Understanding Glenoid track Concept and Clinical significance

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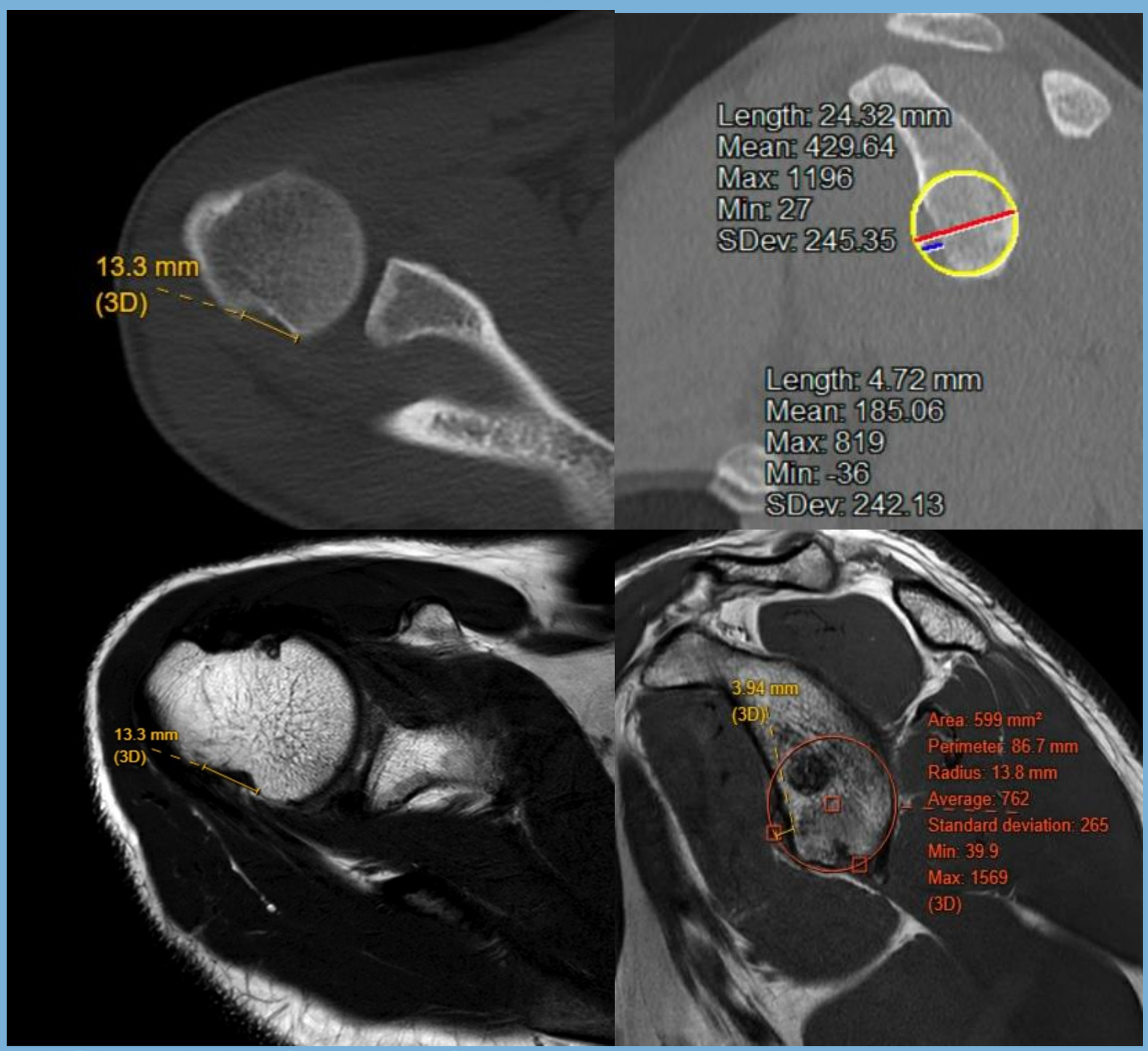
Introduction:

Anterior glenohumeral dislocation might result in bipolar shoulder lesions which will put patients at increased risk of Hill-Sachs engagement or recurrent instability. Glenoid track refers to the area of contact between the humeral head and glenoid during ABER and horizontal extension which is ~83% of the glenoid width.

Objectives:

- How to calculate glenoid track and hill sach interval (HSI); compare measurements to determine whether the hill sach lesion (HSL) is on-track or off-track.
- Discuss clinical significance.

Methods and materials:



These are two examples of taking HSI and glenoid track measurements in CT (upper two) and MRI (lower two) modalities. Both of these bipolar lesions are on-track. HSI has been measured in axial plane while glenoid track measured in sagittal plane.

- HSI = width of the Hill-Sachs lesion plus bony bridge.
- Bony bridge refers to the portion of the humeral head that remains intact between the Hill-Sachs lesion and the insertion of the rotator cuff tendons on the greater tuberosity.
- Glenoid track = (0.83 x D) – d where D is maximum glenoid diameter and d is diameter of anteroinferior glenoid rim defect.
- Glenoid bone loss is quantified via the circle method using en face sagittal view.
- On-track Hills-Sachs lesion = Hill-Sachs interval < glenoid track
- Off-track Hills-Sachs lesion = Hill-Sachs interval > glenoid track
- Off-track Hill Sachs lesion is more likely to be clinically unstable and engaging during arthroscopy.

Glenoid Track Instability Management Score (GTIMS)		
Variable	*Parameter*	*Score*
Age	< 20 years > 20 years	2 0
Degree of sports participation	Competitive Recreational/none	2 0
Type of sport participation	Contact/forced overhead Other	1 0
Shoulder Hyperlaxity	Hyperlaxity (anterior/inferior) Normal	1 0
Bone loss	Off-track On-track	4 0

GTIMS incorporates the glenoid track concept into the instability severity index score (ISIS).
ISIS score of </=6 points has an acceptable recurrence risk of 10% with arthroscopic stabilization.
ISIS score of > 6 points has an unacceptable recurrence risk of 70% and should be advised to undergo open surgery (i.e. Laterjet procedure).
GTIMS algorithm distinguishes patients who score </= 3 (in which a soft tissue repair is indicated) from patients who score >/=4 (in which the Latarjet procedure is indicated).

Conclusion:

- Off-track Hill Sachs lesion is more likely to be clinically unstable and engaging during arthroscopy.
- These measurements should be rigorously documented in report because they may influence surgical planning.

References:

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