

HUMANITIES

All thumbs: The philosophy of plastic and reconstructive surgery via Wassel's classification of thumb duplication

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An artistic reinterpretation of Wassel's 1969 classification (Fig. 1) of pre-axial polydactyly began as an opportunity to learn thumb anatomy and to practice using surgical instruments in the context of art-making and medical education.¹ This process soon illuminated a philosophical dimension of plastic and reconstructive surgery: to what extent is perfection achievable in the repair of a defect?

Contours of Wassel's seven original classes (Fig. 1) were drawn and up-scaled onto sheets of 4x6 inch cardstock using a mechanical pencil with 0.5mm lead. Each phalanx in Wassel's array, each diagrammatic articular cartilage, and each Roman numeral was individually "excised" from the cardstock using a number 10 surgical blade and toothed Adson tissue forceps. A canvas was painted with two layers of black acrylic paint as a contrast background. Once dry, each stencil was aligned and affixed onto the painted canvas.

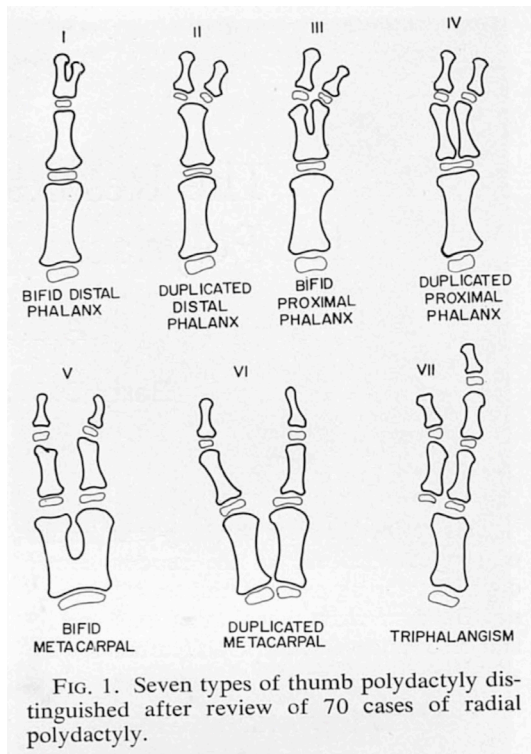


Figure 1: Wassel's original 1969 thumb duplication classification. (Reprinted with permission from Wolters Kluwer. Reference: Wassel, HD. "The Results for Surgery for Polydactyly of the Thumb, A Review." *Clinical Orthopaedics and Related Research* 1969;64:175-93. (https://journals.lww.com/clinorthop/Citation/1969/05000/22_The_Results_of_Surgery_for_Polydactyly_of_the.24.aspx))

Using the stencils, analogous phalanges within and between each Wassel class were brightly colour-coded using an additional layer of paint, to visually demonstrate the level of duplication (Fig. 2; Fig. 3).

Once the paint within stencilled areas had dried, removing the cardstock stencils from the canvas proved surprisingly difficult to accomplish without leaving paper residue on the canvas (Fig. 4). Excess paint had leaked and dried beyond the margins of the stencilled areas, causing the "epidermal" layer of the cardstock to adhere to the canvas. Thus, surgical instruments were used again to "reconstruct" the work: planes were created between the canvas, residue, and dried excess paint to then excise the artifact. While most of the artifacts from the stencilling process were removed, it was not possible to remove all paper and paint residue without compromising the integrity of the canvas material or of the correctly stencilled paint. This attempt to create a carbon copy was a technical failure, relative to the goals of the endeavour, but resulted in an unexpected and valuable lesson in the philosophy of surgery.

Accepting imperfection is a recurring motif in plastic and reconstructive surgery, in medical school, and the broader medical field. Just as DNA replication produces errors, which can lead to a congenital deformity (itself sometimes a perfect or imperfect duplication), analog forms of duplication such as stencilling also produce errors. The subsequent medical and artistic

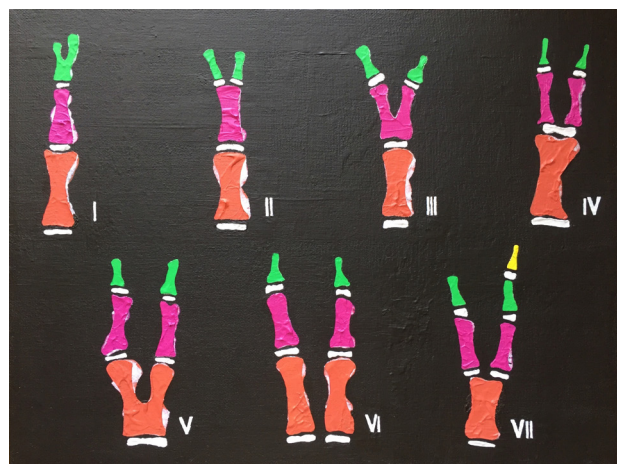


Figure 2: A stencil-painted reinterpretation of Wassel's 1969 thumb duplication classification.



Figure 3: Detail of colour coding in a Wassel VII duplication, highlighting the level of duplication.

reconstruction(s) may be equally “imperfect,” but the reconstructive surgeon must balance a reasonable threshold of time and risk management with aesthetic and functional outcomes.

An Addendum on Perfection(ism)

Importantly, while imperfection is a motif, perfection is at its root, a construct—constructed in the minds of the surgeon and the patient. Their respective constructs can be similar or dissimilar from one another. However, attaining perfection is relative to one’s expectations. If these expectations are realistic, perhaps perfection is attainable, relatively. Realism, of course, is also relative! It is relative to the surgeon’s abilities, to the state of the art of surgical techniques, to the available facilities and tools and operating rooms and staff, and (tautologically) to the immediate expectations of the patient. If expectations are not realistic, then both the surgeon and patient may be left dissatisfied, at minimum. Modulating expectations, even if it benefits the patient and surgeon (and hospital), is not always straightforward. Proper setting of expectations means ensuring the patient understands what is possible (likely and unlikely). Delivering and receiving this information requires patience and thoughtfulness, also at minimum.



Figure 4: Detail of paper residue (stencil edge artifact) and of re-painted edge (note black areas between bone and articular cartilage at MCPs of Wassel classes I and II).

Other than deepening my understanding of anatomy and anatomical variants, I did not think I was attached to a specific outcome when I began my painting, in terms of its appearance. This was until I experienced frustration when I “desquamated” the stencils, only to discover the paper residue. The feeling of frustration came as the outcome progressively failed to match the expectations of a vision I was in the process of refining. I had to reconcile my vision with the tangible reality (e.g. tools, techniques, abilities, materials). Through my failure to achieve my original specific reconstructive outcomes—crystallized by my awareness of the “defect”/residue— I learned about accepting “imperfection.” This may be a lesson that is learned not once, but more deeply with each failure.

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References

1. Wassel HD. The results of surgery for polydactyly of the thumb. *Clin Orthop and Rel Res.* 1969;64:175-93.