

1

Intro

When to expect a scapholunate injury?

- Geissler et al. (1996):
 - 1/3 SLIOL injury in displaced intra-articular distal radius fractures.
- Lindau et al. (1997):
 - 54% SLIOL in distal radius fractures.
- Mehra et al. (2000):
 - 69% SLIOL lesions (partial) in DRF
- Ogawa et al. (2013)
 - 54.5% SLIOL

Natural History?

2

So why ct scan based?

- It's your clinical practice
- And
- It has good sensitivity and specificity

3

Measuring

Most appropriate measuring point

Location	Scapholunate distance (mm)			ANOVA P value*
	Stable group	G3 group	G4 group	
XP	2.02 ± 0.52	2.07 ± 0.55	2.42 ± 0.43	0.041*
A1	1.62 ± 0.31	1.86 ± 0.65	2.16 ± 0.75	0.009*
A2	1.51 ± 0.35	1.67 ± 0.59	1.96 ± 0.55	0.009*
A3	1.56 ± 0.45	1.52 ± 0.53	1.94 ± 0.66	0.058
C1	1.83 ± 0.67	1.99 ± 0.85	2.55 ± 0.86	0.014*
G3	1.45 ± 0.45	1.73 ± 0.66	2.21 ± 0.70	<0.01*
G4	1.43 ± 0.35	1.69 ± 0.54	2.23 ± 0.59	<0.01*

CT based measurements compared to arthroscopic findings (geissler classification)

sens 75%
Spec 90%
ROC analysis
AUC 0.855

Suzuki D, Ono H, Furuta K, et al. Comparison of scapholunate distance measurements on plain radiography and computed tomography for the diagnosis of scapholunate instability associated with distal radius fracture. J Orthop Sci 2014;19:465-70.

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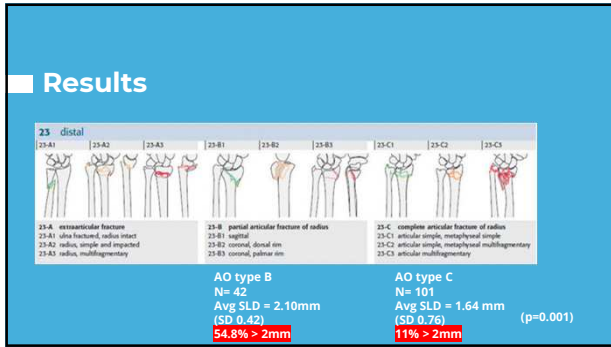
Methods

- CT scan based study on 143 distal radius fractures in 140 patients.
- The scapholunate distance (SLD) was measured at the distal end of the scapholunate joint on the central CT coronal slice, as described by Suzuki et al. in 2013.
- Fractures were classified according to the Müller AO classification into type B (partial intra-articular) and type C (complete intra-articular) fractures.
- Intra-articular fractures were further analysed according to Greg Bains classification for 2-part intra-articular fractures.

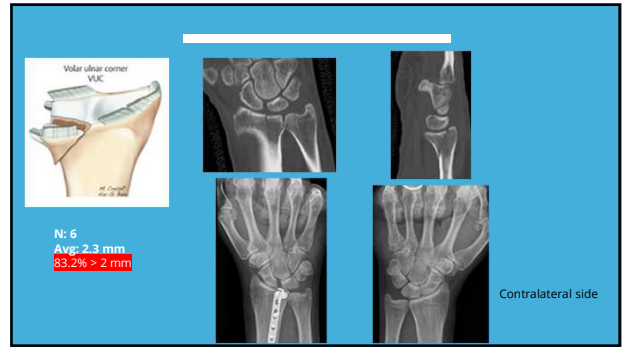
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Ligament Origins Are Preserved in Distal Radial Intra-articular Two-Part Fractures: A Computed Tomography-Based Study. Greg bain et al. Journal of wrist surgery. 2013

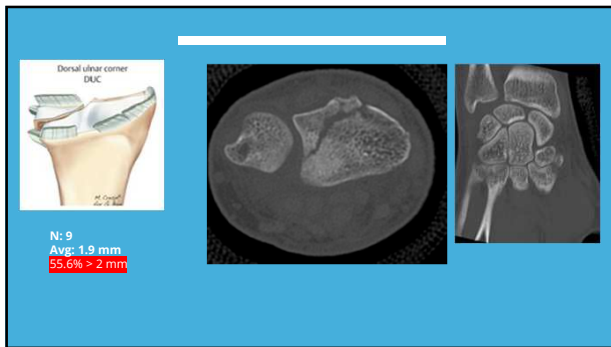
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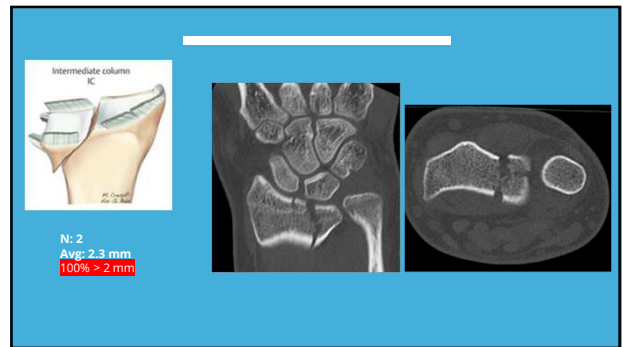
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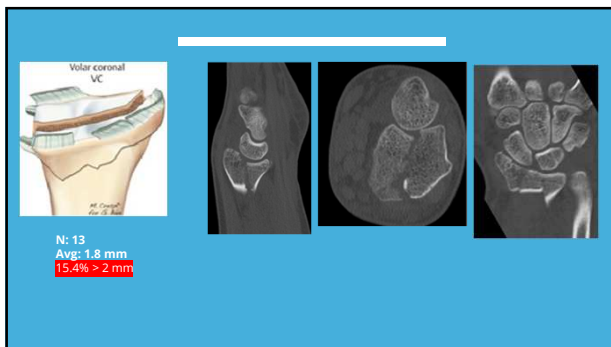
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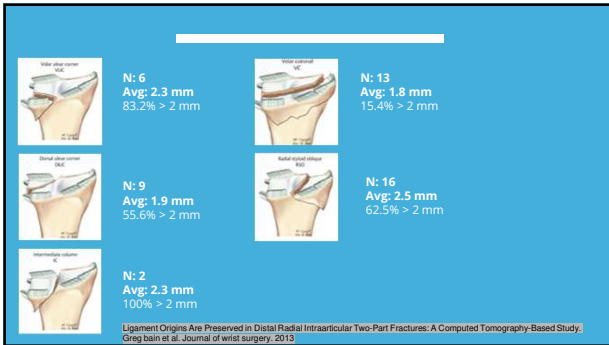
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11



12



13

Weaknesses

- No contralateral images.
- No dynamic imaging.
- Observational study. No outcome scores are matched.
- Distal radius fractures don't like to be classified.

14

"The scapholunate complex"
Scapholunate injuries are a spectrum
The SLIOL is only the first line of defense.
Extrinsic ligaments
DCSS (a predynamic stabiliser?)
Stabilising musculature.

Images: Van overstraeten and Camus. Carpal instability. BHSO 2019

Stable -> +Instability -> Maximal instability -> Ankylosis -> SLAC

Normal alignment -> Reducible -> Malalignment -> Stiffness

Classification systems:

Garcia-Elias M, Luch AL, Stanley JK. Three-ligament tenodesis for the treatment of scapholunate dissociation: indications and surgical technique. The Journal of hand surgery. 2006 Jan;31(1):125-34.

The EWAS Classification of Scapholunate Tears: An Anatomical Arthroscopic Study. Messina JC1, Van Overstraeten L2, Luchetti RS, Fairplay T4, Mathoulin GLS. J Wrist Surg. 2013 May;2(2):105-9.

15



16

Be cautious in partial intra-articular fractures.
Be even more cautious in sagittal fracture patterns.
SL injuries are a spectrum, changing in time.
Clear changes on radiographs may only be seen in advanced injuries, we must be alarmed for subtle scapholunate widening as measured on computed tomography.

17

Is this a recommendation for performing an additional arthroscopy?
Do we need a more aggressive treatment of the SL injuries?

18



19