
CONGENITAL HAND SURGERY

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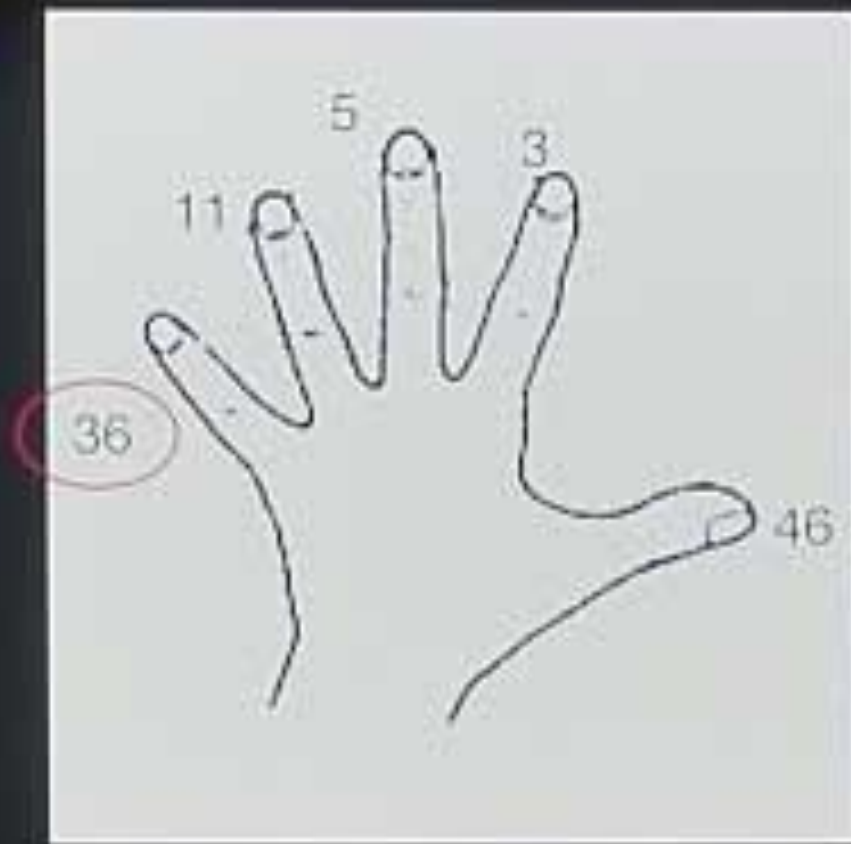
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POLYDACTYLY

PEDIATRIC HAND SURGERY



Polydactyly

POST-AXIAL POLYDACTYLY

- **Marked racial variation**
- **Black: White 10:1**
- **~ 1 in 3000 Caucasians or Asians**
- **Autosomal Dominant in Black Families**

**In Caucasians, should be treated as
a “red flag”**

- **Renal abnormalities**
- **Cardiac abnormalities**
- **Ocular abnormalities**
- **Mental deficits**

Treatment

Very narrow stalk, some consider ligation

Neuroma formation

Hemorrhage

Persistent nubbin

Operative Excision

Direct ligation of artery

PRE-AXIAL POLYDACTYLY

THUMB DUPLICATION

Wassel Classification

- Type 1 through Type 5
- Even Numbers involve joints
- Exploration is mandatory to establish the course of tendons and nerves
- Attempt to preserve ulnar collateral ligament (UCL) of MCP joint
- In general, will delete radial thumb

CENTRAL POLYDACTYLY

BRACHYDACTYLY

Poland's Syndrome

PEDIATRIC HAND SURGERY



RADIAL COLUMN ANOMALIES
(Pre-Axial)

**Congenital
Trigger
Thumb**

**Congenital
Clasped
Thumb**

Hypoplastic

Thumb

Blauth Classification

- Class I – slightly small thumb
 - Class II – muscle hypoplasia
 - Class III a – thenar muscle hypoplasia/aplasia, stable basal joint
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- Class III b – unstable basal joint
 - Class IV – “pouce flottant”
 - Class V – absence

Radial Club Hand

Radial Club Hand

- 1 in 50,000 births
- Slightly more common in males
- Slightly more common in Caucasians
- Thumb is always hypoplastic or absent
- Many associated syndromes

Radial Club Hand

- Type I - Short distal radius
- Type II - Hypoplastic radius -
“Radius in Miniature”
- Type III - Partial absence of radius
- Type IV - Total absence of radius -
Most common type

Treatment

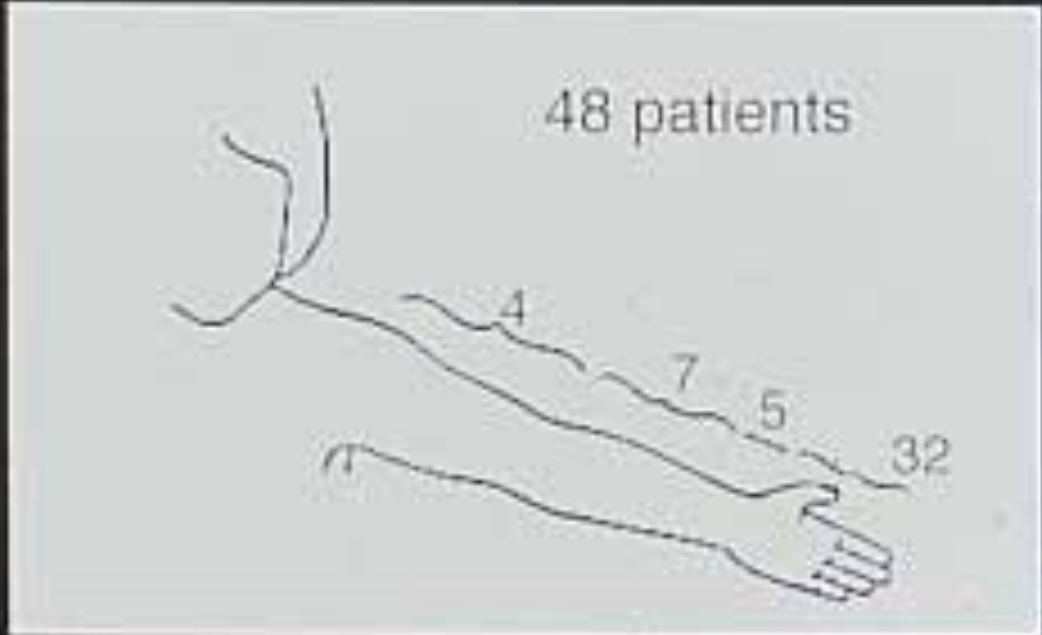
- Centralization
- Ulnar Implantation
- Radialization

All require resection or release of ulnar fibrous anlage & extensive soft tissue reconstruction

Median Nerve

Distraction Lengthening

Constriction Ring Syndrome



Constriction Ring

Flatt et al

PEDIATRIC HAND SURGERY



Constriction Ring

PEDIATRIC HAND SURGERY



***Proximal
Involvement***

Ulnar Club Hand

Ulnar Club Hand

- Type I - Shortened ulna
- Type II - Distal ulna absent,
but anlage present
- most common type
- Type III - Complete absence of ulna
- Type IV - Proximal radius fused
to ulna

Treatment

- Treatment for forearm instability
- Resection of ulna anlage,
if possible
- Single bone forearm

Ulnar Club Hand

- ~ 1 in 250,000 births
- Slightly more common in males
- 25% bilateral
- Only common associated syndrome is Cornelia de Lange Syndrome

“Cleft” Hand

“Typical” Cleft Hand

Surgical Management

By Resection of Third Ray,

Digital Transposition,

and

Straight Forward Closure of Cleft

or

Flap Transposition Technique

“Typical” Cleft Hand

PEDIATRIC HAND SURGERY



Carpal Tunnel Syndrome

***Vascular Malformations,
Hemangiomas,
Lymphangiomas***

Apert's Syndrome