CASE REPORT

THE OCCURRENCE OF AN ADDITIONAL PHALANX IN THE THUMB

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This paper is a case report of a child possessing an additional phalanx in both the thumbs. The case is not only interesting but is of considerable significance. Apart from exhibiting a very rare morphological anomaly, the subject being a child in whom the epiphyseal centres of ossification are present ununited to the diaphyses of the various bones, the features noted in the radiograph are of great value in the interpretation of the morphology of the thumb.

REPORT OF A CASE

Kasturi, a female child aged about two years, was admitted to the Ophthalmic Hospital for the treatment of conjunctivitis. Details of her illness are not relevant to the congenital anomaly and are omitted here. She displayed the obvious peculiarity of the thumbs showing an extra segment. There was no family history of a similar or other digital abnormality. Radiographs of both hands were taken; the anomaly was identical in the two hands. A clinical photograph is not available, as the child left the city before it could be taken. However, all the medical officers who saw the case aver that the digit appeared like a thumb, being the shortest; and the only peculiarity was its extra segmentation. The skiagram also reveals this, as it indicates the translucent outline shadow of the whole hand. Functionally also the digit was usable as a thumb for opposition.

The X-ray picture shows the additional phalanx in the thumb (Fig. 1). The metacarpal bone of the thumb is also abnormal in that it shows an extra centre of ossification at its head, in addition to the usual centre normally present at the base. All the three phalanges of the thumb have epiphyseal centres at their base as is usual with all phalanges generally. The metacarpal bones and phalanges of the other digits show the normal set up of epiphyseal centres for heads of metacarpals and bases for the phalanges. The carpus shows that the capitate and hamate have ossified. The condition was symmetrical; and the two hands were identically similar.

DISCUSSION

The condition is extremely rare. Windle has recorded a case in 1891 cited by Wood Jones, and McGregor has described a case in a South African native in whom the right thumb showed three phalanges and the duplicated left thumb had a medial moiety with three phalanges. Gates refers to the report of a case and review by Stieve and also states that this anomaly is one of the rarest malformations of the hand.

The normal occurrence of only two phalanges in the thumb and great toe, as contrasted with all the other digits of the hand and foot, has been a

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matter for a considerable amount of speculation regarding the missing bony element and attempts have been made to detect it as a part of the morphological complex of one or other member of the first digit. A brief allusion to the various hypotheses has to be made to ascertain to what extent their interpretations would stand confronting the factual findings presented in this case.

Galen's view which has been upheld for nearly two thousand years and which still finds the conventional support in the teaching in our medical schools, is that the original metacarpal is lacking in the thumb and that the proximal phalanx of a hypothetical three-phalangeal thumb has become modified to take the place of the missing metacarpal. The vicarious mode of ossification of the metacarpal of the thumb with its similarity to the usual type of phalangeal ossification was cited as evidence. The direction of the nutrient artery to the bone has been recently brought forward as further support. However, in the present case the metacarpal is present and the proxy which is supposed to substitute and impersonate it is also present. If the case reported here has any morphological implication, the above hypothesis, however attractive and authoritative, cannot stand on the face of the observed facts.

Uffelman, McFarland, Sappey, and Windle put forward the view that the first metacarpal is a complex and is constituted by the fusion of an original metacarpal with an adjacent proximal phalanx. They give morphological significance to the occasional presence of an epiphysis for the head in addition to the usual basal epiphysis as suggestive of its complex nature being formed by the blending of two elements. In the case reported, the metacarpal shows the complex nature of its ossification possessing both the epiphyses, one at each end. But the phalangeal element that is conveniently supposed to have fused with the metacarpal to make it a 'complex' is also present as a separate bone. This cause could not possibly be held responsible for the complex nature of the first metacarpal, which displays the envisaged complexity even without such accretion. This hypothesis is also not tenable on the face of the observations made in the case on hand.

Humphrey, as early as 1858, thought that the missing member was the second phalanx. Also, more recently, Harris came to the same conclusion from a radiographic study of ossification. Pfizter, however, considered that