digit attached to hand by a narrow (<3 mm) pedicle (type IIA) or wider pedicle (type IIB) Type III: well-formed functioning digit that is articulating with a bifid metacarpal head or a partially duplicated fifth metacarpal (type IIIA) or has its proximal phalanx fused to the fifth metacarpal (type IIIB) Type IV: duplication with separate sixth metacarpal	Type II: extra digit occurs on lateral side of fifth digit with an intercalated distal metacarpal remnant Type III: supernumerary digit arises from hypoplastic sixth metacarpal or is fused to fifth metacarpal Type IV: extra digit originates from fifth metacarpophalangeal joints.	Type II (hypoplastic type): defined as the presence of hypoplastic proximal phalanx Type III (malformations at proximal phalanx level): divided into 2 subgroups containing malformations on the proximal phalanx Type IIIA: as bifid proximal phalanx Type IIIB: as duplicated proximal phalanx Type IV (malformations at metacarpal level): Type IVA: defined as form that developed a fusion between proximal phalanx and metacarpal; Type IVB: as presence of bifid metacarpal head; Type IVC: as presence of metacarpal remnant; Type IVD: as bifid metacarpal shaft or complete metacarpal duplication.

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line healed well with no signs of infection. The most common complication expected in this case was infection of the K-wire pin tract because it was left for 6 weeks. Fortunately, our patient had a smooth recovery and was discharged from the clinic with no need of further follow-up, and post operative pictures were taken (Fig. 3).

DISCUSSION

Polydactyly can involve either upper or lower limbs, or both, and can present as unilateral or bilateral.^{2,5} In the Middle East, women are more commonly affected than men, and usually present with unilateral and not bilateral polydactyly.² African and Caucasian variants usually appear as pedunculated nonfunctioning digits, but the

Middle Eastern variety is more likely to present as a soft tissue nubbin.⁴ The diagnosis of polydactyly is usually clinical; however, the exact classification may be determined using AP and lateral view radiographs. Because none of the aforementioned classification systems fit this case report perfectly, a new or modified classification system should be developed. For instance, using the concept of Wassel’s classification of the thumb, a system that includes type IA and B for distal phalanx, type IIA and B for middle phalanx, and type IIIA and B for proximal phalanx may be developed. Thus, the present case may be classified as type IIB. Classification of this new variant of type IIB will aid in standardizing the method of excising the radial digit and applying K-wire for 6 weeks. Thus, maintaining the integrity of the ulnar collateral ligaments and digital alignment,



Fig. 1. Volar image of the hand showing post axial polydactyly.



Fig. 2. AP X-ray of the hand showing bifid mid phalanx with intact proximal phalanx.

thereby reducing future complications. The mainstay of treatment is to enhance cosmesis and maximize function and precision, which are achieved by surgical excision of the extra digits.



Fig. 3. Postoperative dorsal picture of the hand.

CONCLUSION

The aim of this case report is to contribute to the literature by reporting a new variant of postaxial polydactyly, and we suggest that more effort should be made to modify the current classification systems, thereby improving the diagnosis and treatment of patients.

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References

1. Ishigaki T, Akita S, Suzuki H, et al. Postaxial polydactyly of the hand in Japanese patients: Case series reports. *J Plast Reconstr Aesthet Surg.* 2019;72:1170–1177.
2. Atanda OO, Owonikoko KM, Adeyemi AS, et al. Polydactyly 24 in a female neonate. *Case Rep Obstet Gynecol.* 2013;2013:798138.
3. Xiang Y, Bian J, Wang Z, et al. Clinical study of 459 polydactyly cases in China, 2010 to 2014. *Congenit Anom (Kyoto).* 2016;56:226–232.
4. Duran A, Ciloglu NS, Buyukdogan H. A classification system for ulnar polydactyly and clinical series. *J Hand Surg Am.* 2015;40:914–921.
5. de la Torre J, Simpson RL. Complete digital duplication: a case report and review of ulnar polydactyly. *Ann Plast Surg.* 1998;40:76–79.