

WHAT IS A 'FROZEN SHOULDER'?

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'Frozen shoulder' or 'Adhesive Capsulitis' was first termed by Codman in 1934, who described a person presenting with a stiff or painful shoulder that displayed the following features:

- A slow onset
- An inability to sleep on the affected side
- Restrictions and pain with arm elevation as well as external rotation
- Has normal radiographic finding (Bunker and Anthony, 1995).

Risk Factors

Adhesive Capsulitis is a common condition seen in about 3% of population. In 10% of these people it will occur bilaterally. It is more prevalent in people over the age of 40 years and is seen far more often in women than men. Diabetics and people with Thyroid disease appear more susceptible.

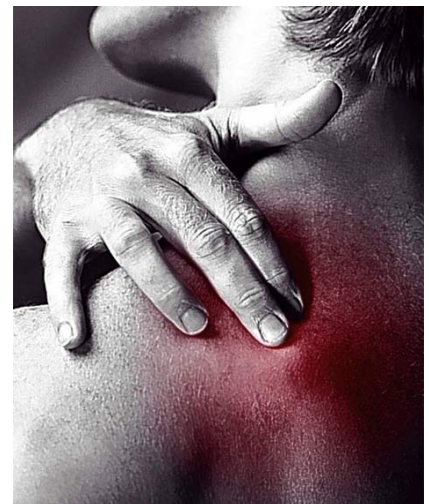
Generally, the condition is **self limiting** – that is, it will resolve by itself over the course of time. It can take up to two years but the reasons for this are unknown.

Pathology

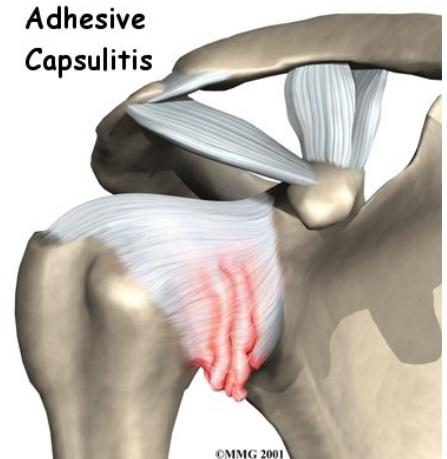
Categories (Lundberg, 1969)

- **Primary:** a possible spontaneous onset of symptoms having no known cause.
- **Secondary:** having a known or identifiable onset, occurring following a previous incident, trauma or surgery

Traumatic events include falls, fractures or joint dislocations, while surgeries such as open heart, breast or neurosurgery are also related to the occurrence of this condition.



Adhesive Capsulitis



Stages (Sandor, 2000)

- **Freezing:** This stage is indicated by severe pain
 - Pain may be at rest as well as with movement, consequently reducing the desire to move the shoulder (joint stiffens as a result) and may last from 10 - 36 weeks.
- **Frozen:** There is progressive development of joint stiffness and loss of joint mobility.
 - Pain still remains at the ends of range but otherwise improves during this phase. This may last from 4 - 12 months
- **Thawing:** Predominantly presenting with stiffness alone.
 - During this phase the range of movement in the shoulder should begin to resolve, returning toward normal. This may last from 12mths - years.

*These time frames are by no means set; these general phases may last for shorter or even longer periods.

In 80% of these patients the pain resolves completely, but more are left with a long-term loss of shoulder motion.

In determining the cause behind the Frozen Shoulder, Nevasier and Simmonds initially thought it was due to chronic inflammation. However, in 1969 Lundberg proposed the pathology was not inflammatory in nature but more closely related to a fibrosing condition (cited in Bunker & Anthony, 1995). Bunker & Anthony in their study supported the latter in 1995 when they defined a frozen shoulder primarily as a fibrosing condition and not an inflammatory condition. They explained that the main healing cells present in this condition are scarring cells (fibroblasts and myofibroblasts), with minimal to no inflammatory cells existent. Those inflammatory cells present were thought to be a secondary reaction to overload from the physical and functional restrictions. Synovial fluid within the joint, which provides lubrication for movement, may also be reduced further limiting motion. It is this lack of space between the capsule and the ball and socket joint of the shoulder that distinguishes the Frozen Shoulder.

Investigations

X-Rays can be useful to differentially diagnose alternative bone or joint pathologies such as osteoarthritis, which may present with similar symptoms

Diagnostic Ultrasound can be useful for differentially diagnosing rotator cuff pathology and sub-acromial space derangement, but not very useful for intra-articular pathology such as frozen shoulder.

Magnetic Resonance Imaging (MRI) can be useful for differentially diagnosing other rotator cuff pathology

CT Scan – arthrogram

Physical Restrictions

Generally individuals with a 'frozen shoulder' will present with:

- A painful and stiff shoulder (worsening at night)
- Restricted range of movement (both actively and passively) in more than 2 directions of movement



- Often unable to elevate their affected arm more than 100°
- Often have less than half of available movement of shoulder external rotation with their elbow at their side (Bunker and Anthony, 1995).

Physical examination of the shoulder is the primary means for diagnosing Frozen Shoulder. Comparisons made between your active movement (that generated by you without assistance) and your passive movement (that generated by your health practitioner) identifies differences in your available range of motion at the shoulder. Loss of both of these movements, as well as a pattern of diffuse pain and joint tightness are strong indicators of Frozen Shoulder.

Functional Restrictions

Generally individuals with a 'frozen shoulder' will present with difficulty:

- Sleeping on their side
- Reaching into cupboards or overhead
- Tucking shirt or fastening bra
- Carrying heavy loads



Treatment

The most important aspect of management is to understand that the condition is likely to resolve by itself.

Avoiding further muscle wasting and joint stiffness by immobilizing the shoulder is important, so often the emphasis is on using the shoulder as normally as possible (within limits of pain and / or movement restriction of course) to preserve joint range of motion.

Pain management is important through the use of analgesics (pain medication administered orally or by injection) and should be discussed with your doctor as to the best course of action.

There are numerous current management strategies for a frozen shoulder, some of which include

- Physiotherapy:
 - Prescribed home exercises
 - Pain free – to maintain range in the initial stages
 - Pain free – to gain range and strength in the latter stages
 - Passive stretches and manual joint mobilization can often be counterproductive in the initial stages
 - Posture correction
 - Movement re-education
 - Assessing the interaction between the upper arm, shoulder blade and the trunk as we move (including coordination)
 - Altering abnormal muscular recruitment patterns and tone in these areas
 - This shared knowledge should enable self management long term



A study by Mao et al (1997) found significant improvements in range of movement of the affected arm through physiotherapy intervention. Physiotherapy treatments are wide ranging and treatment for each individual will vary dependent on findings from a thorough objective evaluation.

- Heat or Cold
- Acupuncture
- Oral Non-Steroidal Anti-Inflammatory Drugs (? acting on the secondary inflammatory cells that may occur)
- Injection of intra-articular steroid (Ultrasound guided)
- Surgery:
 - Arthroscopic release of fibrotic scarring;
 - Hydro-dilatation to stretch scarring or
 - Manipulation under anaesthetic to break scarring.
 - Discuss the success rate and possible complications with your surgeon before undertaking

Best practice management of the frozen shoulder may well be a multi-disciplinary approach from a medical and a physiotherapy perspective. In order to obtain the best management an accurate diagnosis and a thorough physical assessment is required. Each individual who presents with a frozen shoulder (suspected/diagnosed) will not necessarily benefit from the same management as another individual, hereby outlining the importance of an accurate diagnosis and a thorough physical assessment.

Other considerations determining best practice management include:

- The patient's needs/demands (work, social etc),
- How long the condition has been present (the stage of the condition),
- The degree of functional restriction
- The type of condition (primary or secondary).

References:

Bunker TD & Anthony PP (1995). The Pathology of Frozen Shoulder. *Journal of Bone and Joint Surgery*. 77: 677-683.

Mao CY, Jaw WC, Cheng HC. (1997) Frozen shoulder: correlation between the response to physical therapy and follow-up shoulder arthrography. *Arch Phys Med Rehabilitation*. 78: 857– 859.

Sandor R, (2000). Adhesive Capsulitis: Optimal Treatment of 'Frozen Shoulder' *The Physician and Sportsmedicine*. 28(9)
http://www.physsportsmed.com/issues/2000/09_00/sep00.htm. Accessed January 2008.

Other useful links:

<http://www.orthosports.com.au/shoulder.html>
<http://mayoclinic.com/frozen-shoulder/DS00416>
http://en.wikipedia.org/wiki/Frozen_shoulder
<http://orthoinfo.aaos.org/topic.cfm?topic=A00071>

