Casting & splinting workshop

Craig Young, MD
- Professor of Orthopaedic Surgery & Family Medicine

Yuka Kobayashi, DO
- Chief Resident, All Saints Family Medicine Residency

Medical College of Wisconsin
Conflict of interests disclosure

None
Goals

Briefly review background on casting & splinting

Practice making & removing
Short arm cast or gutter splint
Short leg cast or posterior splint
Healing time

Lower extremity
  Children 4-6 weeks; Adults 6-8 weeks

Upper extremity
  Children 3-4 weeks; Adults 4-6 weeks

Slower for geriatric patients, smokers, diabetics

Slow healing bones:
  scaphoid, navicular, Jones (proximal 5th metatarsal shaft)
Which of the following is most suspicious for a fracture?

A. Diffuse tenderness
B. Pain with only active motion
C. Point tenderness over bone
D. Point tenderness over soft tissue
General exam tips

Radiologic tests - indications
- Deformity
- Point bony tenderness
- Inability to walk > 4 steps
- Suspicious mechanism
Which of the following situations is an orthopaedic emergency?

A. Compound fracture
B. Greenstick fracture
C. Open fracture
D. Painful fracture
Referral rules

- Fractures with joint involvement
- Unstable injuries
  - Dislocation - non-reduced
- Orthopaedic emergencies
  - Open fracture
  - Dislocations with neurovascular compromise (knee & hip)
- Uncomfortable treating problem
Alternative materials

- Aluminum splints
- Air splints
- Corrugated cardboard
- Newspaper
Plaster vs. fiberglass

**Plaster**
- Takes 24° to completely set
- Very heavy
- Doesn’t expire

**Fiberglass**
- Takes 20–30 minutes to set
- Do not use hot water to set
- Theoretically can be made “waterproof”
- Lighter
- Material expires
Casting material

- Short arm 2"
- Long arm 2" & 3"
- Forearm splints 3"
- Short leg 3" or 4"
- Long leg 4" & 5"
Other materials

To prevent skin damage & assist with removal

Stockinette

Cast padding
  Cotton or synthetic - most common
  Not waterproof
Gore tex™ “Waterproof”
General positioning*

Immobilize joints above & below

Upper extremity
Hand position of function

Lower extremity
Ankle usually at 90°

*May vary by injury
General casting instructions

Place stockinette

Place in position
Eliminate wrinkles in stockinette

Cover with cast padding
Roll with ~50% overlapping layers
2+ layers
General casting instructions

Cover with cast material
Upper extremity - 2 layers of fiberglass
Lower extremity - 3 layers of fiberglass (2 if non-weight bearing)

Mold to body
General casting & splinting rules

Splint or bivalve if $\leq 24-48^\circ$ after injury

Do not immobilize for $> 1$ wk if diagnosis is uncertain

Abrasion/lacerations
  Clean wound
  Cover with petroleum gauze
  Consider cutting window in cast
  Re-check in 2-3 days
General patient instructions

Too tight cast
  Distal swelling, numbness, tingling, cyanosis & pain

Appropriate water restrictions
  Plastic bags & duct tape

No foreign objects (to scratch with)
Cast removal
Cast removal

Avoid cutting over bony prominences
Cast removal

Cast splitters

Scissors for padding and stockinette
Summary

Cast care instructions
Appropriate follow-up
Important - make sure patient knows to go to ER for cast which is too tight
Appropriate activity restrictions
Casting step-by-step

Address wounds (if any)
Place stockinette
Cast padding (2+ layers)
Check limb position
Cast materials (inside layers) - place & mold - leave a rim of padding
Fold down stockinette & padding ends
Cast material (final layer) - place & mold - leave 1/4" of stockinette & padding
Final mold