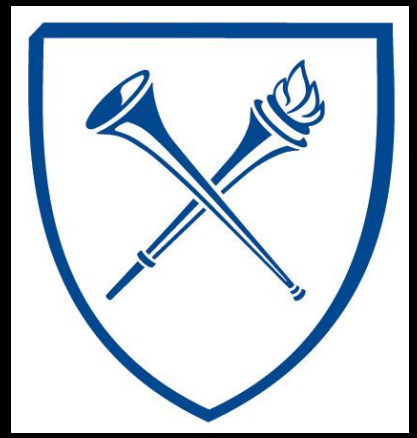
Case Conference

9/21/2017

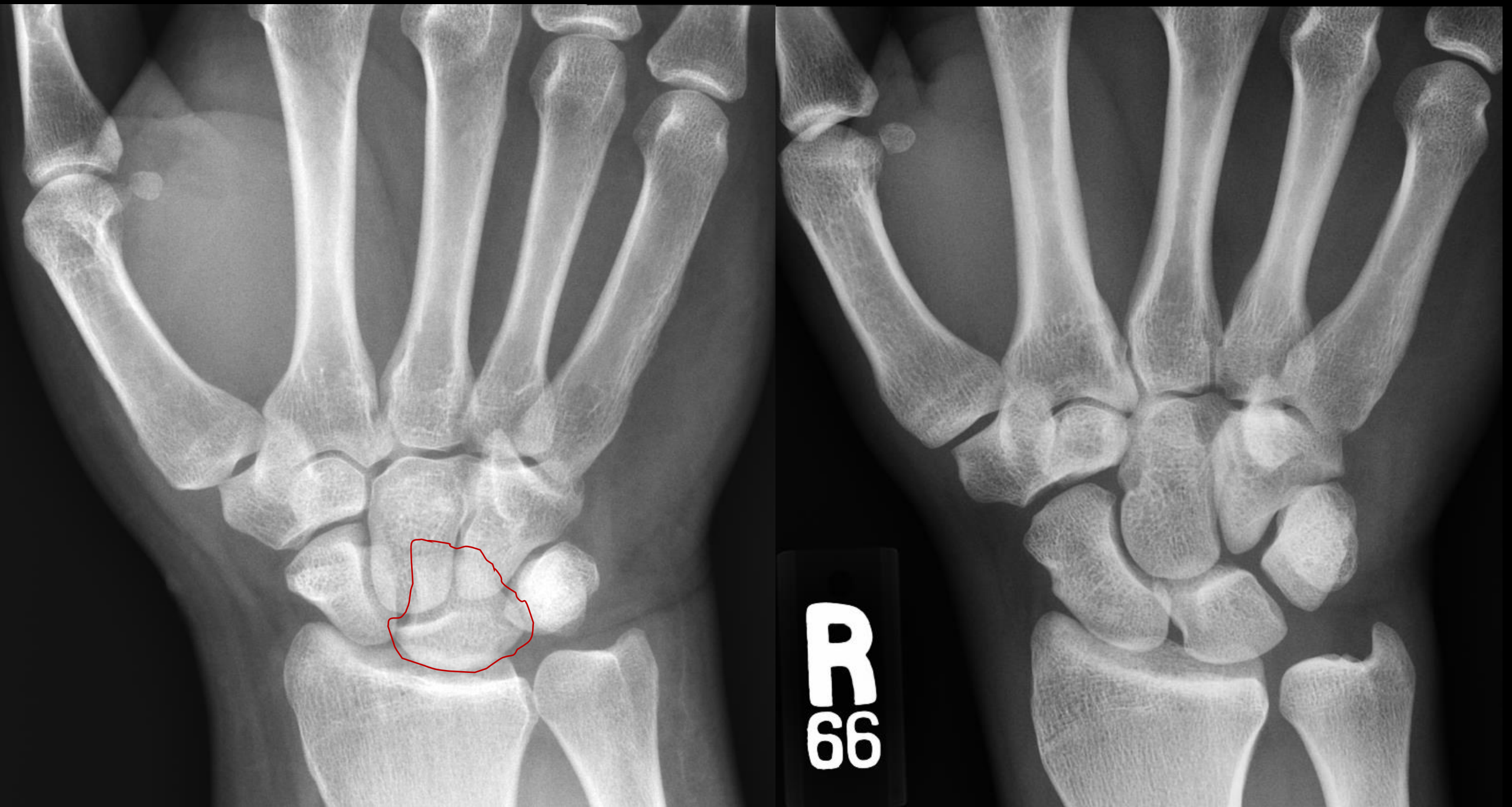
Dylan Simmons

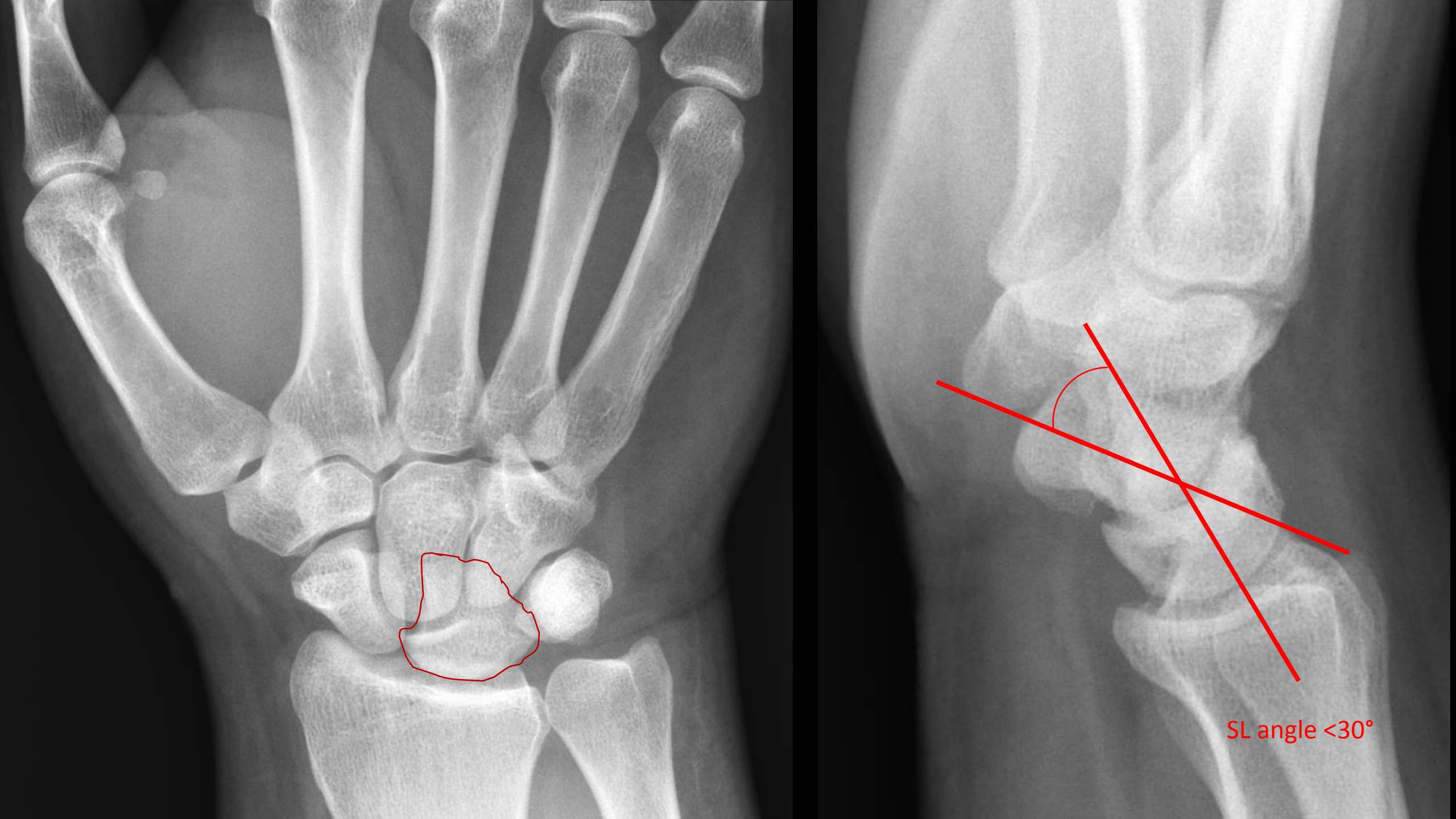


62 yo female presenting with chronic wrist pain and clicking with ulnar deviation.

Patients Wrist

Normal Wrist




SL angle <30°

VISI: Volar intercalated segment instability

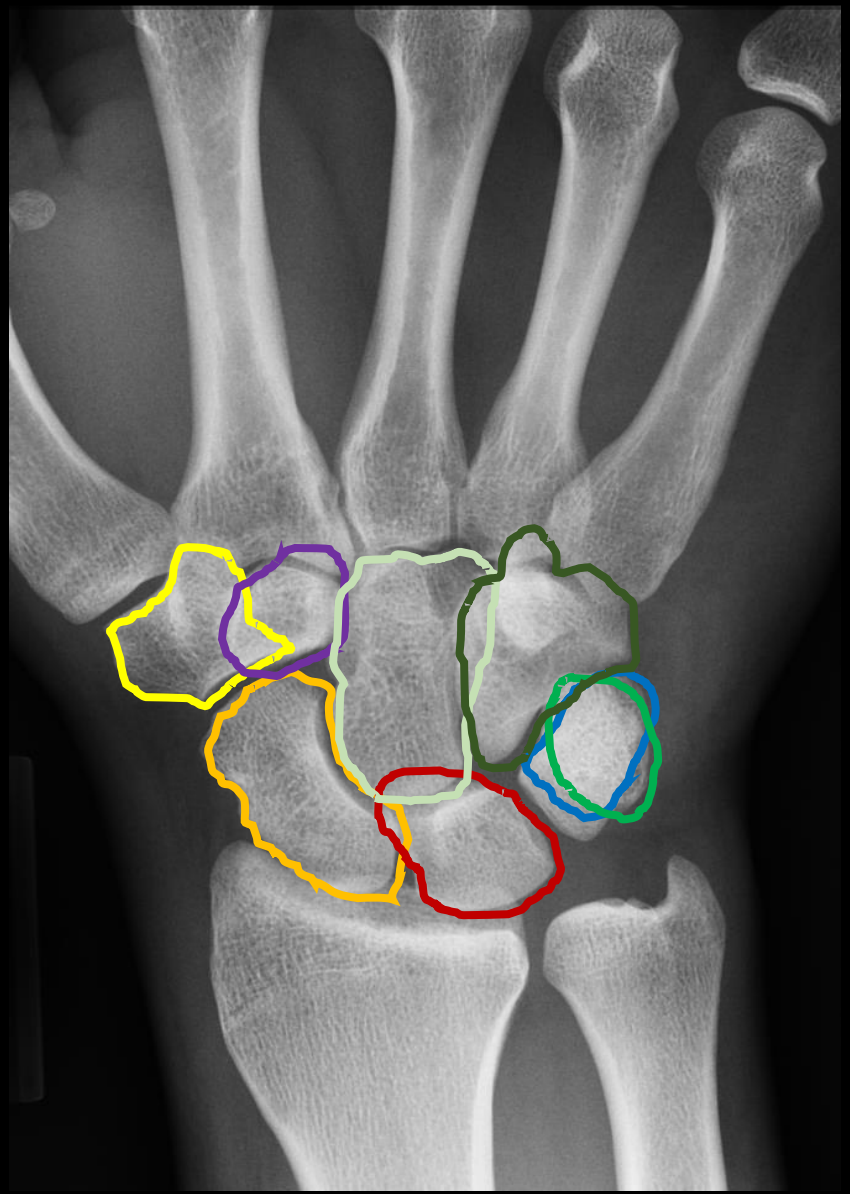
- Secondary to disruption of the lunotriquetral ligamentous complex.
- Lunate- Volar, Triquetrum- Dorsal

- Scapholunate angle: < 30 degrees
- Radiolunate angle: >15 degrees
- Capitolunate angle: >15 degrees

Instabilities may be:

- **Pre-dynamic:** Partial ligamentous tear. Soft tissue injury seen with MRI or arthroscopy only. No changes on plain radiographs.
- **Dynamic**: Abnormal changes in carpal alignment seen on stress radiographs. Plain radiographs are normal.
- **Static**: Abnormal changes in carpal alignment seen on non-stress radiographs.

Carpal Anatomy



Scaphoid

Lunate

Triquetrum

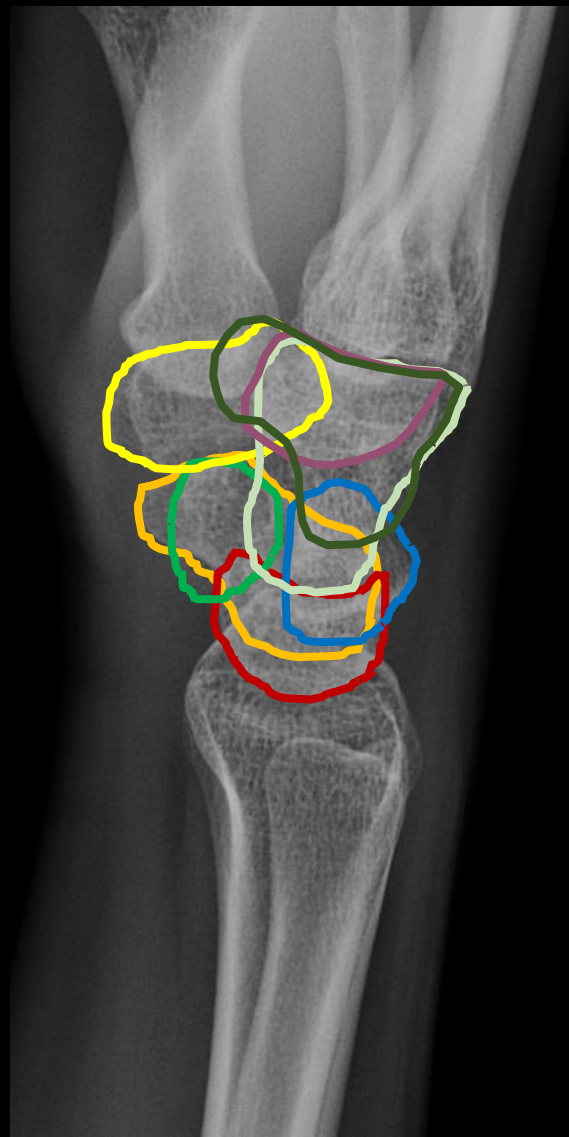
Pisiform

Trapezium

Trapezoid

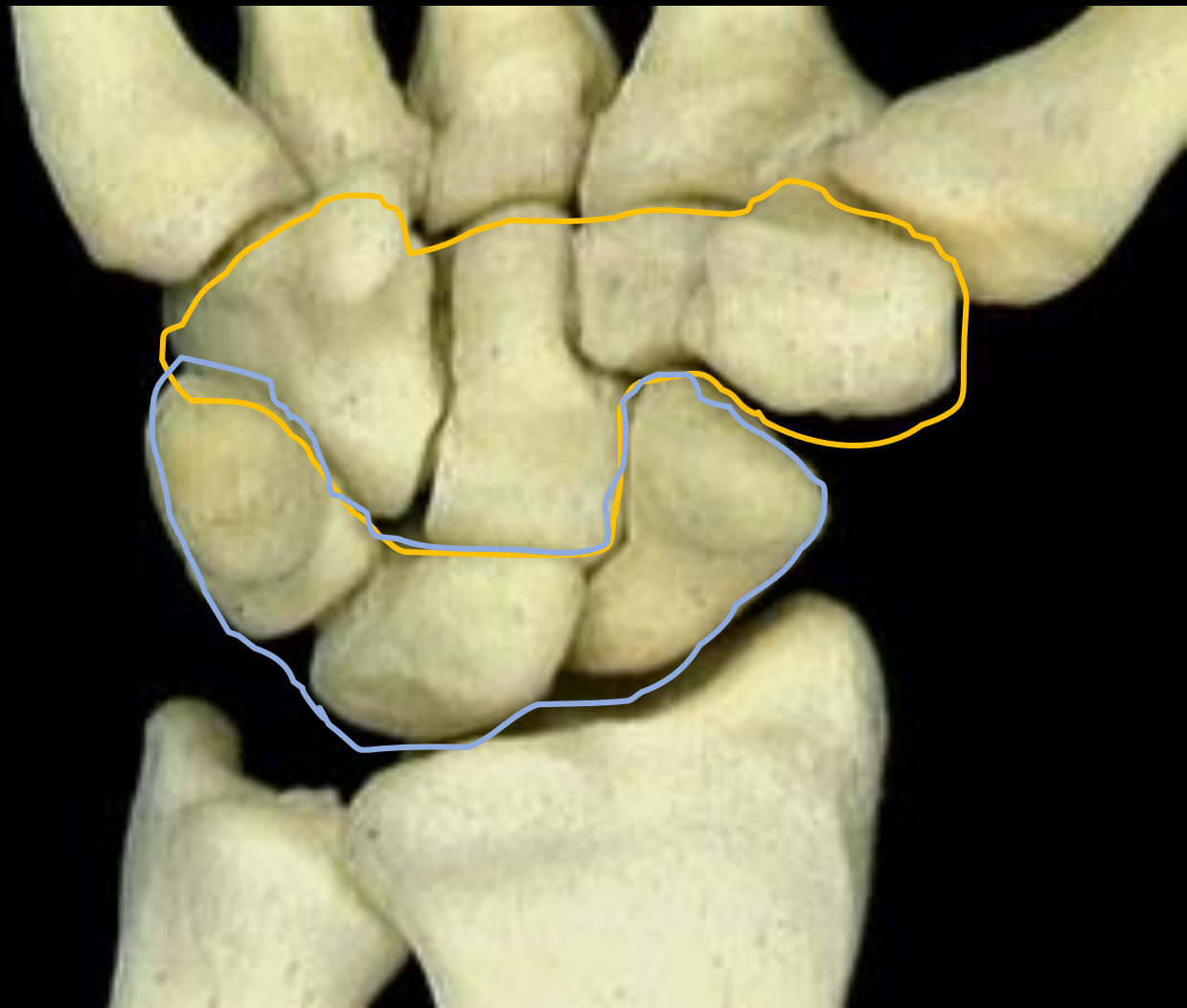
Capitate

Hamate



Carpal Anatomy

- Proximal and distal ”rows”– Complex articulations.
- Motion of the individual bones depends upon biomechanics of its neighbors and its ligamentous attachments (intrinsic and extrinsic ligaments).
- Ligamentous disruption or fracture can disrupt this equilibrium and set stage for subluxation, abnormal biomechanics, and advanced degenerative changes.



Proximal carpal row, the “intercalated segment”

in·ter·ca·late

/inˈtərkəˌlāt/

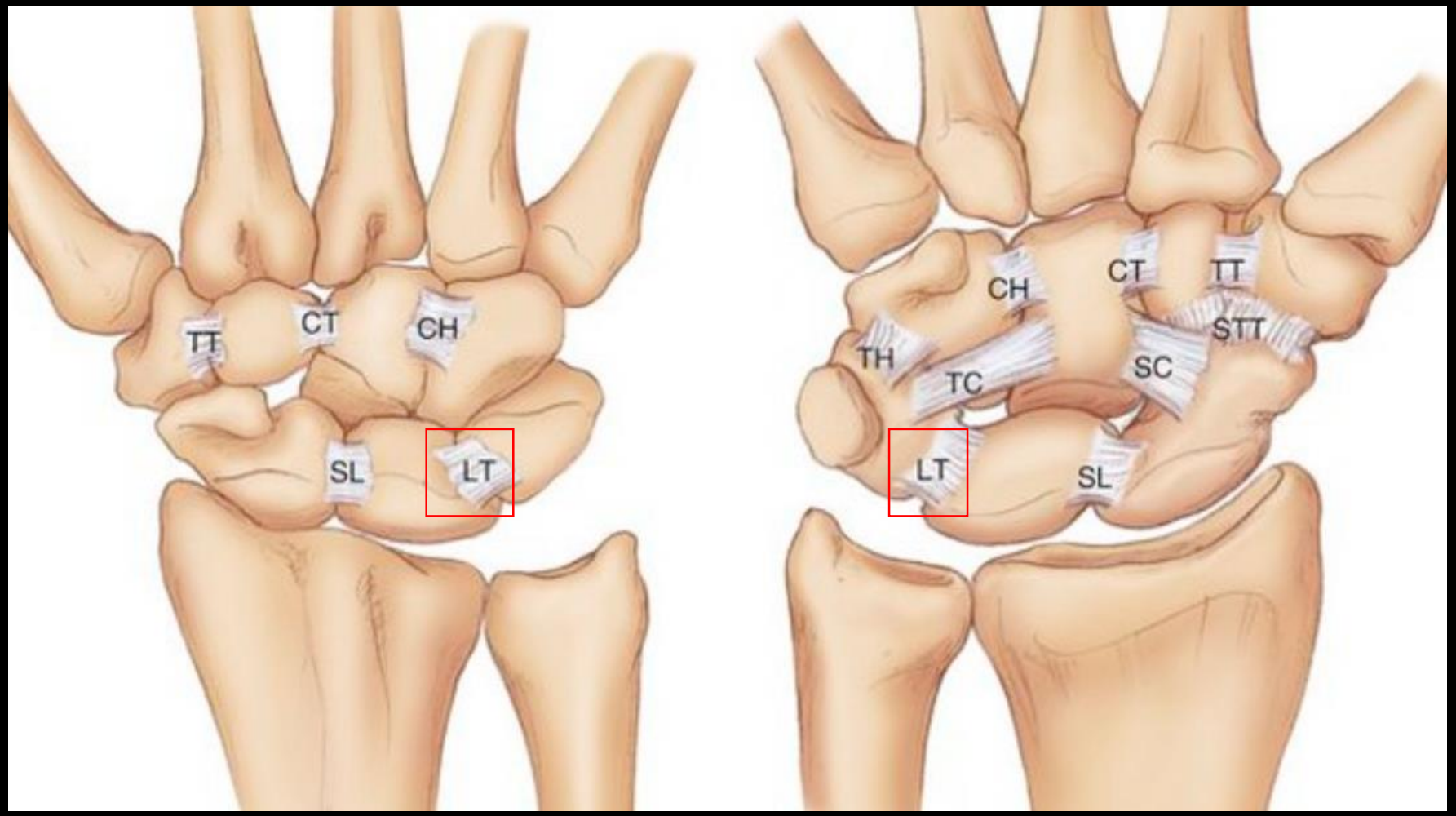
verb

past tense: **intercalated**; past participle: **intercalated**

1. interpolate (an intercalary period) in a calendar.
2. insert (something) between layers in a crystal lattice, geological formation, or other structure.

- In between the proximal segment of the wrist (radius and ulna) and the distal segment (distal carpal row and metacarpals)
- Major intercarpal stabilizers are SLIL and LTIL
- No tendinous insertions

Intrinsic Ligaments



Dorsal wrist

Volar wrist

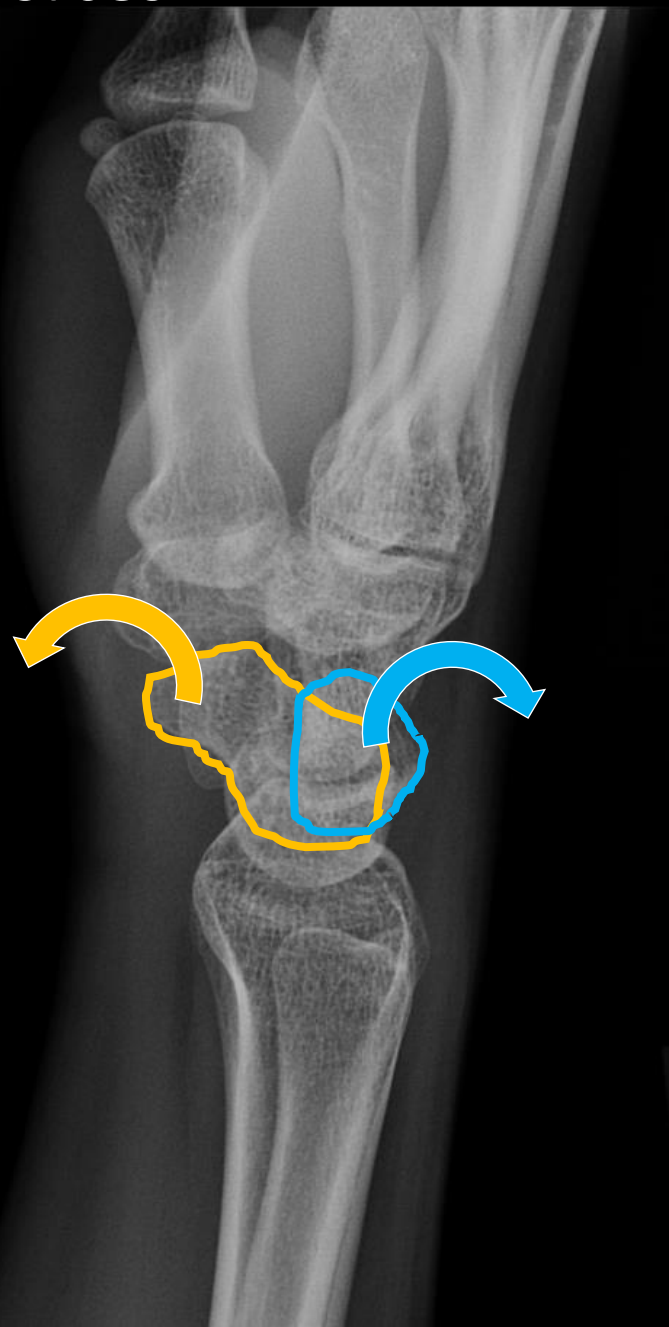
Lunotriquetral ligament

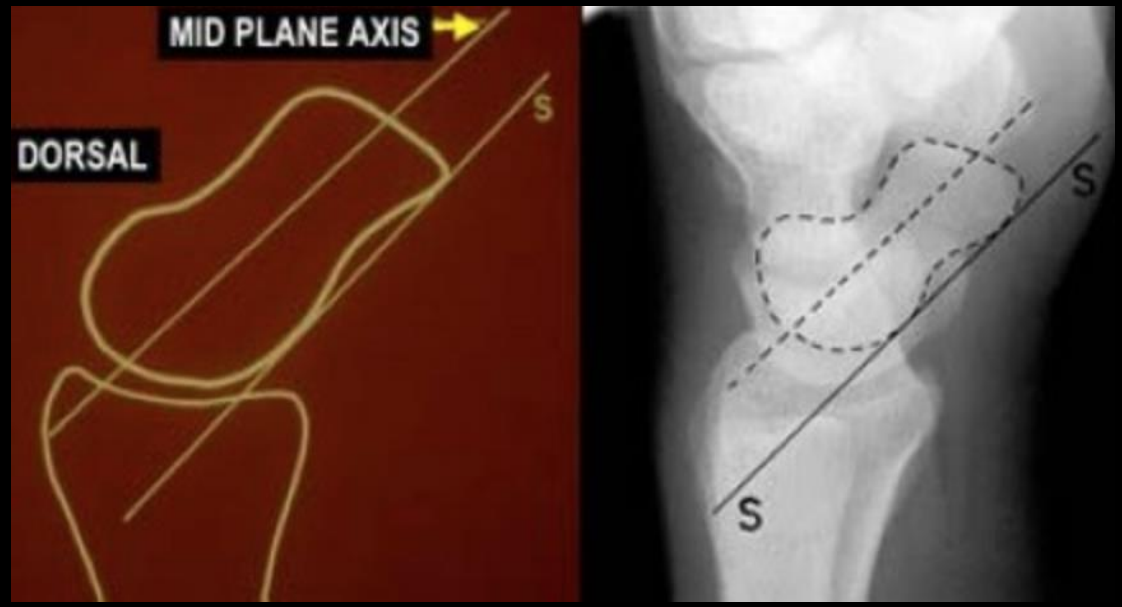
- Major intercarpal stabilizers are SLIL and LTIL
- Restraint to distraction, torsion, and translation
- Injured less frequently than scapholunate ligament.
- Volar fibers are the thickest and most important (Dorsal fibers most improtant for stability in SL ligament)

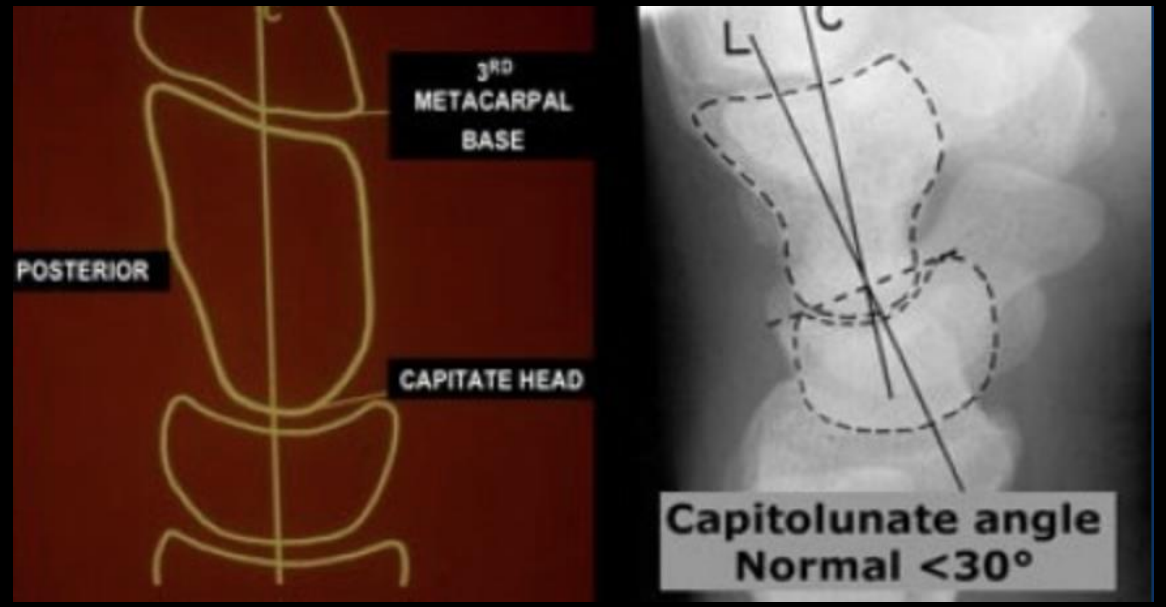
www.assh.org/Members/Documents/32%20**CARPAL**v3.ppt

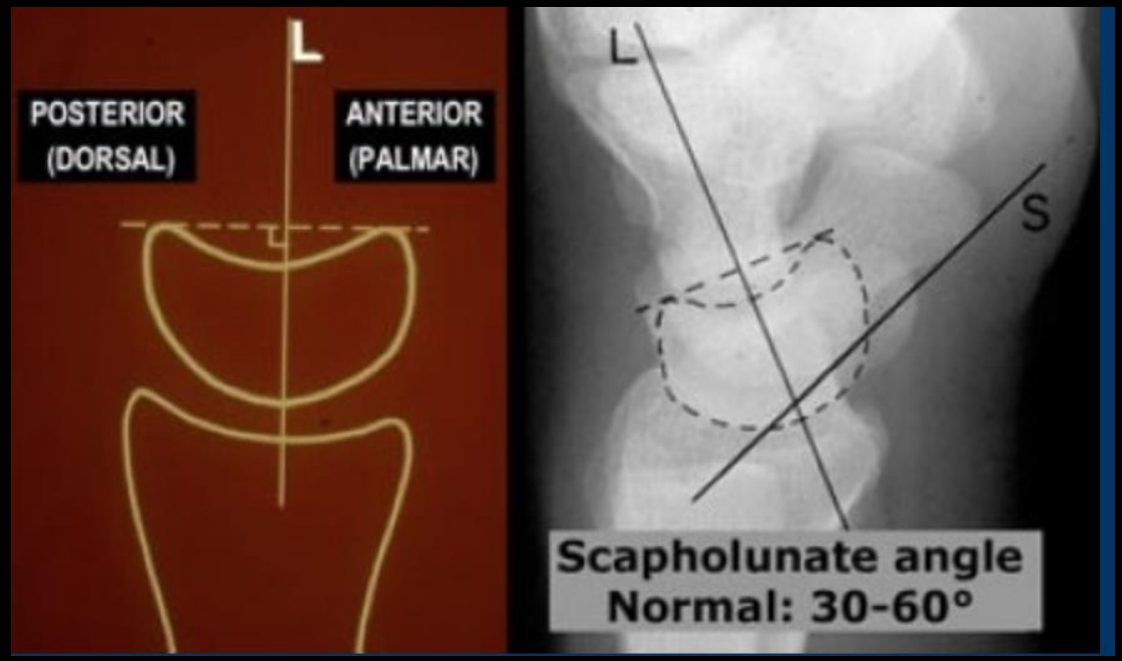
Opposing volar and dorsal forces

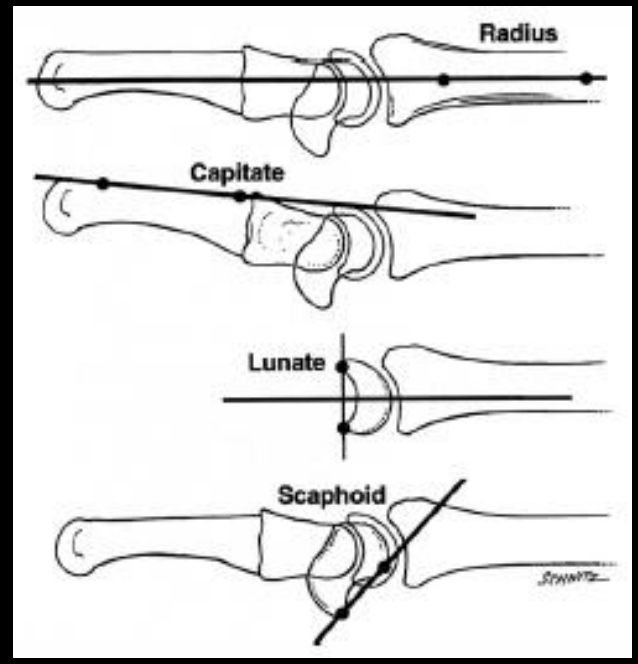
- Scaphoid- Volar rotation
- Triquetrum- Dorsal rotation







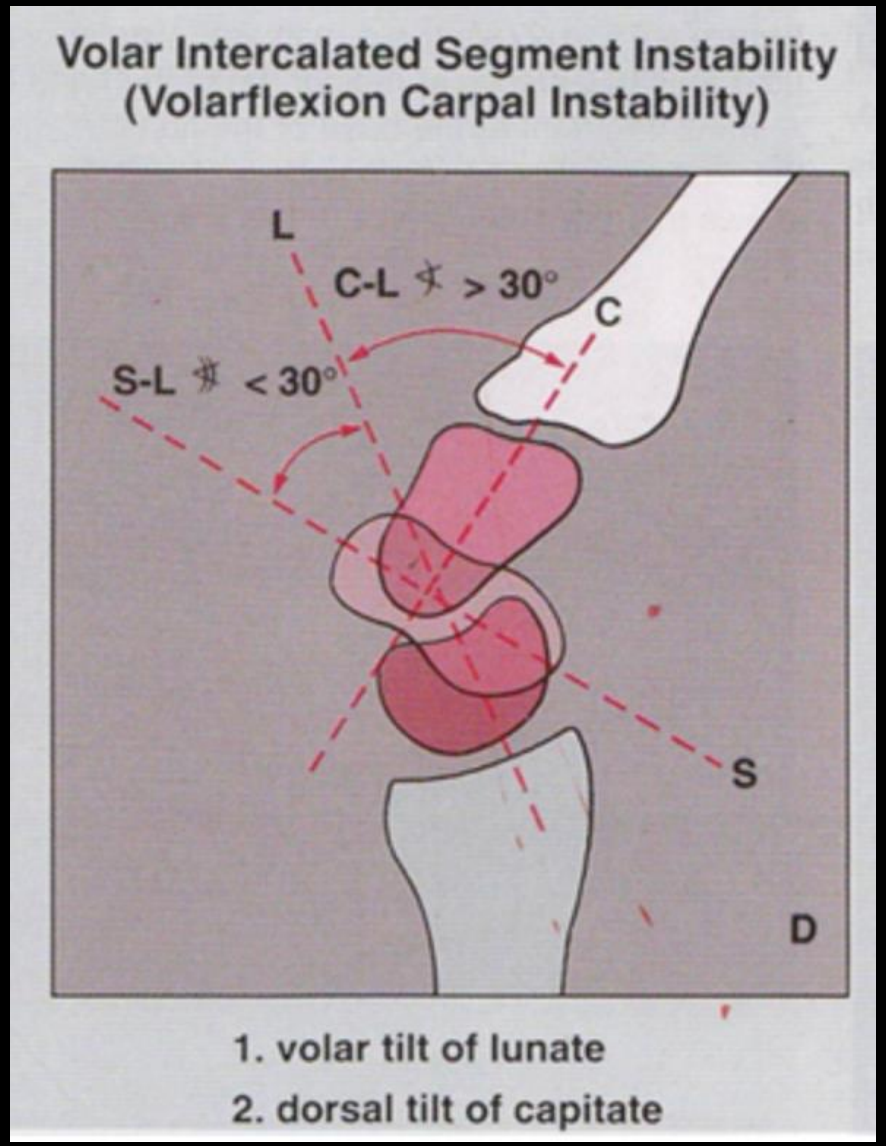




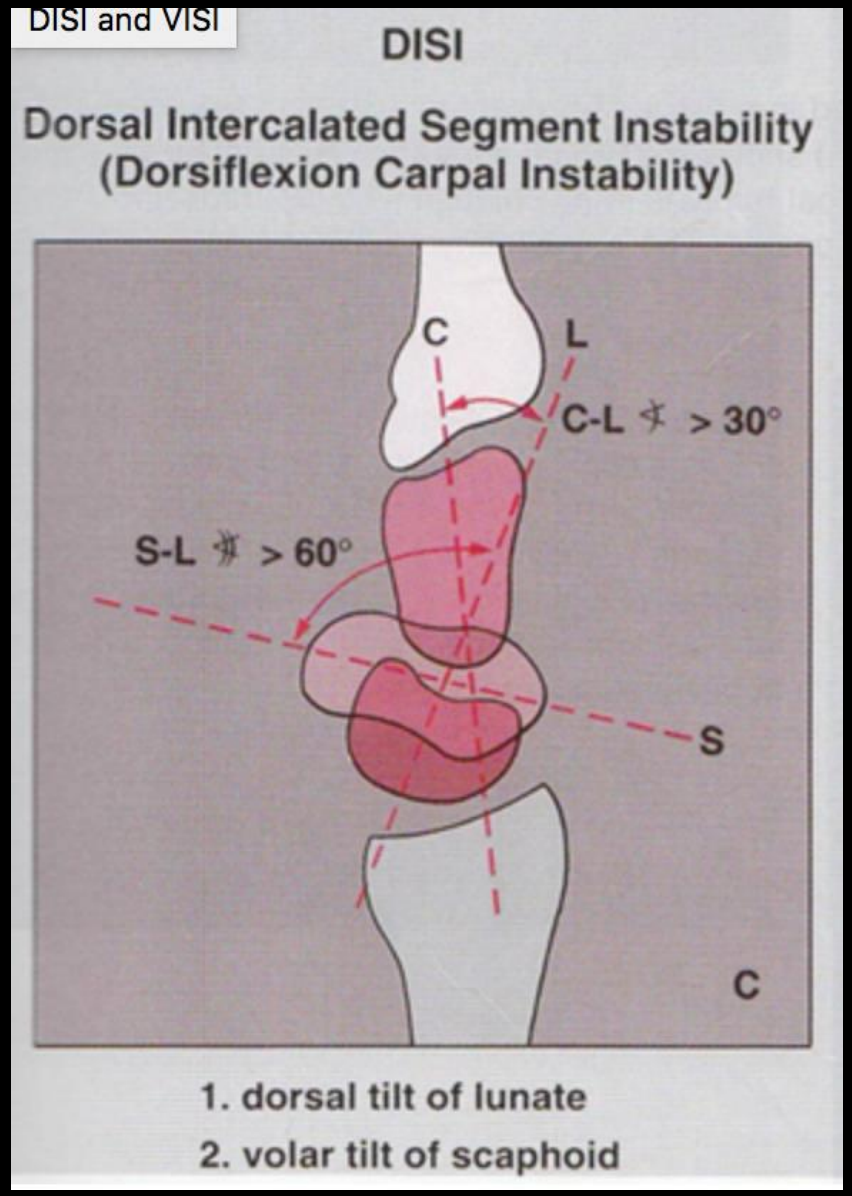
- Tangent lines are
  Easier to use and more reliable

J Hand Surg 2008;33A:998–1013.

VISI


Volar Intercalated Segment Instability
(Volarflexion Carpal Instability)
L
C-L ∢ > 30°
C
S-L ∢ < 30°
S
D
1. volar tilt of lunate
2. dorsal tilt of capitate

DISI


DISI and VISI
DISI
Dorsal Intercalated Segment Instability
(Dorsiflexion Carpal Instability)
C
L
C-L > 30°
S-L > 60°
S
C
1. dorsal tilt of lunate
2. volar tilt of scaphoid

Dorsal: Dorsal intercalated segment instability

- Complete scapholunate ligament disruption & volar extrinsic rupture.
- Scapholunate diastasis (4mm)
- Scaphoid rotates volarly (rotary subluxation)
- Lunate rotates dorsally
- Capitate may sublux posteriorly

- Scapholunate angle: > 80 degrees
- Radiolunate angle: >15 degrees
- Capitolunate angle: >15 degrees

- **May develop Scapholunate Advanced Collapse (SLAC)**
  -Stage I: Radioscaphoid DJD
  -Stage II: Proximal scaphoid facet
  -Stage III: Capitolunate
  -Stage IV: Radiolunate/Pancarpal DJD

Taliesnik "Current Concepts Review: Carpal Instability" JBJS 70A:1262-1267, 1988. Stanley and Trail " Carpal instability" JBJS 76B: 691-700, 1994

Carpal instability. *OrthopaedicsOne Review*. *In: OrthopaedicsOne - The Orthopaedic Knowledge Network*. Created Mar 07, 2010 15:38. Last modified Aug 23, 2014 12:57 ver.25. Retrieved 2017-09-20, from http://www.orthopaedicsone.com/x/TAHYAQ

Adam Greenspan. Orthopedic Imaging: A Practical. Approach, 4th edition. Philadelphia, Pa: Lippincott Williams. & Wilkins, 2004. p206