

FROZEN SHOULDER

Evidence Based "CHEAT SHEET"

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BACKGROUND

- Adhesive capsulitis (frozen shoulder) is an inflammatory condition characterized by shoulder stiffness, pain, and significant loss of passive range of motion. (1)
- Types:
 - Idiopathic primary adhesive capsulitis
 - Unknown cause
 - Secondary systemic
 - Diabetes, thyroid disorders
 - Secondary intrinsic
 - Dislocations, RTC, labral pathology, fracture etc.
 - Secondary extrinsic
 - CVA, cervical radiculopathy (things that may cause prolonged immobilization)

PREVALENCE & RISK FACTORS: (2)

- Primary adhesive capsulitis is reported to affect 2-5% of the general population
 - Can be as high as 20% in patients with diabetes
 - "Often involves the non-dominant arm but bilateral involvement has been reported in up to 40-50% of cases.
- Peak incidence is observed in patients aged 40-60 years old.
 - ~84% fall into this age range
- ~70% of patients with A.C. are women. Higher incidence in men with diabetes
- Symptoms tend to resolve between 1-3 years
 - 20-50% of patients may go on to develop long-lasting symptoms..
- Groups at higher risk:
 - Diabetics, thyroid disease, CAD, autoimmune diseases, Dupuytren's contracture



PATHOANATOMY (2)

- “Contracture and synovitis of the GH capsule is the hallmark of adhesive capsulitis
- “Thus, it might be argued that frozen shoulder is primarily an inflammatory process that eventually leads to fibrotic changes”
 - Initially see increase in inflammatory cells such as T and B cells, macrophages and mast cells.
 - Later see an increase in fibroblasts.
 - Also see angiogenesis and increase in pain detecting nerve fibers



CLINICAL COURSE

- Four stages over 12-18 months (likely longer)
 - 40% of patients have sx's 2 years after
 - @3 years some still have ROM loss
- Stage 1:
 - ~3 mo in duration
 - Marked by sharp pain at end ranges of motion
 - Achy pain @ rest
 - Sleep disturbance
 - Restricted ER ROM with an intact cuff strength may be a hallmark of this stage
 - Tissue level:
 - Diffuse synovial rxn without adhesion or contracture
- Stage 2: “painful or freezing phase”
 - 3-9 mo in duration
 - Gradual loss of motion
 - Tissue level:
 - Aggressive synovitis/angiogenesis and mild loss of ROM under anesthesia
- Stage 3: “frozen stage”
 - 9-15 mo after primary sx's
 - Tissue level:
 - synovitis/angiogenesis lessens
 - Progressive capsuloligamentous fibrosis → loss of axillary fold and ROM under anesthesia
- Stage 4: “thawing phase”
 - By that begins to resolve but significant stiffness
 - 15-24 mo after primary sx's
 - Tissue level
 - Continued capsuloligamentous fibrosis
 - Resolution depends of extent of fibroplasia and subsequent resorption



DIAGNOSIS

- Goal of diagnosis is to direct intervention and inform prognosis
- Rule in if:
 - Age between 40-65 years old
 - Gradual onset and progressive worsening of pain and stiffness > 1 month
 - May be with or without trauma
 - Likely to have night pain
 - GH ROM is limited in multiple directions with pain @ end ROM
 - ER is most limited, esp in adduction and up at 90 degrees abduction
 - > 25% loss of motion in @ least 2 planes
 - Passive ER that is >50% less than the uninvolved side (or less than 30 degrees)
 - Restricted joint play in all directions



DIFFERENTIAL DIAGNOSIS (3)

- Other conditions to r/o:
 - Shoulder instability
 - RCRP, RC Tears, subacromial pain
 - Joint infections
 - OA, RA
 - Malignancy
 - Inflammatory arthropathy including polymyalgia rheumatica
 - GH joint fracture
 - Calcific tendinitis
- Radiograph may be helpful for ruling out other conditions, not for ruling in A.C.(1)

OUTCOME MEASURES (3)

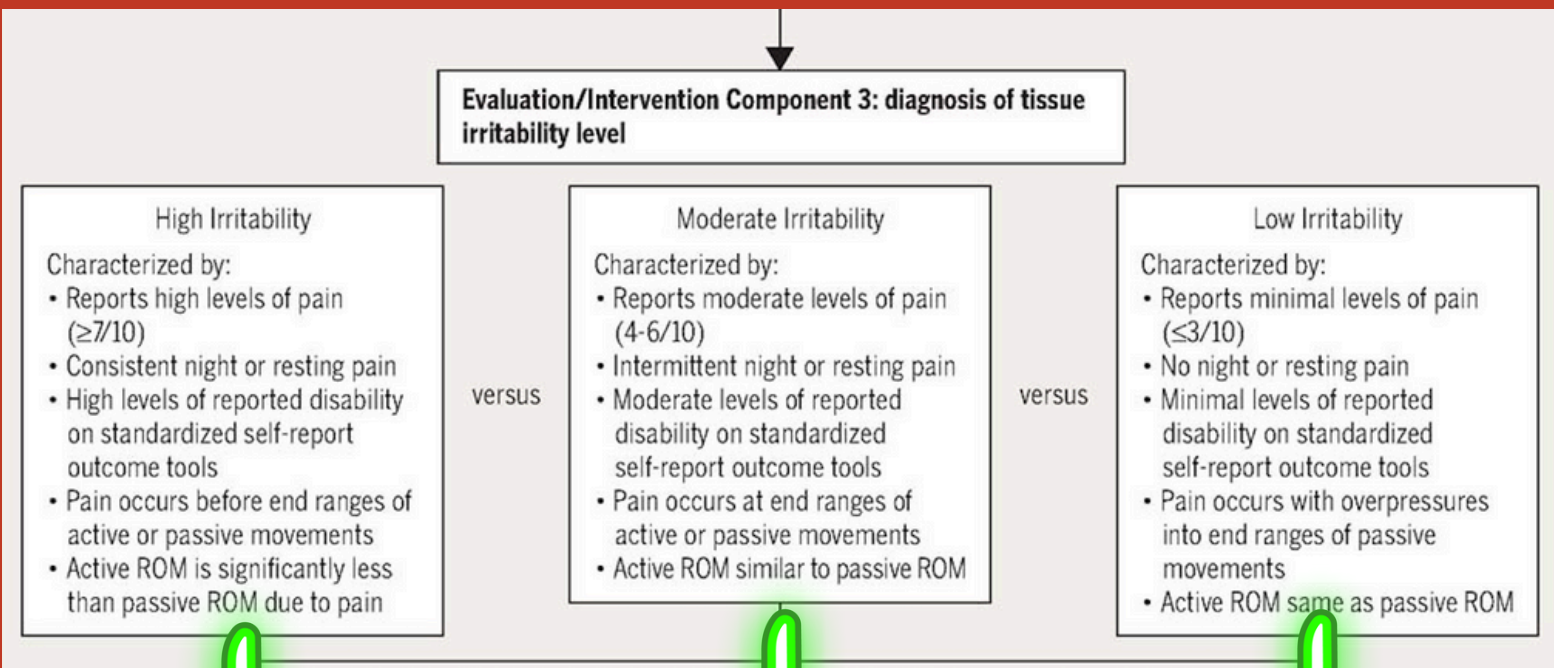
- “A” level recommendation from CPGs
- DASH
 - Scores 0-100 (higher = more disability)
 - MCID 10 pts
- ASES
 - Score of function (higher = better)
 - MCID 6.4
- SPADI
 - 0= no disability
 - 100= most disability
 - MCID 8-13 pts



CLINICAL EXAM (3)

- Determine the level of tissue irritability (2,3)
 - “An expanded classification system that includes the pathoanatomic diagnosis and a rehab classification based on tissue irritability”
 - “For the rehab classification, three levels of irritability are proposed and defined with corresponding strategies guiding intensity of tx based on the physical stress theory”
- Stage 1:
 - 2-6 mo duration w/ mod-sev pain (high)
 - Pain and loss of motion in terminal ranges
- Stage 2:
 - 4-12 mo duration w/ mod pain. Pain improving, motion worsening
- Stage 3:
 - 6-26 mo duration w/ min pain. Gradual resolution of stiffness
- “The appears to be acceptable reliability and strong relationship between patient reported outcome measures and therapist rated tissue irritability, supporting the use of the STAR-Shoulder irritability rating system.

TREATMENTS BY IRRITABILITY (3)



- Modalities:
 - Heat & E-stim for pain modulation
- Self-care / home management training:
 - Patient education on positions of comfort and activity modifications to limit tissue inflammation and pain
- Manual therapy:
 - Low-intensity joint mobilization procedures in pain-free accessory ranges and positions
- Mobility exercises:
 - Pain-free passive ROM exercises
 - Pain-free active assisted ROM

- Modalities:
 - Heat & E-stim for pain modulation
- Self-care/home management training:
 - Education: progressing activities to gain motion and function without producing tissue inflammation and pain
- Manual therapy:
 - Moderate-intensity joint mobilization progressing amplitude and duration of procedures into tissue resistance without producing post-treatment pain
- Stretching exercises:
 - Gentle to moderate stretching exercises, progressing the intensity and duration of the stretches into tissue resistance without producing post treatment pain
- Neuromuscular re-education:
 - Procedures to integrate gains in mobility into normal scapulohumeral movement

- Self-care/home management training:
 - Patient education on progression to performing high-demand functional and/or recreational activities
- Manual therapy:
 - End-range joint mobilization procedures, high amplitude and long duration of procedures into tissue resistance
- Stretching exercises:
 - Stretching exercises, progressing the duration of the stretches into tissue resistance without producing posttreatment pain
- Neuromuscular re-education:
 - Procedures to integrate gains in mobility into normal scapulohumeral movement during performance of the activities performed by the patient during his/her functional and/or recreational activities



CORTICOSTEROID INJECTIONS

- “In general, physical therapy is simultaneously combined with other treatment modalities, as there is little overall evidence to support physical therapy alone in the treatment of adhesive capsulitis.” (4)
- “Based on a network of nine studies the MTC found that steroid combined with physiotherapy was the only treatment showing a statistically and clinically significant beneficial treatment effect compared with placebo (5)
- Anjum et al 2020: PT + injection leads to significant improvement in flexion, abduction & ER ROM and reduced pain & disability vs PT alone (7)
- Carette et al 2003: A combination of corticosteroid injection and supervised physiotherapy effectively improves shoulder pain and disability, while supervised physiotherapy alone has limited efficacy. (8)

SURGERY

- Not superior to conservative care and comes with higher cost and higher risk of complications (9)

Review

> [Cochrane Database Syst Rev.](#)

2014 Aug 26;2014(8):CD011275.

doi: 10.1002/14651858.CD011275.

Manual therapy and exercise for adhesive capsulitis (frozen shoulder)

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- Cochrane review (6)
 - Pain:
 - Manual therapy and exercise not as effective as glucocorticoid injection
 - Function:
 - Pt with manual therapy and exercise did not improve as much as glucocorticoid injection
 - 46/100 reported successful tx with manual therapy and exercise
 - 77/100 reported tx success with steroid injection = 31% more improvement

OTHER TREATMENTS



Hydrodilatation: (12)

- Attempts to expand the joint space through the sheer hydraulic pressure exerted by the injectate (saline and steroid)
- Hydrodilatation leads to at least transient more marked improvements in shoulder disability and passive external rotation compared with intra-articular corticosteroid injections.

Suprascapular Nerve Block: (13)

- Injection of anesthetics and steroids into the suprascapular nerve
- Suprascapular nerve block is an effective therapy with long-term pain relief and increased mobility of the shoulder joint in patients with adhesive capsulitis



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