Anatomy of MCP and PIP Joints

Sarah A Stapley
Wessex Hand Meeting
RH Haslar 9 Feb 2007
Metacarpophalangeal joints

Condyloid configuration
which allows;
flexion/extension
abduction/adduction
circumduction/rotation
hyperextension

Loose CT volar to joint
Structurally & functionally linked
together
ROM: 0-90 degrees
Metacarpophalangeal joints

Collateral ligaments
Bone contact area
Intracapsular fluid space
Joint

Extended
loose
minimal
unstable

Flexed
tight
maximal
stable
Composed of criss-crossing bands of fibers
Fibers collapse with flexion (30 - 100%)
Expand with large intersecting angles with extension

Metacarpophalangeal joints

• Volar plate
  – Firmly attached to the PP
  – Attached to mobile structures MC side
    • Deep transverse ligaments
    • Extensor Hood
    • Interossei
    • Palmar Aponeurosis
Proximal interphalangeal joints

- **Hinge joint**
  - Flexion/Extension
    - Little other movement
  - No hyperextension
  - Increased stability

- Each joint separate
- ROM: 0-110 degrees
- Total Joint contact
- No loose CT volar to joint
Proximal interphalangeal joints

Proximal Phalanx AP/Lat

Middle Phalanx AP/Lat
Proximal interphalangeal joints

- **Collateral Ligaments**
  - Epicondyle on PP to base of MP anterior 40%
  - Dorsal (tight in extension) and volar (tight in flexion) parts
  - Extending anteriorly are the accessory collateral ligaments, similar in structure but inserts into the lateral free edge of the volar plate
  - In flexion accessory collateral becomes slack, but true collateral remains taut.
Proximal interphalangeal joints

- Volar Plate
  - Much less mobile
  - Attached firmly to the base of middle phalanx
  - Attachment to the neck of the proximal phalanx is loose
  - Minimal length change on flexion/extension (10%)
  - Slides proximally and distally protecting the joint
Overall Anatomy

A, Lateral view

B, Dorsal view
Thank you