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CASE REPORT

Type II and IV Thumb Duplication in Neonates

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Summary

Thumb duplication is a rare anomaly. Here we describe two neonatal cases of thumb duplications, one type II and the other type IV. Seven types have been described in the medical literature. Radiological assessment is important in differentiating between these types.

Case 1

A male infant was born at term. On careful physical examination, he was noted to have an isolated anomaly of the right thumb (Figure 1A-D).



Figure 1 A-D: Duplication of right thumb.

- Dorsal view showing fused thumb.
- Ventral view showing fused thumb with no dividing line.
- Side view showing two thumbs with two separate nails.
- Flexed view demonstrating movement of the thumbs at the joint.

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The infant had no dysmorphic features, and the remainder of the physical examination was within normal limits. Mother reported no family history of similar problems among close or distant families on both maternal and paternal sides. Radiological evaluation was performed which showed complete duplication of the distal phalanx of the thumb (Figure 2A,B).

Case 2

An infant was born with clinical features of Down syndrome. The chromosomal analysis confirmed the diagnosis of Trisomy 21 (47, XY, +21). A picture of the newborn's hand is shown below (Figure 3A,B).

Discussion

The infant described in case 1 had type II pre-axial

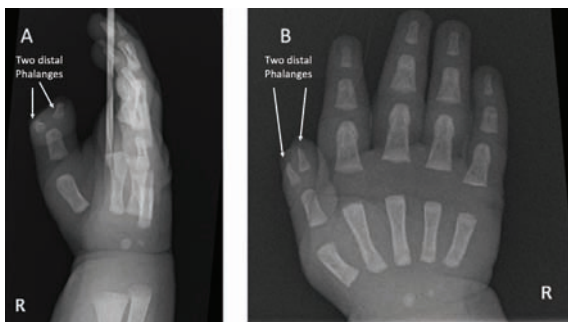


Figure 2 A,B: Radiological images showing two distal phalanges of the right thumb.



Figure 3a Picture of hand showing two right thumbs.

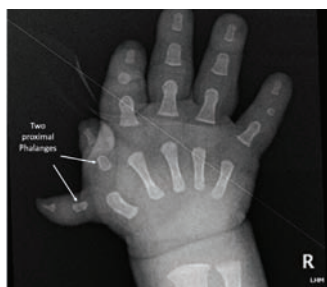


Figure 3b Radiological image showing two proximal phalanges of the right thumb.

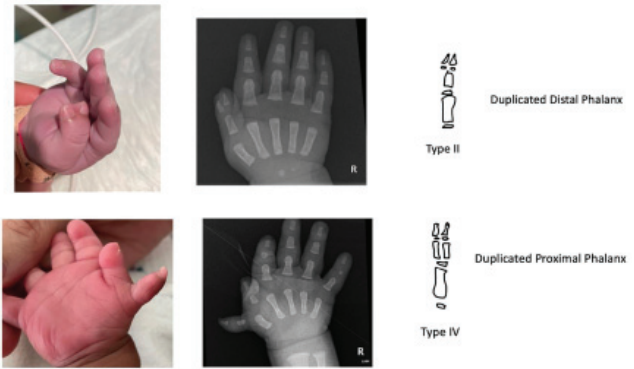


Figure 4 Type II pre-axial thumb duplication (two distal phalanges).

Table 1: Classification of thumb duplication (Watt AJ [2])

Wassel Type	Anatomic Description	Percentage
Type 1	Bifid Distal Phalanx	4%
Type II	Duplicated Distal Phalanx	16%
Type III	Bifid Proximal Phalanx	11%
Type IV	Duplicated Proximal Phalanx	40%
Type V	Bifid Metacarpal	10%
Type VI	Duplicated Metacarpal	4%
Type VII	Triphalangeal Thumb	

thumb duplication (two distal phalanges), while case 2 had a polydactyly, classified as type IV pre-axial thumb duplication (two proximal phalanges). Post-axial polydactyly would be on the ulnar side of the hand.

Thumb duplication is a rare anomaly; the incidence is 1 in every 3,000 live births, with the highest incidence among Asian and Caucasian populations [1]. Seven types (I–VII) of thumb anomalies have been described in literature [2].

These cases highlighted the need for obtaining radiological studies to differentiate between different types of thumb duplication. Both infants were referred to hand surgery team for further intervention. Surgical treatment for congenital thumb duplication ranges from simple ablation to a reconstruction. The aim is to correct any angular deformity by rebalancing of the soft tissue with collateral ligament reconstruction and tendon centralization. In cases of osseous deformity that disrupt the axial alignment of the thumb, closing or opening wedge osteotomies may be necessary to provide alignment followed by bone graft, obtained from the amputated thumb [2].

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