



Adhesive Capsulitis and the “frozen shoulder”

FROZEN SHOULDER: reduced range of active and passive movements in all directions.

This occasionally happens idiopathically, i.e for no good reason. There seems to be some association with Dupuytren contracture of the finger, and the microscopic changes seen in the coracohumeral ligament are similar to the changes that affect the Dupuytren ligaments.

KNOWN ASSOCIATIONS:

- missed fractures or dislocations
- rotator cuff repair surgery
- diabetes (?)
- Dupuytren contracture
- Age around 50-60

Roughly 2% prevalence in the general population; but an 11% prevalence among diabetics! Type 1 diabetics have a 40% lifetime risk of developing frozen shoulder. For whatever reason.

Consider other causes of a painful shoulder! Could this be a Pancoast tumour, for example? C-spine problems? OA?

Positive prognostic factors:

- Dominant arm involvement

**External rotation and abduction = most affected
Extension and horizontal adduction = least affected**

Negative prognostic factors:

- Diabetes for over 10 years
- Associated shoulder pathology, eg. rotator cuff injury
- Work-related injury, or the involvement of compensation lawyers.

NATURAL HISTORY: there are 3 stages, each lasting ~ 6 months.

FREEZING: Initially, there is hypervascular synovitis, and lots of inflammation.

The pain is initially greatest at the extremes of shoulder ROM.

The shoulder should be warm to the touch, and may feel slightly swollen.

PAIN IS AT ITS GREATEST AT THIS POINT.

FROZEN: Once the inflammation has settled, scarring persists: the hypervascularity and heat will have gone, and now capsular contraction is the predominant feature. The capsule is shrunken, thickened, and the ROM is reduced as described above; external rotation and abduction are most affected. **At this point, histology will show chronic fibrosis, with the predominant cells being the fibroblasts and myofibroblasts. This is exactly what you would find in a Dupuytren's tendon.** The condition also involves the coracohumeral ligament, rotator interval, subscapularis and the subacromial bursae. **Up to 80% of the ROM is lost.**

MOVEMENT RANGE IS AT ITS POOREST AT THIS POINT. Pain is somewhat better.

THAWING: the synovitis has resolved and the capsule gradually loosens over several months.

To be more precise, 12 to 42 months.

Most people recover 100% ROM. 10-15% of people may not recover completely. Recurrence is rare.

INVESTIGATION FINDINGS

Occasionally, for some reason, people may have investigations for this condition

PLAIN XRAYS: may show calcification of the rotator cuff. Rare sign.

BONE SCAN: increased uptake in the shoulder. Totally non-specific.

MRI: thickening of the coracohumeral ligament and joint capsule. This is more specific.

MANAGEMENT

Overall the outcome of management is relief of pain rather than improvement in ROM.

DRUGS: NSAIDs and steroid injections.

Actual oral steroids are useful for about 6 weeks; after that there is no improvement.

Shoulder injections are slightly more useful...

- **HOWEVER:** in the hands of an expert, without radiological guidance, 68% of the injections FAIL TO ENTER THE CAPSULE OF THE JOINT.

If you manage to hit the joint, you will get some improvement in 80% of these people.

PHYSIOTHERAPY: most useful in the “frozen” phase. There is certain 4-direction exercise.

SURGERY:

Tricky topic. Its tempting to operate at the 12th or 18th month into the “frozen” phase, when it seems as if the capsulitis isn’t getting any better. Several invasive things can be done:

MANIPULATION UNDER ANAESTHESIA:

Basically, wrenching the frozen shoulder through its ROM. May produce a humeral shaft fracture, especially in the osteopenic population. Apart from that, there is a good response, with only 13% of people having absolutely NO improvement. Generally better for people who have had symptoms for longer than 6 months.

OPEN CAPSULAR RELEASE:

Yes you may go in and release everything but this is fraught with complications, the posterior capsule is difficult to access, and post-operative pain severely inhibits all attempts to mobilize the recently released shoulder, so this is reserved for the horrible cases of postoperative adhesive capsulitis, where there is lots and lots of subdeltoid scarring.

ARTHROSCOPIC RELEASE:

Better than open release in terms of post-op morbidity; ranges from subscapularis release to complete synovectomy. Complications are rare.

THE BOTTOM LINE:

- This presents in a 50-60yr old diabetic, as pain on shoulder movement.
- You treat this with NSAIDs and opiates if necessary
- Then restricted ROM becomes a problem, and you treat this with physiotherapy
- If pain continues to be a problem, you consider skillfully injecting the capsule with steroids
- If there is no resolution and the problem persists for years, refer to a surgeon for some variety of release procedure, most likely arthroscopic release plus-minus mobilization under general anaesthesia.

Tasto et.al, “Adhesive Capsulitis” (SportsMedArthroscRev 2007;15:216221)

Bunker FE, Anthony PP. The pathology of frozen shoulder. A Dupuytren-like disease. JBJS. 1995;Br77:638677