ePoster #9

Arthroscopic Anatomic Glenoid Reconstruction Does Not Affect Subscapularis Muscle Compared To Latarjet

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Disclosures of Interest

I (and/or my co-authors) have no financial interests to disclose related to this presentation

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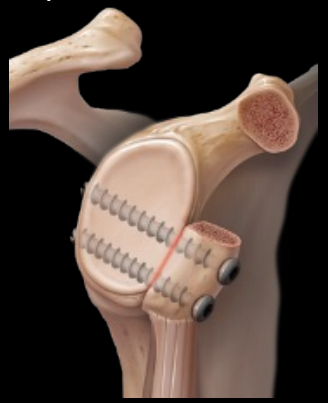
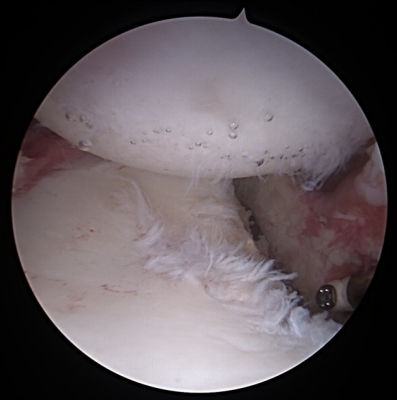
Management Of Glenoid Bony Injuries

- Glenoid bony injuries are found in 50-86% of recurrent shoulder dislocators.[1]
- Latarjet procedure has been the gold standard for glenoid bony augmentation due to its low recurrence rate, but this procedure has been linked to a high incidence of complications and violates the subscapularis to introduce the graft in the joint.[2,3]
- Arthroscopic Anatomic Glenoid Reconstruction (AAGR) with distal tibia allograft is a safe and reliable alternative.[4,5] When performed arthroscopically, the graft is deployed through the rotator interval, preserving the subscapularis.[6]

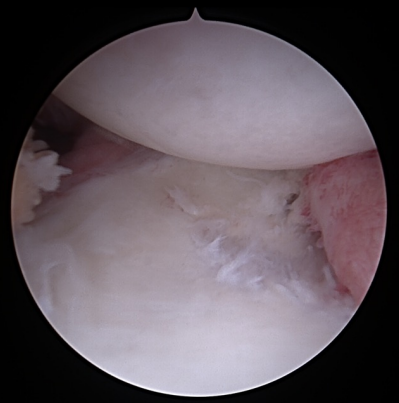


Latarjet



Native glenoid with bone loss

Distal tibia allograft in place



Final view after Bankart repair over the graft.

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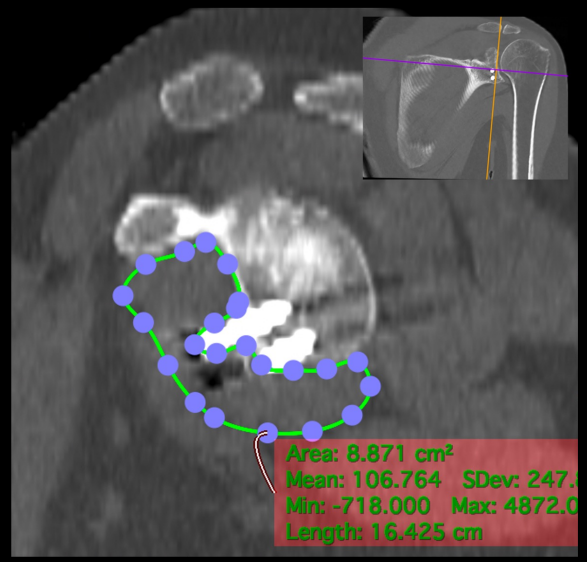
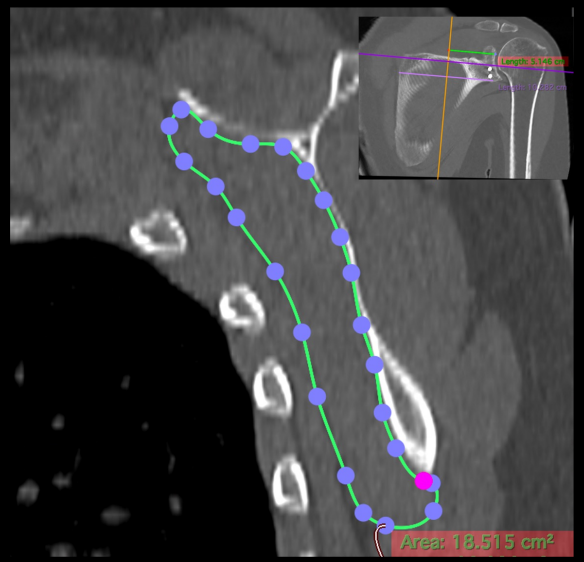
Subscapularis Muscle Volume Measurement

- Subscapularis muscle volume can be estimated with two transverse area measurements of the muscle belly in MRI as described by Henninger et. al, as shown below.[7]
- The same measurements can be performed in CT scans to avoid artifact effect of hardware in postoperative measurements.[8,9]



A) Lateral



B) Medial

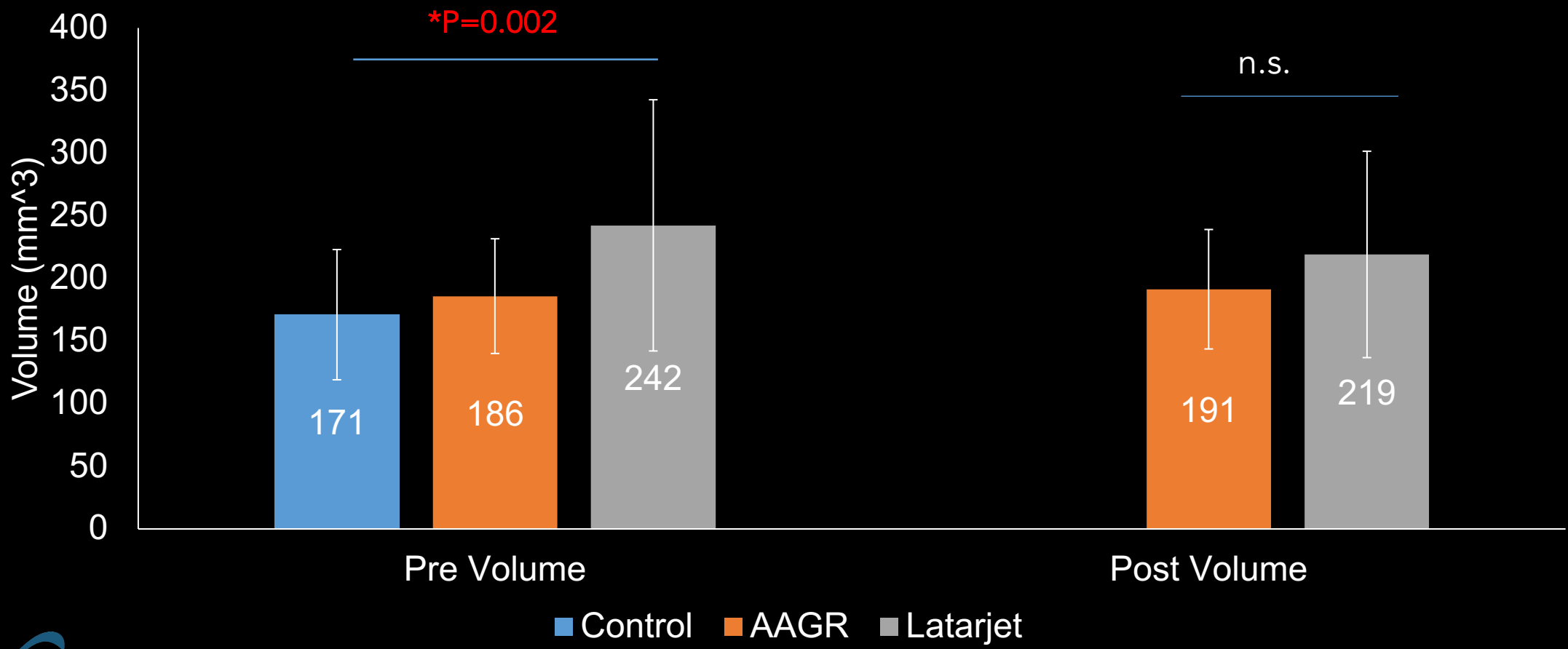
Purpose

To compare subscapularis muscle in normal population to changes before and after surgery in Latarjet and AAGR patients

Demographics

Groups	Control (N=48)	AAGR (N=93)	Latarjet (N=33)	P value
Age	37.7±15.8	29.1±11.6	25.6±4.8	0.003
Gender - Males	26 (54.2%)	72 (77.4%)	33 (100%)	<0.001
Type of Surgery (Revision)	-	30 (32.3%)	15 (45.5%)	0.174
Postop CT Follow-up, months	-	9.9±9.4	21.1±29.7	0.745

Latarjet had significantly larger preop volume than the control and AAGR group but not post-operatively



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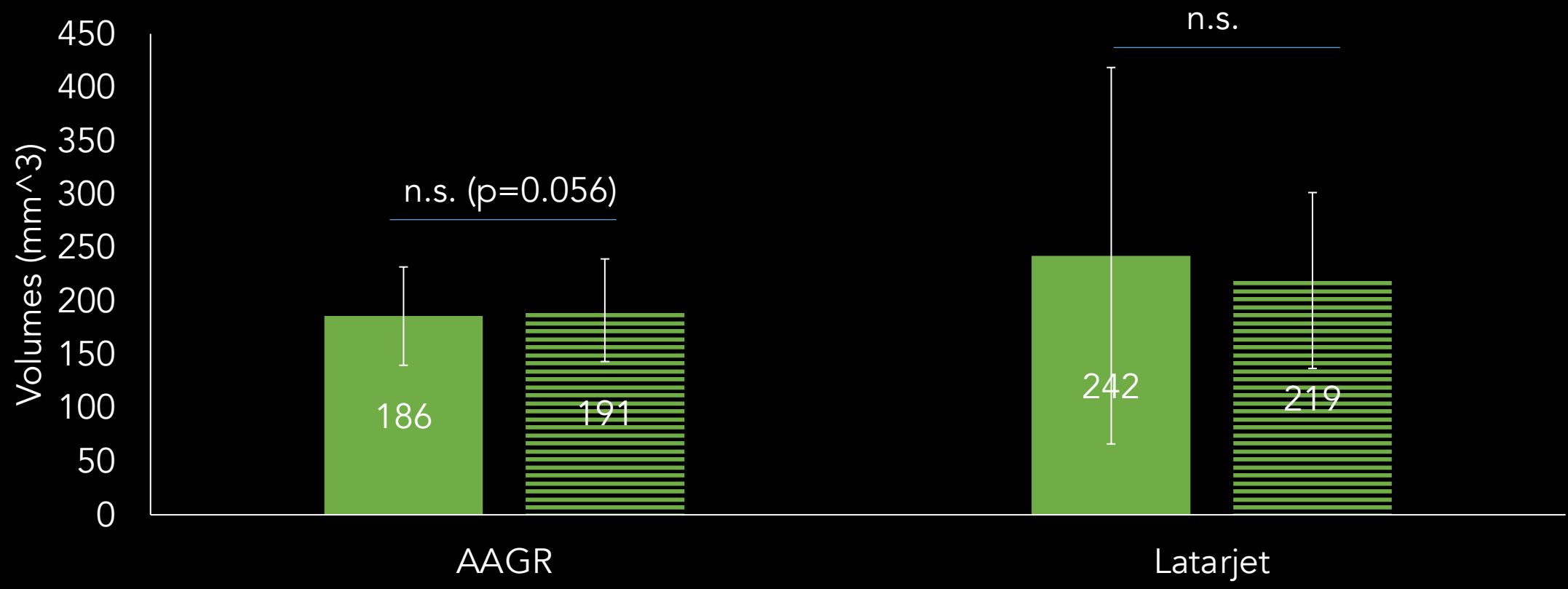
Both groups did not have significant change in subs volumes from preop to postop



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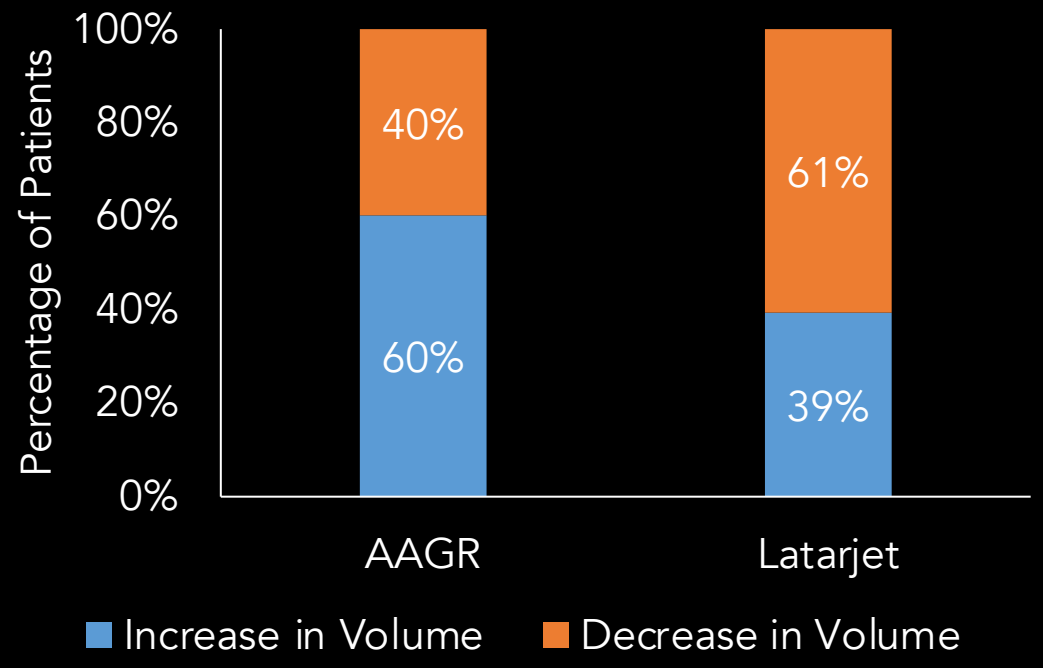
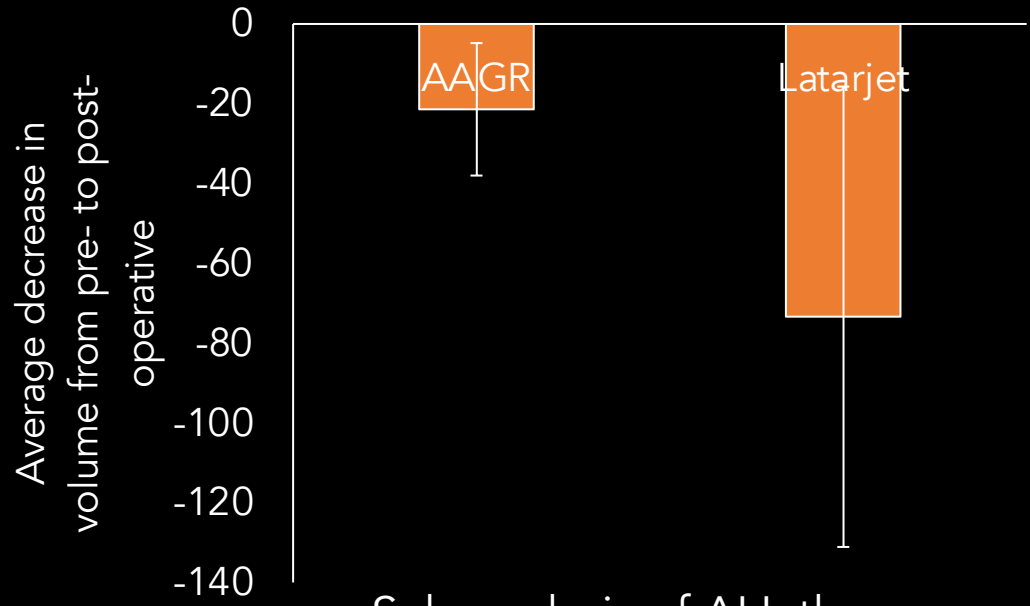
However, 61% Latarjet patients had a decrease in subscapularis volume and had significantly higher decrease in volume in the sub-analysis

P=0.039



P<0.001



Sub-analysis of ALL those with a decrease in subs volume

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AAGR had comparable preop volume as compared to normal population while Latarjet had a significant higher mean volume

- This is probably caused by the military recruits and a significantly higher percentage of males included in the Latarjet group while the AAGR and normal groups included the regular population.
- Military recruits are much stronger than the regular population
- A mix of regular people and military recruits may also explain the wide standard deviation in Latarjet

Both Latarjet and AAGR groups showed preserved subscap volume before and after surgery

- AAGR showed a slight increase in the subscapularis volume from pre to post even though this increase was not statistically significant (p=0.058)
  - This increase may be explained by the fact that patients often have decreased activity levels following shoulder instability which may lead to initial muscle atrophy. Following surgery and post-operative rehabilitation, patients resume their typical activities and sports about one year post-operatively, which may result in subsequent hypertrophy of the subscapularis muscle.

- Latarjet showed a slight decrease in the subscapularis volume from pre to post but this change was also not significant (p>0.05)
  - Ernstbrunner et al (2022) showed primary open Latajet preocedure did not result in the structural changes in subscapularis muscle quality as compared to the healthy contralateral shoulder at a mean follow-up of 8.4 years[10], which echoes with our study that Latarjet subscapularis split did not cause difference in muscle quality post-operatively

More Latarjet patients had decreased volumes when comparing pre to post than AAGR

- Of those patients that decreased volume in AAGR and Latarjet, Latarjet were significantly more reduced ($p<0.001$).
- The literature shows that functional and morphological changes to the subscapularis have been observed after Bristow - Latarjet procedure in terms of:
    - Fatty infiltration.[11]
    - Tendon thinning.[11]
    - Decreased range of motion and strength.[11,12,13]
- These significant changes in subscapularis muscle quality after subscapularis split were also confirmed with our study.

Strengths

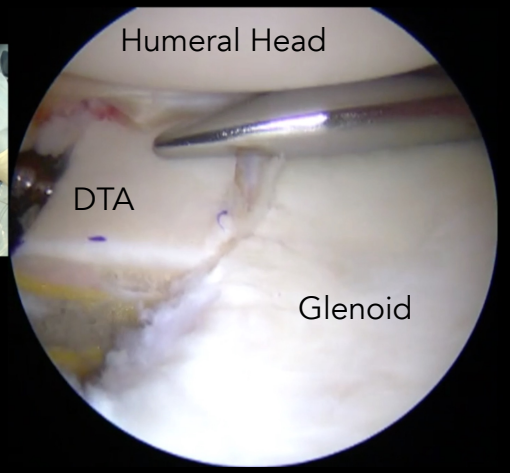
- Have a normal population as control group
- Have baseline characteristics as comparison to post-operative measurements
- AAGR has a large sample size as compared to previously published studies

Limitations

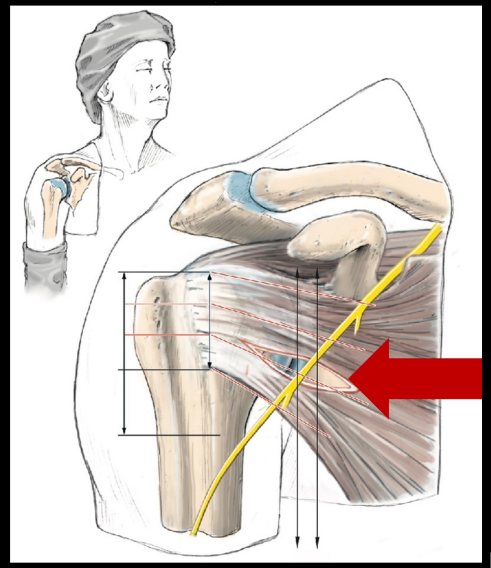
- Latarjet has a small sample size and includes military recruits which may cause a wide range of standard deviation.
- Both groups have a wide standard deviation in the CT follow-up.

Summary

- The AAGR technique is subscapularis-sparing both in surgical technique and structural outcomes, resulting in comparable subscapularis cross-sectional area and volume pre- and post-operatively.



- Latarjet using a subscapularis split results in lower subscapularis medial volumetric area.



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