CONGENITAL HAND

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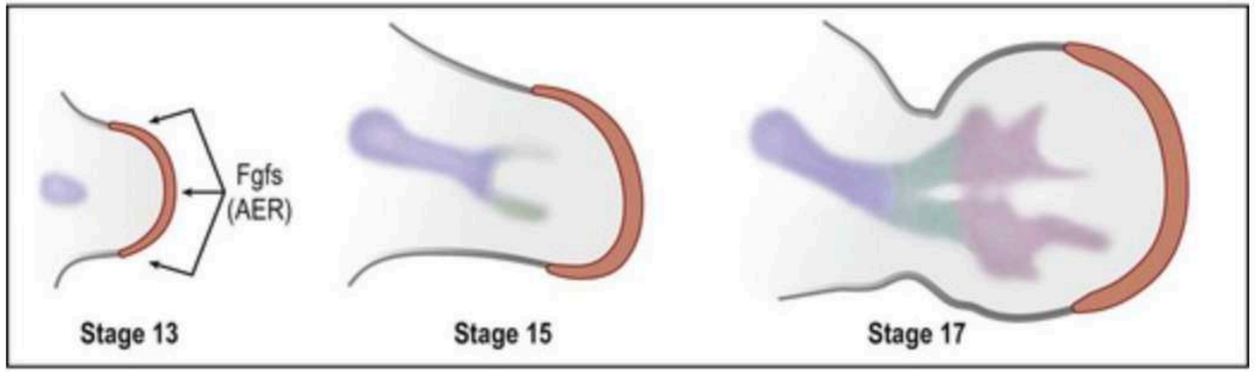
4th - 7th week

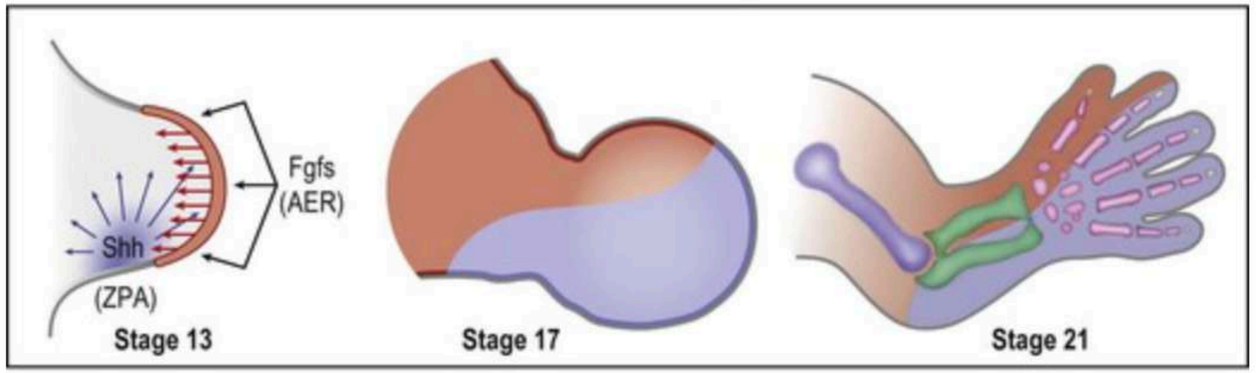
Timetable of hand development

- Onset of development of arm bud - **27 days** 4th week
- Well-developed arm bud - **28-30 days**
- Elongation of arm bud - **34-36 days** 5th week
- Formation of hand paddle - **34-38 days**
- Onset of finger separation - **38-40 days**
- Full separation of fingers - **50-52 days** 7th week

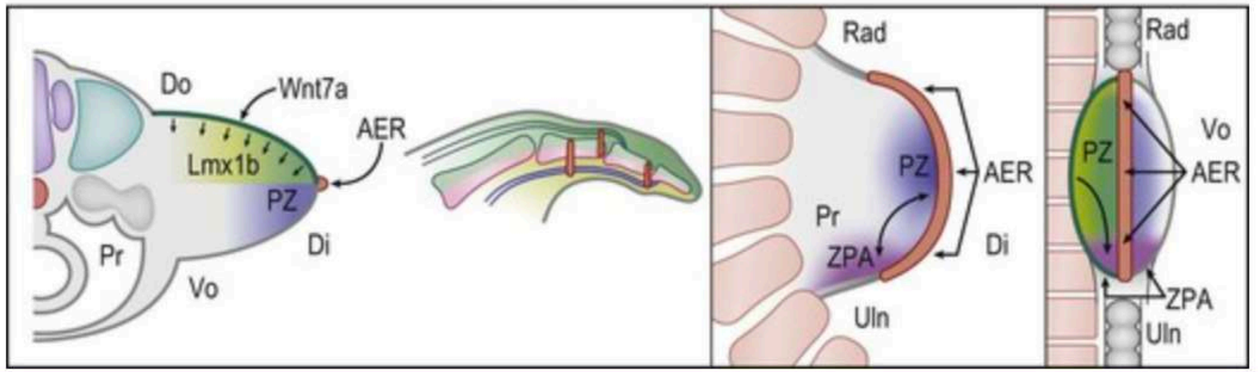
Proximodistal asymmetry



Radioulnar asymmetry



Dorsovolar asymmetry



SWANSON Classification

Type	Description
I	Failure of formation
II	Failure of differentiation
III	Duplication
IV	Overgrowth
V	Undergrowth
VI	Constriction band syndromes
VII	Generalized anomalies and syndromes

Classification of congenital hand deformities (IFSSH).

Malformations	
Failure of axis formation/differentiation: entire upper limb	
Proximal-distal outgrowth	Brachymelia with brachydactyly
	Symbrachydactyly
	Transverse deficiency
	Intersegmental deficiency
Radial-ulnar (anteroposterior) axis	Radial longitudinal deficiency
	Ulnar longitudinal deficiency
	Ulnar dimelia
	Radioulnar synostosis
	Humero-radial synostosis
Dorsal-ventral axis	Nail-patella syndrome

Failure of axis formation/differentiation: handplate	
Radial-ulnar (anteroposterior) axis	Radial polydactyly
	Triphalangeal thumb
	Ulnar polydactyly
Dorsal-ventral axis	Dorsal dimelia (palmar nail)
	Hypoplastic/aplastic nail

Failure of handplate formation/differentiation: unspecified axis	
Soft tissue	Syndactyly
	Camptodactyly
Skeletal deficiency	Brachydactyly
	Clinodactyly
	Kirner's deformity
	Metacarpal and carpal synostoses
Complex	Cleft hand
	Synpolydactyly
	Apert hand

Deformations
Constriction ring sequence
Arthrogryposis
Trigger digits
Not otherwise specified
Dysplasias
Hypertrophy
Macrodactyly
Upper limb
Upper limb and macrodactyly
Tumorous conditions

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OMT classification: Oberg, Manske, Tonkin (OMT) classification.

Syndromes associated:

VACTERL

TAR

FANCONI

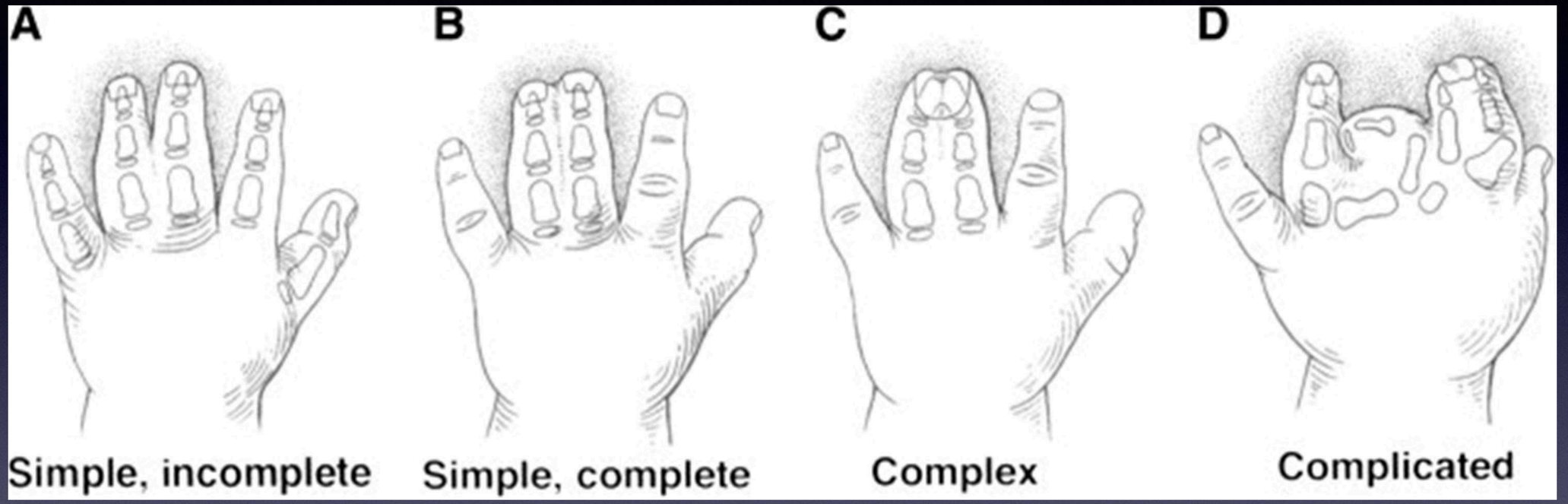
Holt - Oram

Poland syndrome

Apert syndrome

SYNDACTYLY

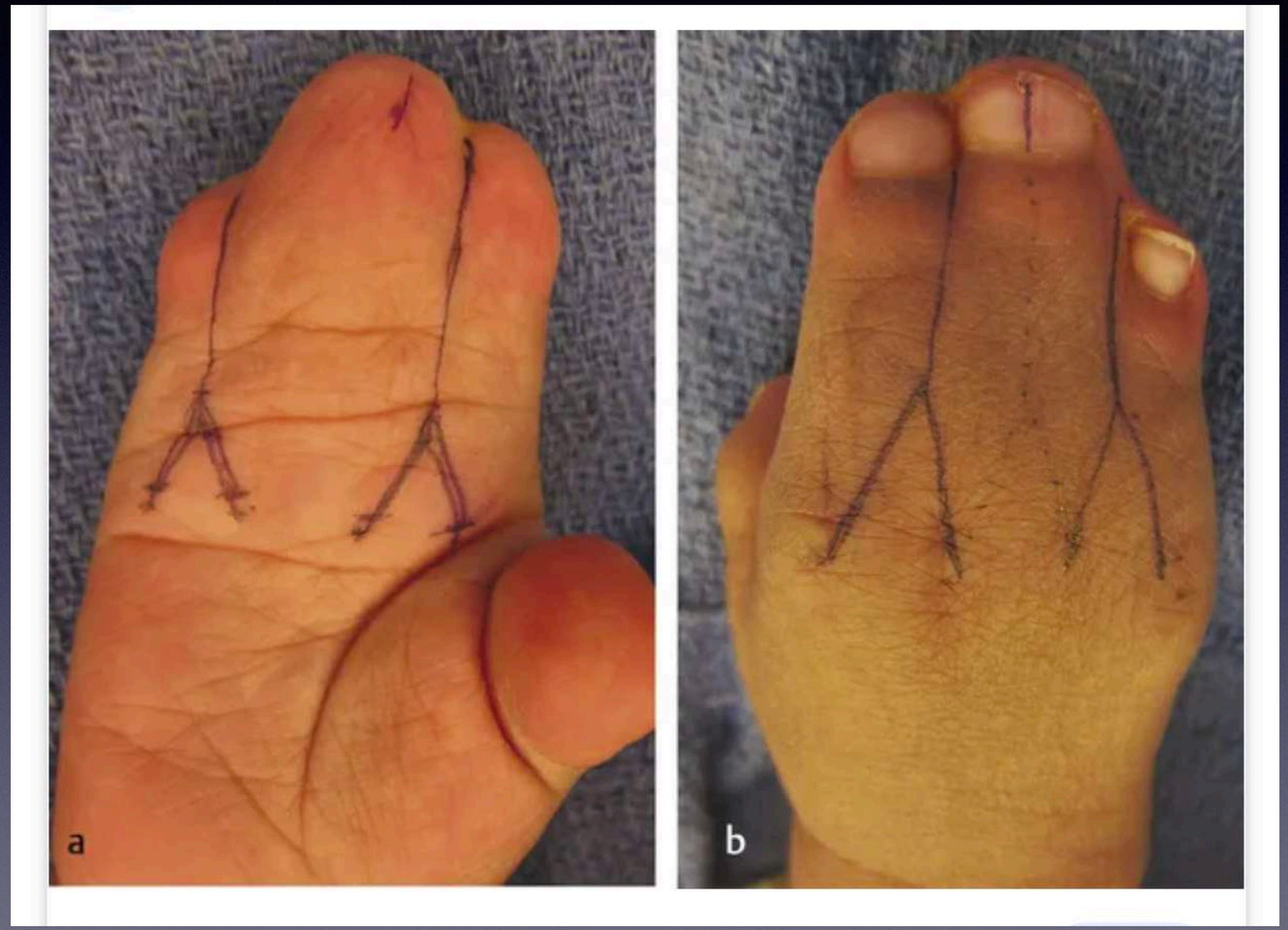
- Most common
- Failure of apoptosis
- 1 in 2000, M>F
- Familial in 15-40%, autosomal dominant
- Commonest Mid-Ring in 50%
- Associated with other syndromes
- Surgery 12 - 18 months



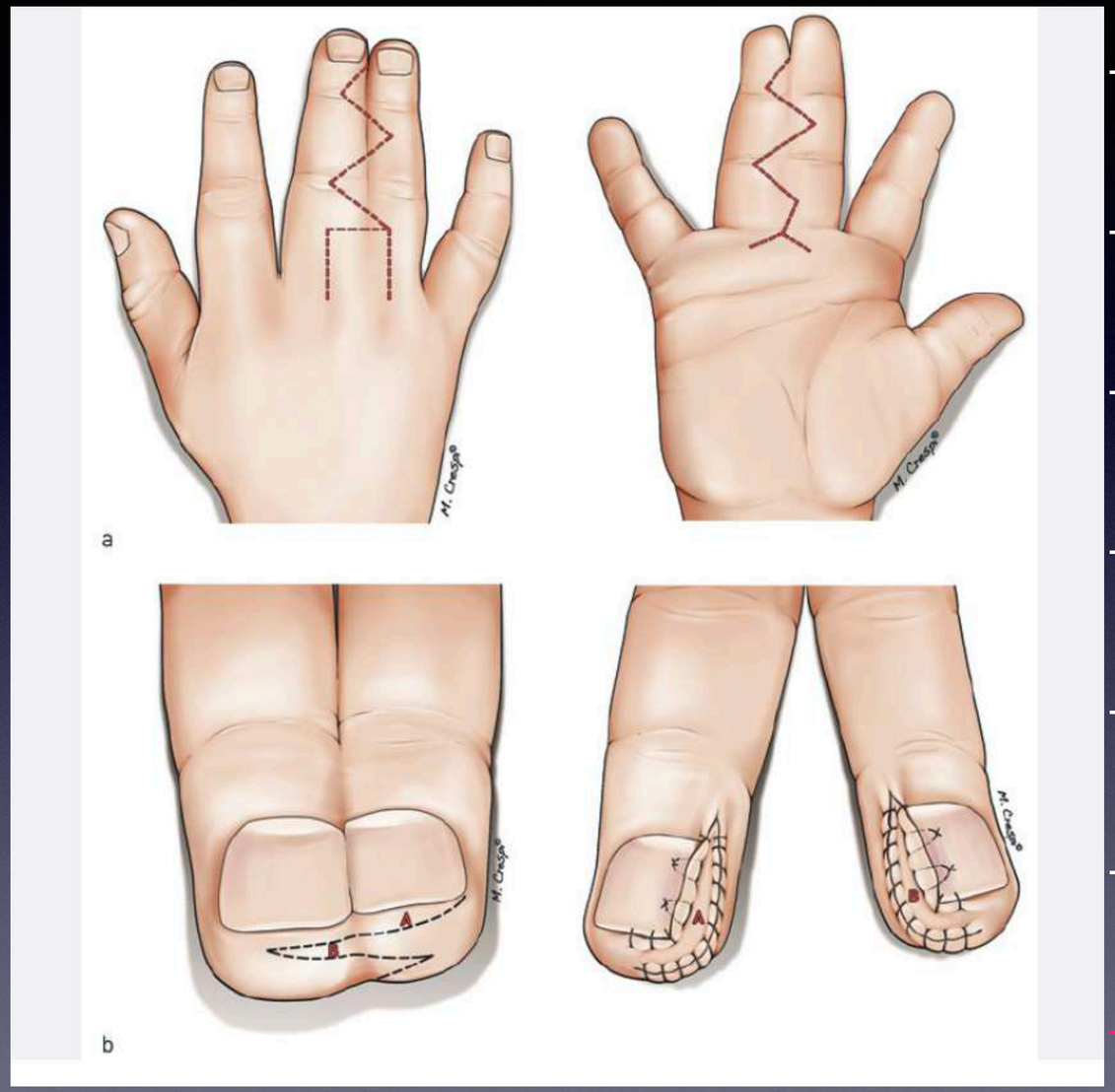
Principles of surgical release:

- Staged release in case of multiple
- Protection of NV bundle
- Soft tissue and bony release
- Web creation
- Treat lateral soft tissue defects
- Creation of nail folds

Q. How to manage multiple fingers?



- 2 staged release
- Lateral digits first
- Not to do all adjacent ones together
- Release those with differential growth first
- 6 months gap between 2 stages
- Release all before school



- Dorsal truncated flap
- Volar anchor/ triangular flap
- Zigzag flaps
- Buck Gramcko flaps for nail beds
- FTSG
- Most common Cx:
- Web creep

Difference between syndactyly & symphalangism?

Symphalangism

- Longitudinal fusion of phalanges

- same finger

- PIP joint - Mx is conservative

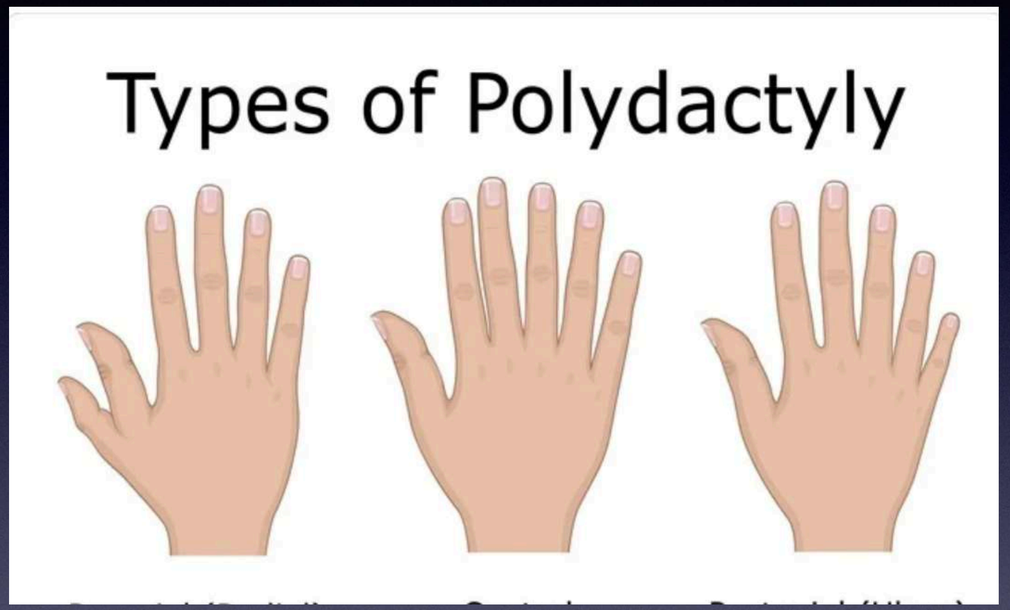
SYNOSTOSIS:

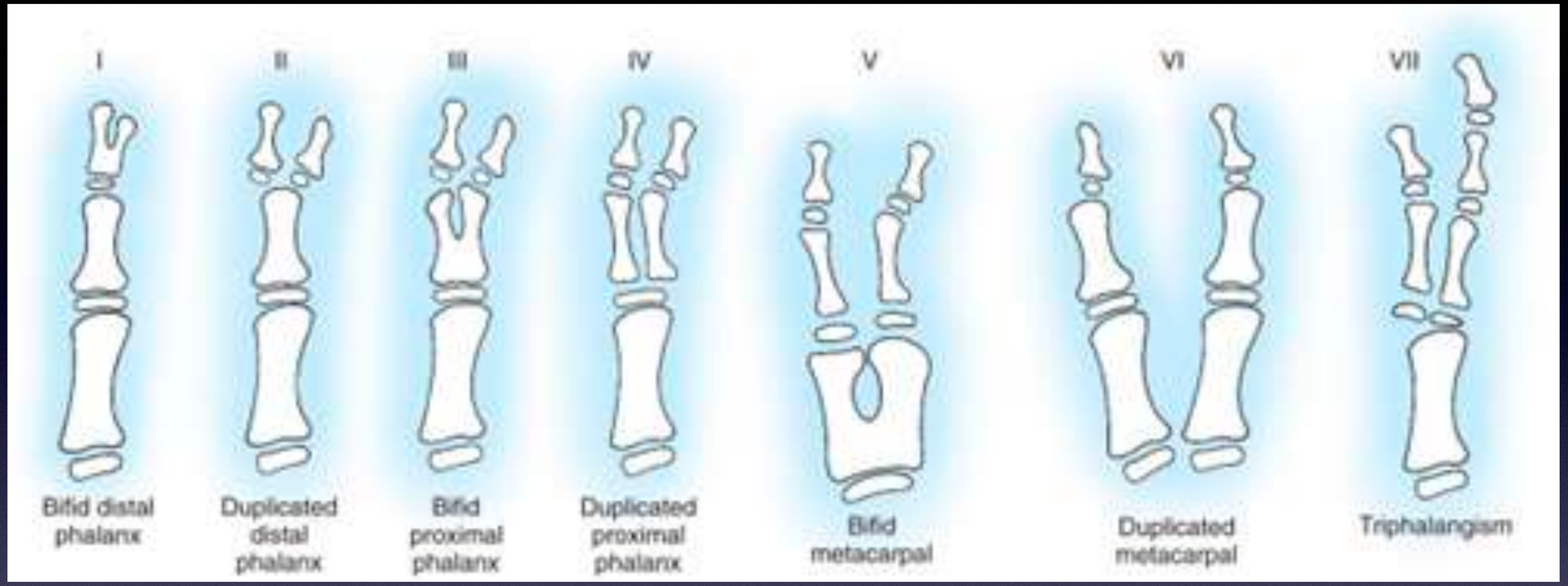
- Metacarpal : common 4th, 5th digit
- Carpal : Conservative
- Radio ulnar :
- Present at > 3 years of age
- Excess pronation
- Compensatory movements at wrist and shoulder

POLYDACTYLY

2nd most common

- Preaxial/ Radial (thumb)
- Postaxial/ Ulnar
- (little finger)
- Central





WASSEL

Type 4 commonest - duplicated proximal phalanx

Principles or repair:

- Use most of both
- Balance the soft tissue
- Repair collateral ligament
- Reinsert tendons
- Create sufficient web space
- Cover all articular surfaces

MIRROR HAND / ULNAR DIMELIA

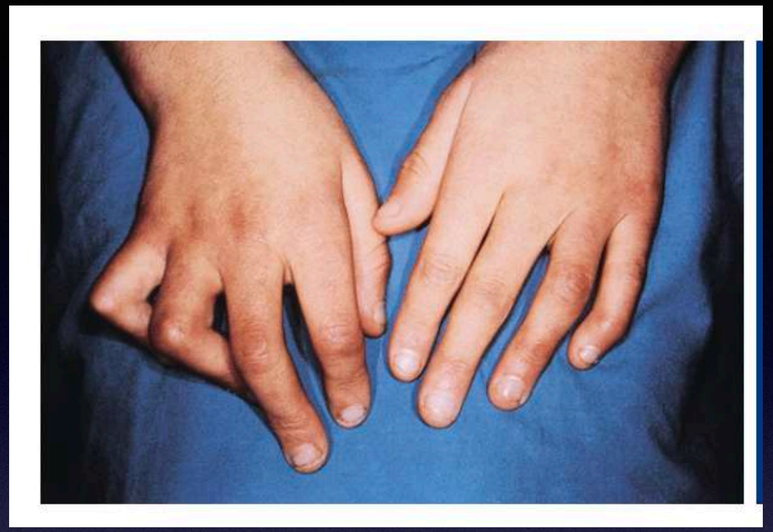
- -Very rare
- Absence of radial post
- Duplication of ulnar side
- Removal of extra digits
- Creation of web space
- Use the best finger to make a thumb

TRIPHALANGISM

- Appears as a 5 fingered hand
- Extra phalanx in thumb
- Extra middle phalanx - DELTA phalanx
- Both IPJ are mobile
- MP unstable, CMC hypoplastic
- Mx - Web space, pollicisation, delta phalanx

CAMPTODACTYLY

- Contracture in PIP in antero-posterior direction
- Little finger
- Splint at birth
- Release of volar tissues



CLINODACTYLY

- Abnormal curvature in
- radio-ulnar plane
- Little finger
- Downs syndrome
- Close/open wedge osteotomy

THANK YOU!

Linkedin – Dr.Priyanka Sharma

Instagram – drps_plastics

Youtube – DrPS