





Texas Children's Hospital®

Baylor College of Medicine

Splinting and Casting

A Humerus Break From Primary Care

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Financial Disclosures

- None

Workshop Outline

- Splint vs Cast
- Principles of Splinting
- Types of Splints
- Compilations from Splints
- To refer or not to refer: ER or Clinic
- Patient education

Goals

- Know principles of splinting
- Know different types of splints
- How to apply a splint
- How to avoid errors in splint application
- Happy splint, Happy patient

Splint vs Cast

- First do no harm.
- A splint can always be made into a cast.
- Duration of treatment
  - Short term : splint
  - Long term : cast or splint

What do you think?

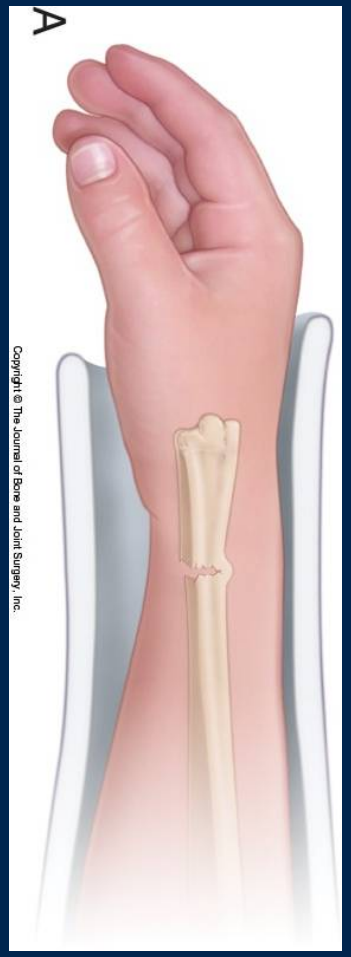
What do you think?

Indications for Splinting or Casting

- Fracture
- Sprain
- Post op
- Infection
- Acute inflammation

Principles of splinting

- Immobilize the joint above and below
- Padding – not too much, not too little
- Positioning – keep joints in functional position
- Well molded – if the splint don't fit you must acquit
- Hold splint until it fully cures
- Plaster – 10 layers thick for upper extremity
  15 layers for lower extremity

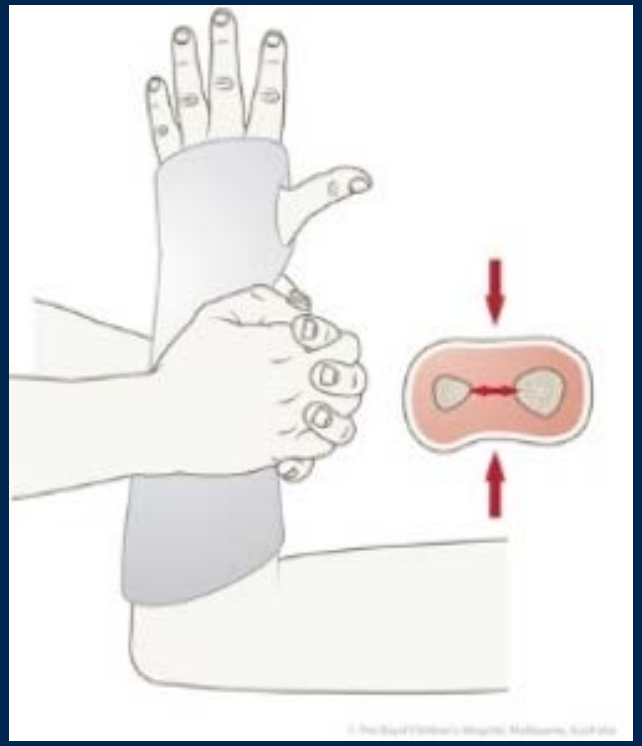


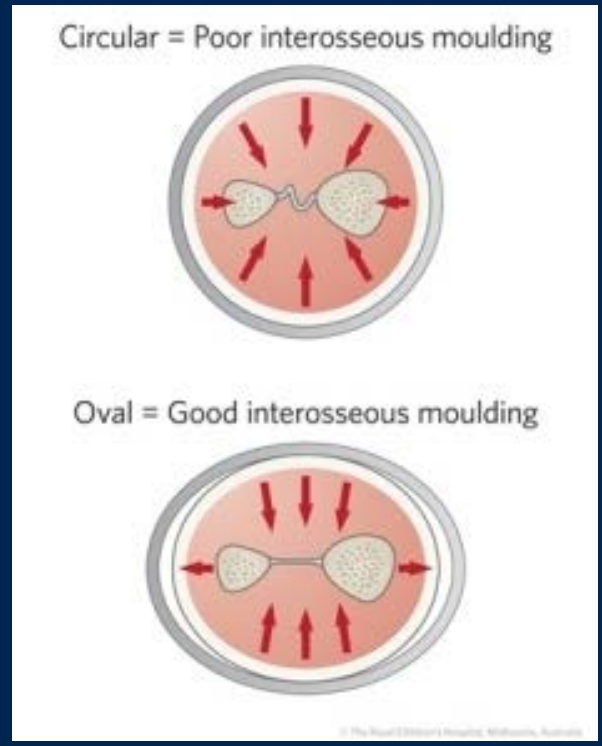
Bad Mold

Good Mold

Molding

- Interosseous Mold
  - Upper extremity fractures, especially **forearm,** and **distal radius/ulna**



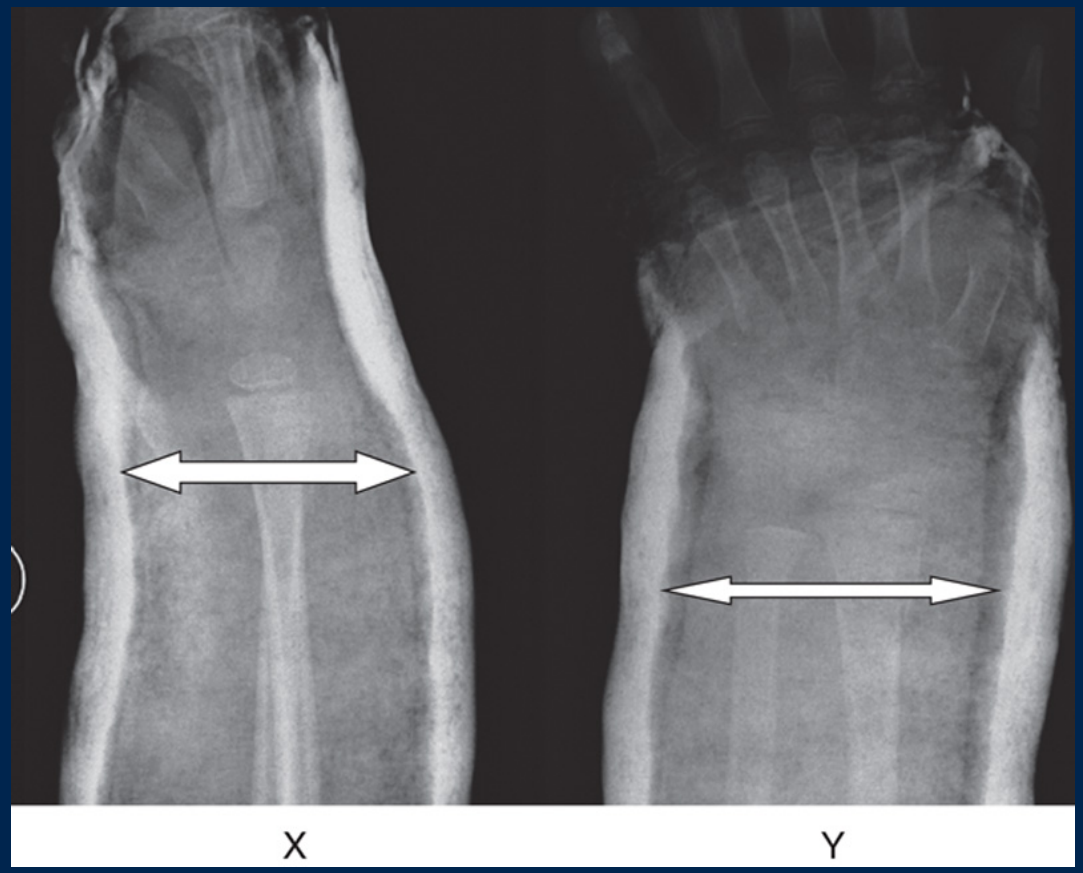


- Ideal Cast Index of <0.81 to prevent displacement

Cast Index

- Cast Index = X/Y
  - Sagittal width divided by coronal width.

- Ideal Cast Index of <0.81 to prevent displacement



Extremity Positioning

- Positioning is critical. Improperly positioned splints lead to poor outcomes.
- Upper Extremity
  - MCP joints: leave free if not location of injury.
  - Wrist: neutral to intrinsic plus
  - Elbow: 90 deg. Or slight extension
- Lower Extremity
  - Ankle: neutral dorsiflexion
  - Knee: Depends on weight bearing status
    Slight flexion to clear foot when in crutches.
    If NWB may flex up to 80-90 deg. in noncompliant patient.

Complications from splinting

- Blisters
- Ulcers
- Skin Breakdown
- Burns
- Skin Breakdown
- Ulcers
- Pressure Sores
- Compartment Syndrome

Skin breakdown

- Thumb prints
- Creases
- Lost objects
  - –Toys
  - –Scratchers
  - –Spoons

Complications

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Complications

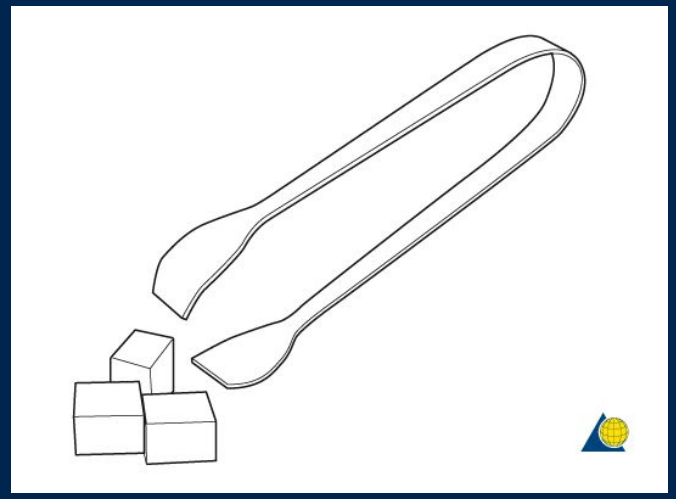
- Compartment Syndrome
  - Too tight
  - Swelling under circumferential dressing
    - Roll webril, cast padding, ace bandage, coban LOOSE
    - Bivalve all casts placed in acute settings

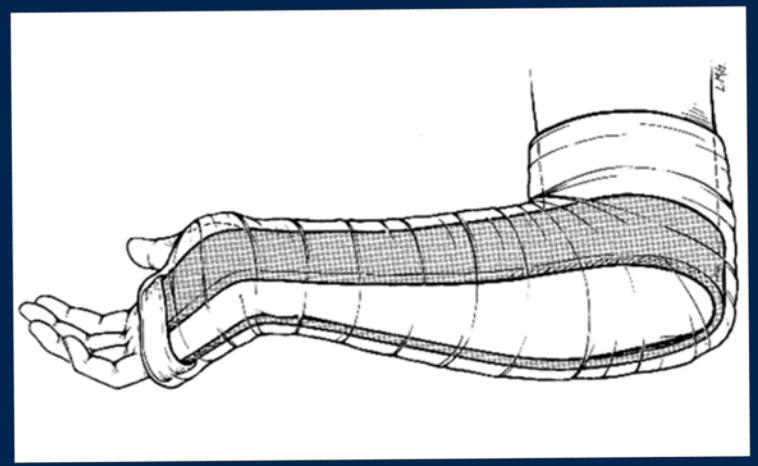
Types of splints

- Upper Extremity
  - Volar/Dorsal Slab
  - Sugar Tong
  - Thumb Spica
  - Long Arm Posterior slab
  - Coaptation
  - Ulnar Gutter
  - Radial Gutter
  - Finger Splilnt
- Lower Extremity
  - Posterior Slab
    - long or short
  - Stirrup / U Splint
    - Sugar tong of leg

Sugar Tong Splint

- Place stockinette
- Unroll Webril from palmar crease around elbow to dorsal Metacarpal heads
- 4-5 layers thick of Webril
- Measure length of plaster/ortho glass to an inch short of Webril
- 10 layers thick of plaster
- Wet plaster or ortho glass
- Lay plaster on Webril
- Place splint on arm
- Wrap with Webril
- Roll back stockinette
- Wrap with Ace bandage





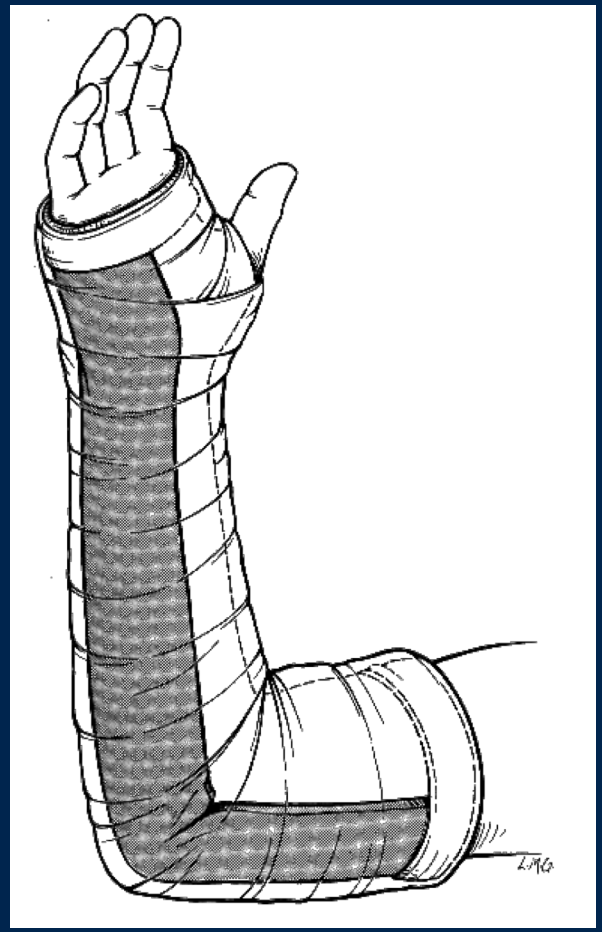
Long Arm Posterior Splint

Indications: Elbow, forearm, distal humerus injuries

Immobilizes elbow and wrist

Steps

- Place stockinette
- Measure Webril from 5th metacarpal head to a few inches below axilla
- 4-5 layers Webril
- Measure plaster/ ortho glass slightly shorter than Webril
- 10 layers plaster
- Wrist in neutral rotation
- Roll back stockinette
- Lay on and wrap with Webril and Ace bandage



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Patient education

- Don’t get the cast or splint wet.
- Don’t stick anything in the cast or splint.
- If it itches: Hair dryer on cool setting, Tap on cast
- Elevation of extremity to reduce swelling
- Signs and symptoms of compartment syndrome

Key indicators in the HPI

- Monkey Bars – Supracondylar Humerus, Lateral Condyle, Both bone forearm
- FOOSH – Distal Radius/Ulna, Buckle fractures, BBFA
- Trampoline – Proximal tibia, Toddler's Fracture
- Unwitnessed fall/injury - NAT
- Refusal to bear weight – Recent trauma? Illness? Transient synovitis, buckle fracture

When to refer

Emergency Room

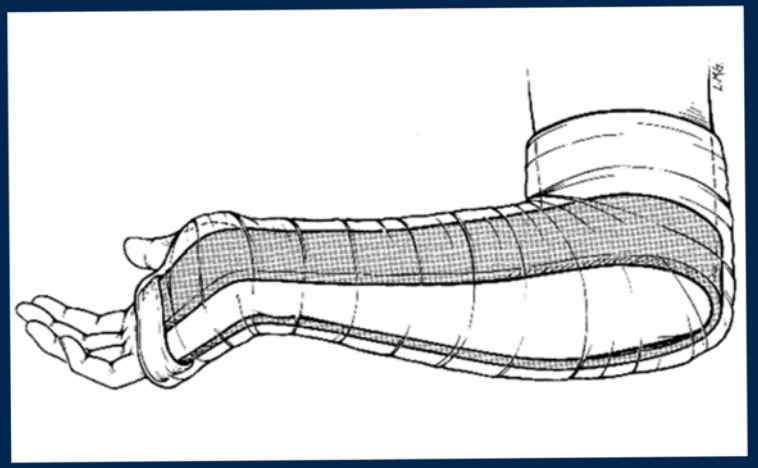
- Obvious deformity or Displaced fracture
- Functional deficit, nerve palsy
- Suspect compartment syndrome

Clinic

- Clavicle Fracture – sling and swathe, safety pin affected arm to clothes at 90 deg. flexion.
- Buckle Fracture – Velcro wrist brace
- Toddler's Fracture – initial x-ray can be negative. Positive exam = fracture until proven otherwise.
- Metatarsal/Toe – Hard sole shoe

All of this in one slide

- Cant go wrong with a Sugar Tong



Thank you, good night!