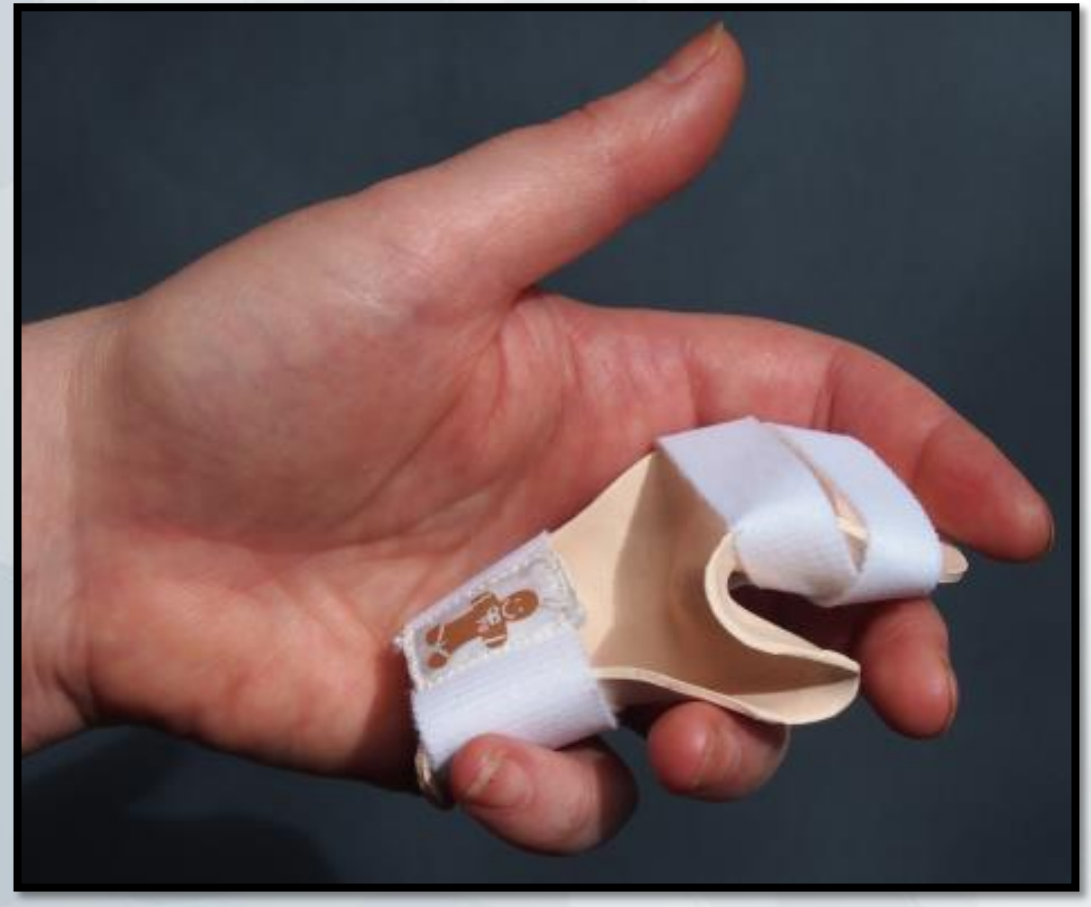
Splinting Little Hands



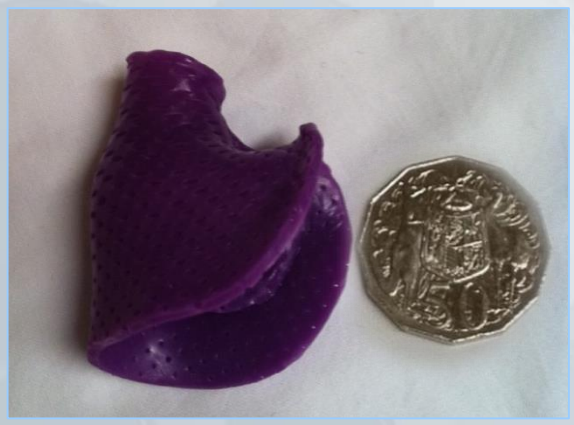
Occupational Therapy Department
The Royal Children's Hospital
Melbourne, 2014

Presentation outline

- Splint wearing schedules
- Splinting for hand contractures
- Assessment
- Considerations
- Splint design
- Securing splints
- Linings, skin care
- Useful materials

Splint wearing schedules - Improving hand function

- Apply splint for particular activities
- In older child used as an adjunct to retraining during therapy (such as after surgery, Botox or casting)



Splint wearing schedules - Managing contractures

<u>To prevent contracture</u>

- Continuous low-load stretch for several hours
- Reversal of imbalances or hypertonic posture
- Night splinting is appropriate

<u>To reduce contracture</u>

- Long periods of continuous low-load stretch – day and night
- Regular adjustment required as length is achieved
- Serial casting is appropriate

Splinting for congenital hand contractures

- Many deformities can be prevented or minimised by splinting

Timing and protocol

- As early as possible after birth
- Most successful correction before 4-6 months of age
- Rigid thermoplastic splinting (for existing contracture)
- Up to 20 hours daily; 4 hours movement*
- Frequent serial adjustment
- When resolved: 12 hours overnight to maintain

* It is important to balance the splinting regime with other developmental goals and fine motor milestones

Splinting for congenital hand contractures

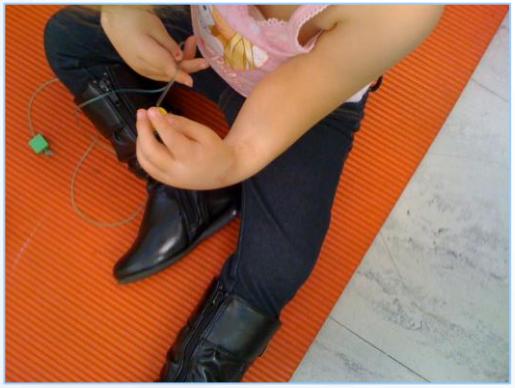
Advantages

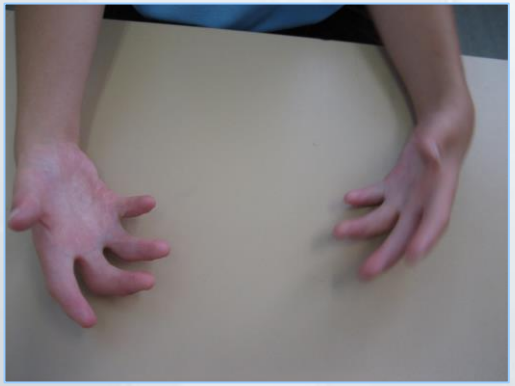
- More normal bone growth & joint formation
- Muscle strengthening with improved biomechanical advantage of weak muscles
- Clarification of absence or weakness of muscles which may require surgery
- Improved functional potential & use with developmental progression
- Avoidance of surgery or reduction in number of procedures

Splinting for congenital hand contractures

Responsive conditions include:

- Camptodactyly
- Clasp thumb
- Radial dysplasia
- Arthrogryposis





Assessment

Multiple interacting components to be analysed

- Passive movement limitations
- Active patterns of movement
- Weakness
- Sensation
- Pain
- If hypertonicity present - type and degree
- Hand function and performance

Considerations

- The pathology
- The small size
- The parents
- The child
- Infants – splinting easier when asleep or recently fed
- Babies to 3 years - splinting easier with distraction & parent involvement
- 3 years and over - splinting easier with explanation, responsibility and choices

Splint design

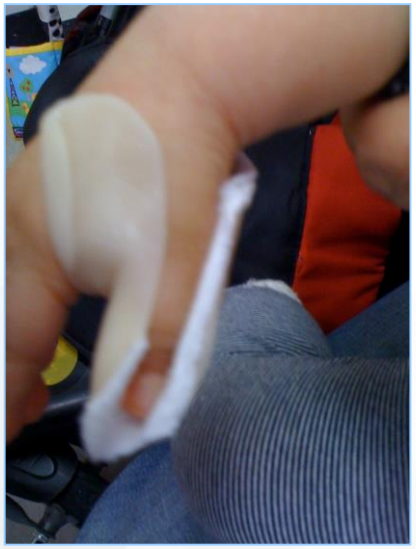
- The art of compromise
- Lateral thinking
- Minimal stiffness

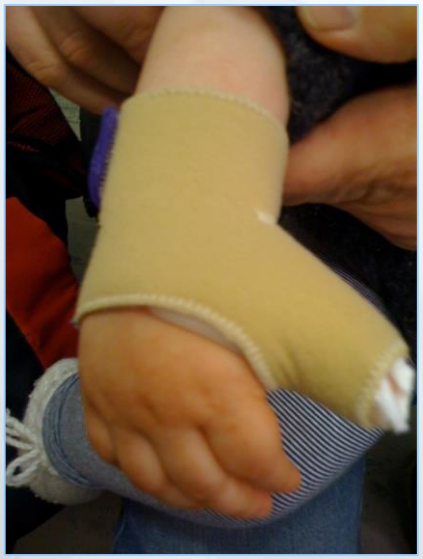
Splint design

- Lightweight for small hand
- Ability of material to contour
- Memory for serial molding if needed
- Rigidity for weight bearing if needed
- Easy application for parents
- Firm contouring strapping to prevent slipping & removal
- Avoidance of perforated material where possible
- Consider if child is mouthing – do not use small splints or material that may be swallowed

Securing splints

- Velcro alternatives
- Velfoam
- Nu-Stim (conforms, non slip)
- Adhesive dressing tapes
- Bandages
- If the child removes the splint, consider a tubigrip sling covering the entire arm or hide splint under clothing





Linings & care of skin

- Disposable adhesive liners
- Curash if not mouthing
- Nu-Stim lining

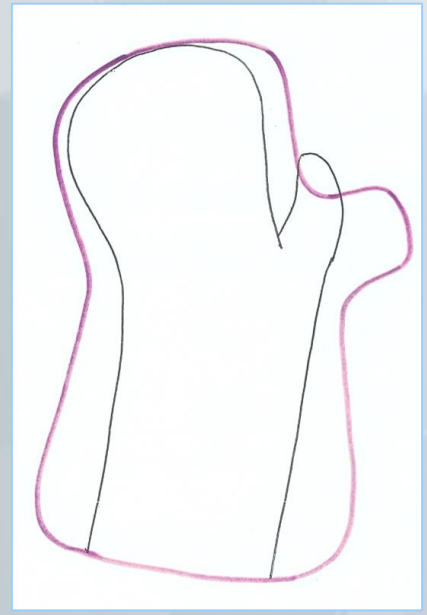
Silicone putties including Otoform K

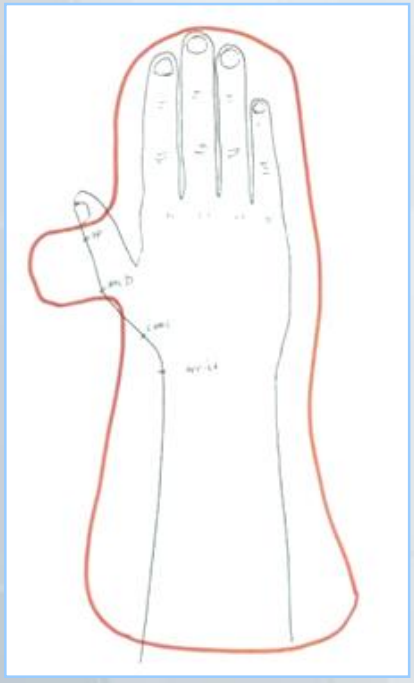
- can add rigidity if needed e.g. thumbs
- can improve alignment of fingers in finger pan

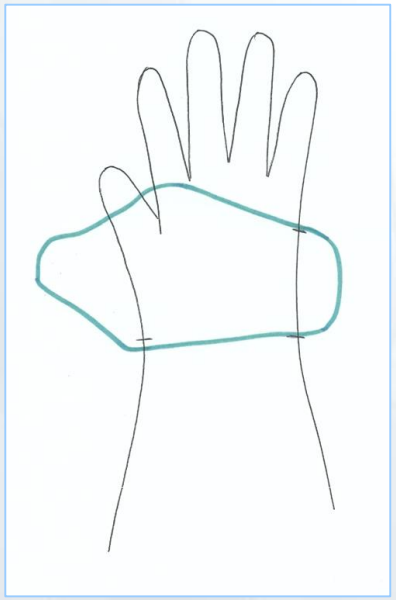
Saliva management

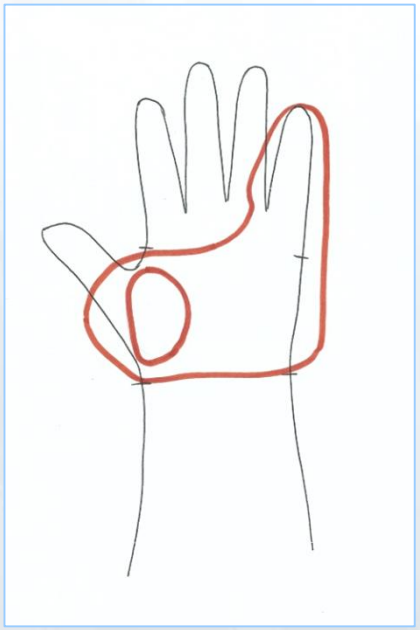
- Cover with mitten or sock if tolerated to discourage mouthing

Splint patterns



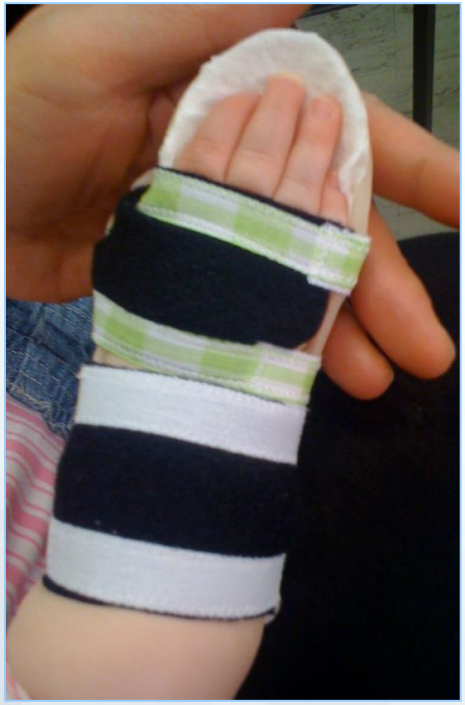






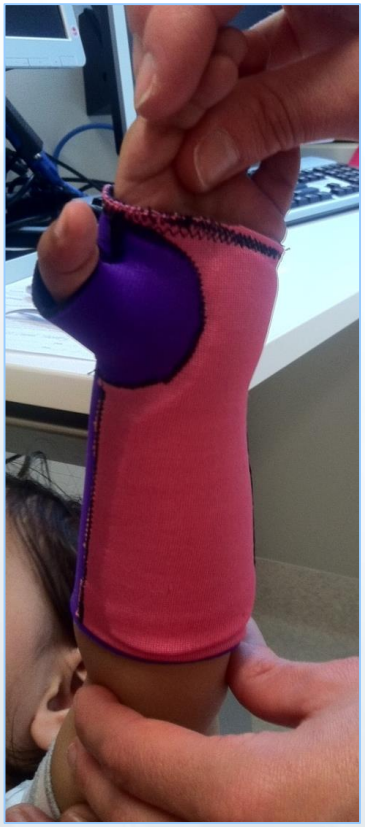
Useful materials

- Orfit 1.6mm or 2mm
- Nu-Stim for straps or splints
- Extra-thin Velcro



Useful materials

- Satin power lycra with Orfit insert



* See “How to make a neoprene gauntlet” video

Useful tapes

- Hypafix – low irritant, sticks well, may need adhesive dissolver. Be aware of unidirectional stretch and use to suit the situation:
  - Scar management/web spaces
  - Securing splints/over straps
- Micropore – inexpensive, easy to remove, good over straps as a foil for little fingers
- Leukosilk tape – more expensive, but low irritant and will re-adhere if necessary

Splints off!

- Ensure that babies and young children have lots of opportunities for play, exploration and weight - bearing through their hands without their splints, unless this is contra-indicated by their condition or recent surgery

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