

Casting & splinting workshop

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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

Aluminium splints

Air splints

Corrugated cardboard

Newspaper



Plaster vs. fiberglass

Plaster

Takes 24^h 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