Pollicization

Frontiers in Upper Extremity Surgery
November 5, 2016
Tampa, Florida

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1974 Japanese Baseball

Leaders and Award Winners

Home Runs
Kosuke Tabuchi, Tigers – 43
John Sapi, Whales – 34
Gail Hopkins, Carp – 33
Sadaharu Oh, Giants – 33
Koji Yamamoto, Carp – 30

Runs Batted In
Sadaharu Oh, Giants – 96
Gail Hopkins, Carp – 91
Kosuke Tabuchi, Tigers – 90
Koji Yamamoto, Carp – 94
Makoto Matsumura, Whales – 83
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Characteristics of the Hypoplastic Thumb

- Small or absent
- Thumb Adduction / Narrow First Web
- Unstable MP joint
- Absent Intrinsic Muscles
- Ineffective Extrinsic Muscle Excursion
- Metacarpal Hypoplasia

Modified Blauth Classification

- Type I
- Type II
- Type III A
- Thumb Basilar Joint Stability
- Type III B
- Type IV
- Type V
  - Reconstruct
  - Ablate
  - & Pollicization
Pollicization Indications

- Type III B
- Type IV
- Type V

The boundary is imprecise

- Some Type III A thumbs are best deleted and pollicize index
- Some Type III B thumbs may be reconstructed
- Consider bilateral pollicization with asymmetric types

Size Matters

- If Thumb is bigger than Small Finger - reconstruct
- If Thumb is smaller than Small Finger - delete and pollicize
The goal of pollicization is different in different hands

- Absent thumb with normal hand and forearm
  - Goal = small and large object prehension
- Absent thumb with radial dysplasia
  - Goal = large object prehension

Indications

- Some Radial Deficient hands are so dysplastic that pollicization won’t augment function

Timing

- Dieter Buck-Gramcko
  - As early as possible to facilitate functional integration
- Paul Manske
  - Doesn’t seem to matter
Timing - Wait until child is in optimal health

- VATER/VACTERAL
  - may have recurrent pneumonia secondary to TE Fistula
  - may require cardiac surgery
- Holt-Oram - cardiac issues
- Fanconi Anemia
  - if delayed the child may require pre-op bone marrow transplant

Timing

Thumb hypoplasia without radial dysplasia

- When family is comfortable with decision
- When surgeon is comfortable with plan
- After child’s first birthday

How do you overcome family’s understandable reluctance to ablate & pollicize?

- Meet other patients and talk to other parents
- Observe patterns of use
  - Index-Middle Prehension
  - Ring-Small Prehension
- Urge decision before school age
- Urge family not to defer decision so child can decide
Timing of Pollicization in Radial Dysplasia
- After centralization has corrected severe radial deviation
- When radial prehension has been facilitated

Index Pollicization
- Skin incision
- Neurovascular dissection
- Skeletal reorganization
- Musculoskeletal revision

Skin Incision
- Expose anatomic structures
- Create flap surfaced first web space
Musculotendinous Revision

Tailor Skin Flaps & Close

Early Extensor Posture
Post Operative Care

- Week 1
  - Dressing without circular plaster
- Weeks 2-6
  - Thermoplastic splint
- 6 Weeks
  - Activity ad lib

Rehabilitation?
Spontaneous Use by 12 Weeks

Pre Operative Prehension Pattern Predicts Post Operative Function
Pollicization Quality
- Highly variable
- Related to preoperative index finger quality
- May be improved by secondary procedures

Pollicization Function
- Large object grasp & Cylindrical grip improved
- Pinch patterns parallel pre-operative function
  - Index-middle
  - Ring-little
- Worse in radial deficient limbs

Secondary Procedures
- Opponensplasty
- Osteotomy
- Arthrodesis
- MC Head Epiphysiodesis
Vascular Complications

- Venous Congestion more common than Arterial Insufficiency
- Variable Arterial Supply
- Beware of “creative” tendon transfers

Shortcomings

- It’s not really a thumb, it is still a finger more conveniently situated
- Inadequate ADDUCTOR Pollicis Muscle Power

High Degree of Patient & Family Satisfaction