

# 2023 NEHS Annual Meeting Abstract Submission

COMPLETE

NEHS Vice President, Daniel Mastella, M.D., is currently accepting abstract submissions for presentation at our Annual Meeting on December 1, 2023.

This meeting will be held at the Sturbridge Host Hotel in Sturbridge, MA.

Therapists, NPs, and PAs are also encouraged to submit.

THE DEADLINE FOR SUBMISSION IS OCTOBER 15, 2023

RESIDENTS AND FELLOWS ONLY. Please indicate if you want your paper to be considered for the prestigious H.Kirk Watson, M.D. Founder's Award. The abstracts for award consideration will be presented in the morning and the award will be presented in the afternoon.

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## \* ABSTRACT TITLE

Preaxial Polydactyly Reconstruction in Adults: A Case Series

## \* Contact Person Name

Peter Laub

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**\* Name of who will present abstract at NEHS meeting on December 1, 2023 Please note that the same person cannot present more than one abstract at the meeting.**

Peter Laub

## \* Please indicate if the presenter is:

Fellow

**\* List full names of abstract authors Please note - one of the lead authors must be present at the meeting to answer questions about the paper.**

Peter J. Laub, MD and Felicity G. Fishman, MD

\* ABSTRACT - should include background information and a description of methods, programs, or practices.

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Please consider for H.Kirk Watson, M.D. Founder's Award

#### BACKGROUND:

Pre-axial polydactyly is typically addressed in children between of 3 months and 18 years of age.<sup>1,2</sup> Early treatment of this congenital hand difference is considered beneficial in order to benefit the development of fine motor skills, maximize remodeling potential and aesthetic outcomes.<sup>1-5</sup> Published literature on management of pre-axial polydactyly is generally limited to pediatric patients. Cultural beliefs, access to healthcare and parental preferences may preclude surgical treatment of pre-axial polydactyly in childhood.<sup>6</sup> It is rare to seek treatment for pre-axial polydactyly as an adult. We present three cases of surgical treatment for pre-axial polydactyly in adults.

#### METHODS:

We describe three adult patients with previously non-surgically treated pre-axial polydactyly who presented for discussion of potential operative management of their congenital hand difference at two institutions. Surgery was performed by a single fellowship-trained pediatric hand surgeon. Surgical approach was tailored to each patient based on their specific preaxial polydactyly type, functional and aesthetic goals. IRB or patient authorization for case study was obtained for patients at each respective institution.

#### RESULTS:

Patient age ranged from 19 to 57 years old and Wassel/Flatt type also spanned a range from type I to type IV (Table 1). All three patients were female, underwent surgery on their dominant hand and noted their major motivation for surgery was aesthetic. Other motivations for surgery were fingernail hygiene concerns and functional limitations. Preoperatively patients were counseled about possible stiffness, altered function of thumb and delayed healing. The type III Wassel thumb patient underwent radial phalanx deletion, ulnar phalanx translation with soft tissue rebalancing and Buck-Gramcko flap radial nail fold reconstruction (Figure 1). This patient complained of thumb weakness and stiffness at long term follow-up. The Type IV Wassel thumb patient underwent hypoplastic ulnar digit deletion, proximal phalanx osteotomy and reconstruction of UCL with deleted digit flexor tendon (Figure 2). This patient's angulation deformity was not fully corrected by surgery. The Type I patient underwent radial distal phalanx deletion, closing wedge osteotomy, UCL imbrication and FPL advancement. This patient's IPJ flexion was decreased after surgery. All patients underwent occupational therapy postoperatively and did not experience significant functional limitations subjectively once healed other than IPJ stiffness. Follow up ranged from 4 months to 14 months. No patient regretted pursuing surgery.

#### CONCLUSION:

Application of similar technical principles can be used for management of pre-axial polydactyly in adults and children. However, as adults lack the remodeling potential, functional plasticity and regenerative capabilities of children, they should be counseled pre-operatively about the risks of stiffness, altered function and, if present, persistent angulation. Thumb aesthetics was the major motivation for surgery and the functional limitations were minor.

#### TABLE AND FIGURES CAPTIONS

TABLE 1: Patient characteristics, surgical details and outcomes

FIGURE 1: 55-year-old female with Wassel/Flatt Type III thumb. A, preoperative clinical appearance. B, preoperative radiograph. C, Immediate post-operative appearance dorsal view. D, Intraoperative fluoroscopy after radial digit deletion demonstrating Kirschner wire holding remaining translated phalanx. E, Immediate post operative appearance lateral view. F, radiograph six months post-procedure.

FIGURE 2: 19-year-old female Wassel/Flatt Type IV thumb. A, preoperative clinical appearance. B, preoperative oblique radiograph. C, Immediate post-operative appearance. D, Intraoperative fluoroscopy after deletion of ulnar digit and wedge osteotomy demonstrating partial improvement of angulation deformity. E, Clinical appearance at four months. F, radiograph four months post-procedure.

FIGURE 3: 30-year-old female Wassel/Flatt type I thumb. A, preoperative clinical appearance. B, preoperative reverse oblique radiograph. C, Immediate post-operative appearance dorsal view. D, Intraoperative fluoroscopy after deletion of radial digit and closing wedge osteotomy demonstrating improvement of angulation deformity. E, Clinical appearance at four months. F, radiograph four months post-procedure.

#### BIBLIOGRAPHY

1. Miller R, Kaempfen A, Moledina J, Sivakumar B, Smith G, Nikkhah D. Correction of Thumb Duplication: A Systematic Review of Surgical Techniques. *J Hand Microsurg.* 2020;12(02):074-084. doi:10.1055/s-0039-1700445
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4. Goldfarb CA. Reconstruction of Radial Polydactyly. *Techniques in Hand & Upper Extremity Surgery.* 2006;10(4):265-270. doi:10.1097/01.bth.0000236988.88911.4b
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6. Thomas BP, Pallapati S. Congenital thumb differences- current concepts. *Journal of Clinical Orthopaedics and Trauma.* 2020;11(4):580-589. doi:10.1016/j.jcot.2020.06.018

**Please attach files with diagrams and/or photos to support your abstract (10 MB limit)**

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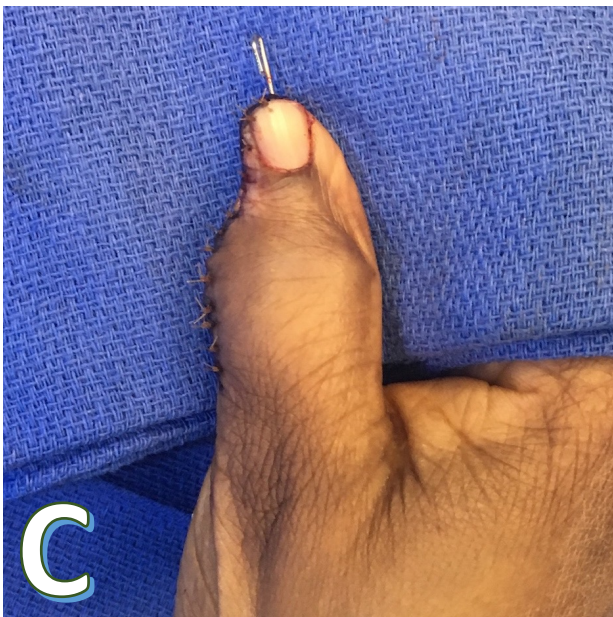
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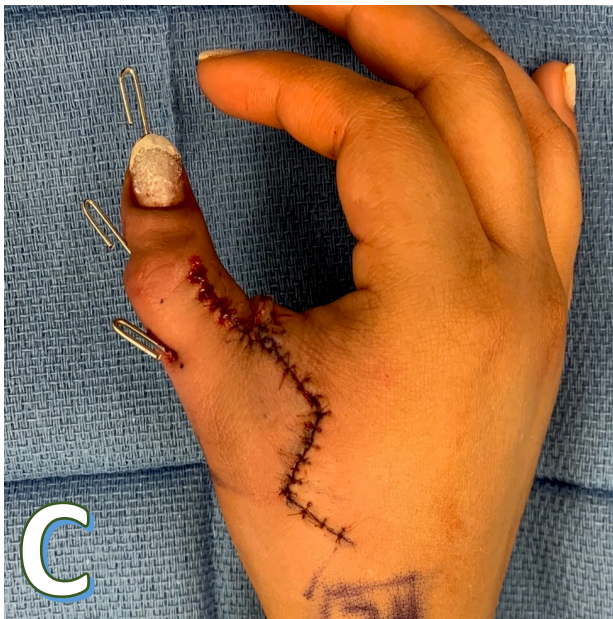
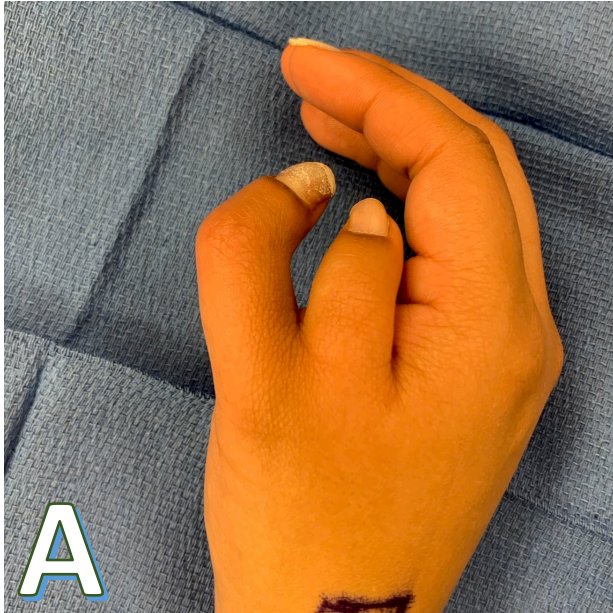
Table 1  
Patient characteristics, surgical details and outcomes

Case	Age	Sex	Motivation for surgery	Delay reason	Wassel/Flatt Type	Surgery	Post Op Course	Complaints/Complications	Follow up
1	57	F	Appearance skin maceration,	"Lucky thumb"	III	radial phalanx deletion, ulnar phalanx translation, soft tissue rebalancing, Buck-Gramcko nail fold flap	Pins removed at 6 weeks OT 6 weeks	Radial sided sensitivity (resolved) bulkiness (resolved) key pinch strength decreased IPJ stiffness	14 months
2	19	F	Appearance, functional limitation	Parental preference	IV	Ulnar deletion, wedge osteotomy, UCL reconstruction	Pins removed at 7 weeks.	webspace tightness (resolved) Persistent angulation	4 months
3	30	F	Appearance, painful to trim nails	No referral at birth to hand specialist	I	radial digit deletion, closing wedge osteotomy.	Pins removed at 5 weeks OT 12 weeks	IPJ stiffness	4 months

**FIGURE 1: 55-year-old female with Wassel/Flatt Type III thumb.**



**FIGURE 2:** 19-year-old female Wassel/Flatt Type IV thumb



**FIGURE 3:** 30-year-old female Wassel/Flatt type I thumb

