Splinting

- Importance of proper joint position:
  - Keep collateral ligaments at maximum length
  - Keep volar plate stretched (IP joints)
  - If this is not done properly, permanent joint contractures may result

1. Collateral ligaments:
   a) MCP → due to shape of metacarpal head, collateral ligaments longest with flexion
   b) IPs → due to shape of phalangeal heads, collateral ligaments longest with extension

2. Volar plate (IP joints):
   Want digits in extension at DIP and PIP to keep volar plate maximally stretched → if held in flexion: a) volar plate is not stretched → moves proximally; b) checkrein ligaments attached to the volar plate will also be shortened and tightened = resulting proximal pull to volar plate

Types of splints

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<th>Types of splints</th>
<th>Indications for use (examples)</th>
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<td>Volar (blocking) splint</td>
<td>Index, long and ring finger fracture; extensor tendon repair D1-5; post-dislocation reduction (index, long and ring finger joints), splinting hand infections (comfort + prevent contractures)</td>
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<td>Dorsal (blocking) splint</td>
<td>Flexor tendon repairs D1-5</td>
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<td>Thumb spica</td>
<td>Thumb fracture, post-carpometacarpal (CMC) arthroplasty, post-ulnar collateral ligament (UCL) injury, post-reduction thumb joint dislocation</td>
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<td>Volar splint + ulnar gutter combination</td>
<td>Multiple extensor tendon repairs, multiple metacarpal fractures</td>
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Volar splint:

Position of Safety:

- Wrist extended @ 30-40°
- MCP flexed @ 60-90° (if splinting repaired extensor tendon, use ~ 30°)
- IP joints extended @ 180°
- Tailor for thumb (MCP & IP extended)
Dorsal splint:

- Wrist flexed @ 30-40°
- MCPs flexed @ 90°
- IP joints extended @ 180°
- Tailor for thumb (MCP & IP flexed)

Thumb spica

- Thumb in natural position for CMC & MCP
- IP joint extended at 180°

Ulnar gutter

- Position of safety with only ring & little finger

Making the splint:

1) Wound dressing if needed
2) Wrap fingers and arms with cling or webroll (put gauze between fingers that will be in the splint to wick away moisture and prevent skin maceration in finger webs)
3) Measure length of plaster needed + trim as needed
4) Prepare sheets of webroll that will be used to sandwich plaster (so plaster can easily be removed to check wounds, do dressing changes, etc. and put back on)
5) Immerse plaster into room-temperature water (the hotter the water, the faster the plaster will set; plaster heats up after contact with water → can cause burns if water was too hot to begin with which means +++ heat once plaster contacts)
6) Put plaster between webroll sandwich = splint
7) Place splint along area of finger/hand/arm to be splinted (make sure plaster goes to tip of fingertips)
8) Ask patient to support proximal end of cast while you wrap the splint on with tensor bandage + apply metal clips (put tape on top since these tend to fall off)
9) Mold splint
10) Make sure you can see all fingertips at the end (to make sure no fingers were flexed within the cast)
11) Prepare sling (hand on affected side should be as high as contralateral shoulder) – instruct patient to remove sling a few times a day and range shoulder (prevent shoulder stiffness)
12) Instruct patient on cast care (keep dry, put bag over it with tape seal when for showers)