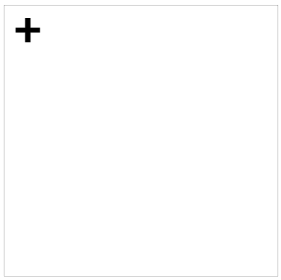


Splinting 202: Pediatric Splinting

Rebecca von der Heyde, PhD, OTR/L, CHT
Concordia University Wisconsin

Acknowledgements

GUATEMALA HEALING HANDS FOUNDATION

- *Photos courtesy of Lynn Bassini*

Objectives

1. Children who need splints
2. Common issues and solutions in pediatric splinting
3. Function versus protection

Basic premises
(Armstrong, 2005)

- Pediatric splints are not just "little" adult splints
- Consider problems AND strengths
  - Do not eliminate strengths in finding a solution
- Wearing schedules that facilitate functional use

Basic premises
(Armstrong, 2005)

- Monitor compensatory function in children who have been affected since birth
  - Lateral pinch to compensate for palmar abduction/opposition
  - Weight of splints that may limit movement of the upper extremity
- Skin integrity and monitoring
  - Growth rate
  - Activity level

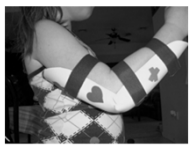
Children who need splints

High tone: Resting hand splint

- Cerebral palsy or similar neurological infarct
- Prevent or decrease contracture formation
- Sub-maximal range at wrist to decrease risk of skin breakdown and facilitate digital extension
- Partial radial abduction for children with thenar tone

Moderate tone: Elbow splint

- Used to maintain elbow extension in children with flexor synergy pattern
- Can be volar or dorsal
  - Based on severity of tone and responsiveness to inhibitory techniques
- 2/3 proximal - 2/3 distal to the elbow
  - Maximizes distribution of force and pressure



Mild to moderate tone: Weight-bearing splint

- Cerebral palsy or similar neurological infarct
- Requires passive wrist extension
- Weight is born through the heel of the hand to facilitate proximal control and weight bearing activities

Mild to moderate tone: Thumb splints

- "Thumb in palm"
  - Increased tone pulls thumb into palmar adduction
- In mild cases, typically observed with active thumb and finger extension
- In moderate to severe cases, may need to include a thermoplastic base

Decreased hand function: Wrist splint

- Improves distal digital function through wrist stabilization
- Volar design may more effectively control wrist flexion
- Dorsal approach allows more palmar sensibility
- Can be modified to include a finger pointer or provide additional stability to distal joints

Congenital hand differences: Apert's syndrome

Syndactyly release/reconstruction: Web spacer splint

Evidence for specific diagnoses

Trigger finger

Shiozawa et al., 2012

- Retrospective study of 47 fingers in 24 children
  - Mean age 2 years (range 1 month to 9 years)
- 24 fingers with static splint
- 23 fingers without splint

Trigger finger

Shiozawa et al., 2012

24 fingers with static splint
- 67% resolved, 17% improved, 17% unchanged
- 29% ultimately required surgery

23 fingers without splint
- 30% resolved, 4% improved, 65% unchanged
- 65% required surgery

Significant difference in those fingers treated with static splinting

Wrist fractures

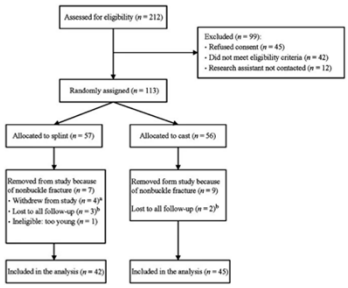
Plint et al. (2006)

- Randomized control trial
  - 113 children with distal radius and/or ulna buckle fractures presenting to the ER
  - Randomized to cast group or splint group
  - Splint made of 12 plaster layers and attached with a bandage
    - Patients instructed to wear for comfort, remove for activities as desired, and discontinue as desired
- Dependent variables of pain and physical function
  - Visual analog scale
  - Activities Scales for Kids, performance version (ASKp)

Wrist fractures

Plint et al. (2006)

- Randomly assigned: 113
- Completed study: 87
- 23% drop-out rate



Wrist fractures

Plint et al. (2006)

- No significant differences in pain
- No re-fractures
- Significant difference in physical function in splint group at day 14
- Significant change from baseline in splint group at days 14 and 20
- No significant differences between groups or in change from baseline in either group at day 28
  - Casts removed at 3 weeks
  - Do splints help children "get better faster"?

Common issues and solutions in pediatric splinting

Presence of primitive reflexes

- Presence of primitive reflexes
  - Monitor position of head with ATNR
  - Same side = extension
  - Opposite side = flexion

My material is a MESS!

- High tone
  - Rigid material with low drape
    - Allows a "heavy hand" against tone
    - Resists fingerprinting
  - Moderate memory
    - Second (and third) chances at proper fit
- Perceived difficulty in fabrication
  - Consider a "pinch and pop" technique
    - Rubber/elastic based materials
    - Material stays in place
    - Therapist focus on position

Limited willingness or ability to comply: DURING

Increased tone

- Employ preparatory activities to decrease tone
- Ask for assistance
- Avoid toys in opposite hand due to tone "overflow"
- Frozen elastic band or wrap to speed process

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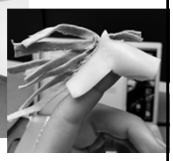
Limited willingness or ability to comply: AFTER



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Little Houdinis

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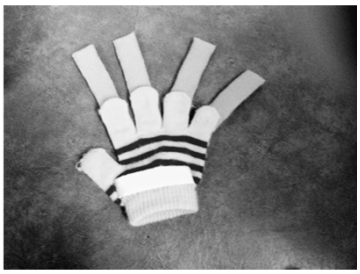
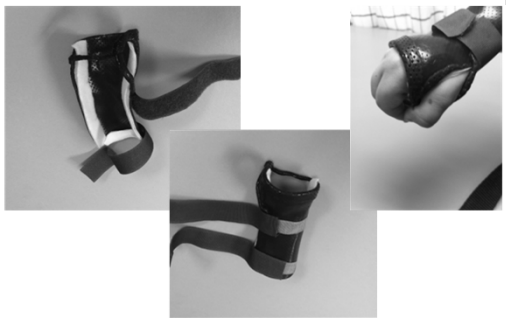
Little Houdinis

+ Finding the "right" fit



+ Function versus protection

+ Palmar sensibility



+ Facilitating grasp

+ "Soft" web spacing

+

Review

Basic premises
(Armstrong, 2005)

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- Skin integrity and monitoring

Objectives

1. Children who need splints
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Thank You!

Rebecca von der Heyde, PhD, OTR/L, CHT
rvdh04@gmail.com

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