

## Congenital Hand Differences

### To the Editor:

I read with great enthusiasm the Current Concepts article about congenital hand differences authored by Goldfarb in your distinguished journal.<sup>1</sup> I would like to comment on the recent classification of thumb polydactyly by Zuidam et al<sup>2</sup>

Zuidam et al<sup>2</sup> have elaborated on the Wassel's classification, which is based on the x-ray appearance of the bony skeletons of the thumb polydactyly.<sup>3</sup> The classifications of Wassel<sup>3</sup> and Zuidam et al<sup>2</sup> diagram the ossification centers in the epiphysis. They appear to belong to the thumbs of children between approximately 6 and 15 years of age.<sup>4</sup> Treatment for thumb polydactyly is recommended earlier in life, and usually the ossification centers of the epiphysis are not apparent. Actually, there is a large time-space interval between the recommended age for the treatment of the thumb polydactyly and the diagrams of the Wassel and Zuidam et al classifications.

The skeletally immature hands of young children do not reveal the details of their skeletons on x-ray. Symphalangism in a skeletally immature hand can be inferred from a narrowed joint space and limited range of motion on clinical examination. Symphalangism can be at the level of metacarpophalangeal (MCP) joint<sup>5</sup> or at the level of the interphalangeal joint.<sup>6</sup> All the reported symphalangism have occurred on the radial side.<sup>5,6</sup> Bony symphalangism does not appear until the full skeletal maturation that will take years beyond the recommended age for treatment. The symphalangism demonstrated on the Zuidam et al diagram at the MCP joint with fused bones cannot occur while the other components of the thumb polydactyly are still skeletally immature.

In the Zuidam et al classification diagram, deviation from longitudinal axis at the MCP joint is demonstrated with divergence of each proximal phalanx at the MCP joint, whereas at the interphalangeal joint, the distal phalanges converge and point toward each other. In the nomenclature Type IV D u/r, "u" stands for the deviation of ulnar component and "r" stands for the radial component. Ogino et al reported radially deviated types of both components of the thumb polydactyly.<sup>7</sup> Hung et al recognized 4 different presentations of the thumb polydactyly at the MCP joint: hypoplastic, ulnar deviated type, diver-

gent type, and convergent type. The ulnar deviated type was described as one in which the ulnar and the radial components were angulated toward the ulnar side at the interphalangeal joints. The divergent type was described as one in which both components were straight but pointed divergently.<sup>8</sup> The "deviation" label in the Zuidam et al nomenclature might not be identifying directly the related anatomy of the designated deformity.

In conclusion, it seems that the Zuidam et al classification diagram still needs more elaboration to describe some of the complex presentations of thumb polydactyly.

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### In Reply:

Thank you for your letter outlining the limitations of current classification schemes for thumb polydactyly. In our Current Concepts article on congenital hand differences, I chose to include the Zuidam et al classification diagram for thumb polydactyly<sup>1</sup> because I believe it is the most comprehensive yet practical system available. As depicted in the diagram and expanded on in the manuscript, the authors

have included 6 subtypes (with modifiers) of the well-accepted Wassel classification.<sup>2</sup>

However, I share your concerns relating to ossification center development; specifically, the schematic depiction of thumbs represents older children. I agree that most children are treated surgically before these growth centers are radiographically clear. Likewise, I agree that symphalangism may not be present radiographically at an age before surgical intervention.

As noted in the Introduction of their manuscript, Zuidam et al. “propose several modifications to Wassel’s classification that result in a more complete taxonomy and more flexible nomenclature to facilitate communication, analysis, and treatment of all known variations.” Although they are imperfect, I

believe that their modifications of the Wassel classification meet these stated goals and help both clinician and researcher better understand and treat radial polydactyly.

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