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?
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
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
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 Splint

- **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
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!