

Sonographic Assessment of Calcific Deposit Volume in Rotator Cuff Calcific Tendinosis – A Reliable, Accurate and Non-Invasive Technique

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Introduction:

Calcific tendinosis(CaT) of the shoulder can present acutely or as a chronic painful condition, due to the presence of deposits of calcium hydroxyapatite crystals, commonly within the supraspinatus and infraspinatus tendons (1).

CaT predominantly affects individuals aged between 40 and 60 years. Women are more commonly affected than men.

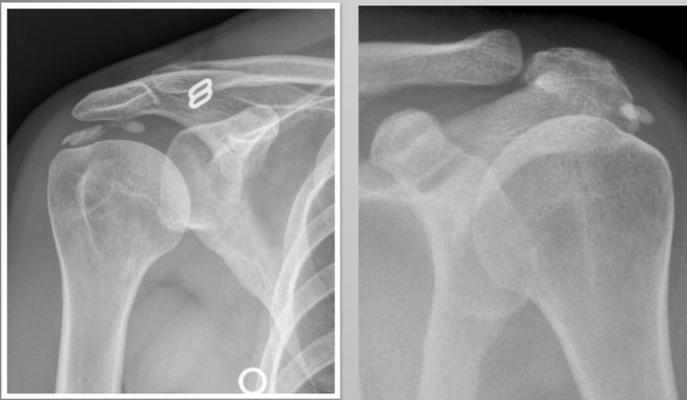


Fig.1&2: Right & left rotator cuff calcific deposits(Cdep) with clinical tendinosis, on x-rays

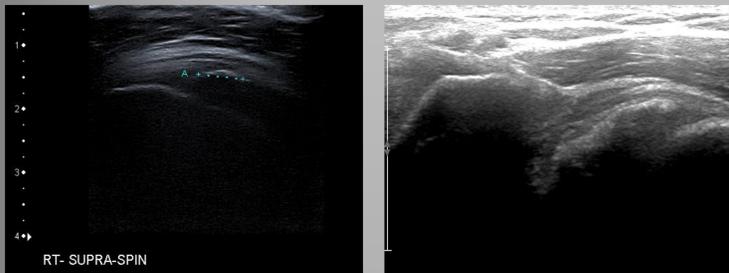


Fig.3&4: Supraspinatus Cdep on ultrasound(US) demonstrating volume under-estimation of the deposits on x-rays, corresponding to images Fig 1&2

Aims:

To accurately determine the CDep volumes in the rotator cuff tendons(RCT), in order to plan radiological based therapeutic intervention.

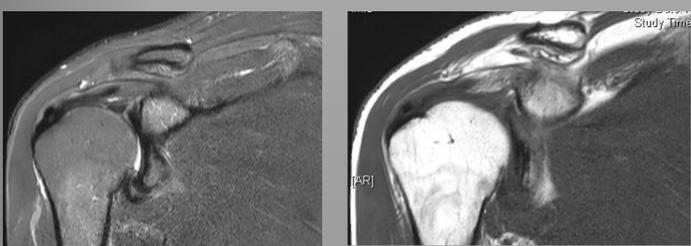


Fig.5&6: MR Evidence of Right Supra-Spinatus Cdep and clinical Tendinosis

Materials & Methods:

Upon initial plain film assessment, sonographic evaluation of the calcific deposits (CDep) was performed.

31(n=21) consecutive patients, with CDep in the RCT, detected on plain films, were referred for radiological therapeutic intervention, within a 1-year interval.

23(m=23) female patients and 8(n=8) male patients were included in the study cohort. The age range was 33 to 71 years with a median age of 52.

3 dedicated MSK Radiologists assessed the patient's calcific deposits volume with High Resolution Ultrasound, to determine the best treatment option (barbotage, fenestration or a combination of both).



Fig.7: Right Supra-Spinatus Tendon CDep

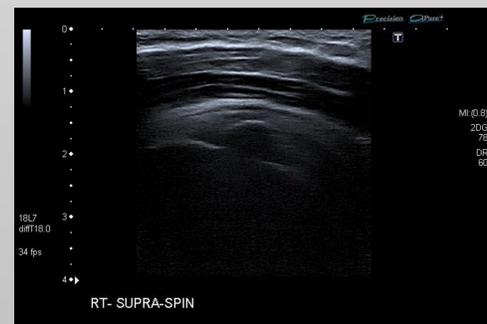


Fig.8: Right Supra-Spinatus Tendon CDep

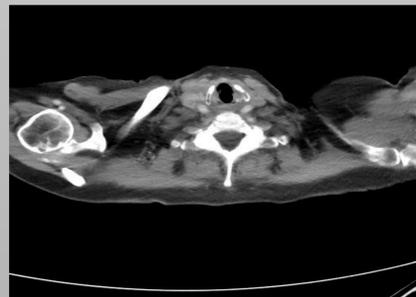


Fig.9: CT showing Right sided Cdep with clinical presentation of Calcific tendinitis



Fig.10: Left Cdep with clinical presentation of Calcific tendinitis on CT



Fig.11:Small&faint Cdep following fenestration treatment(same patient as Fig.1)



Fig.12:Small& faint Cdep following fenestration treatment(same patient as in Fig.2)



Fig.13: Plain Radiograph of Right Supra-Spinatus with CDep

Results:

Sonographic evaluation of the CDep in the RCT reveals a constant plain film underestimation of the deposit size, in all of our patients.

In two patients (k=2), CDep suspicion on x-rays was sonographically confirmed.

The measured difference in two-axis determination of the CDep varies from 3mm to 5 mm (mean value of 4 mm), with a projected volume underestimation differential of at least 3.9mm

Conclusion:

Sonographic assessment of CDep in the RCT is accurate, non-invasive and rapid.

It has significant advantages over plain films (underestimate CDep), CT (invasive) and MR (lengthy, non-reliable) and allows one-stop radiological intervention.



Fig.14: Plain Radiograph of Right Supra-Spinatus, with relatively faint Cdep. Please note axillary clips from previous Breast surgery

Study Limitations:

- Small study cohort
- Large BMI patients where US will have limitations