De primaire frozen shoulder
Stenvers, Jan Derek

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
1994

Citation for published version (APA):

Copyright
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.
Summary

The primary frozen shoulder, a once occurring idiopathic condition of the shoulder, is characterised by inflammation of the tissues around the shoulder joint and is followed by adhesions and retraction of those tissues. This condition is seen in 1 to 2% of patients exhibiting shoulder problems, occurring more or less equally within men and women in the age span between 40 and 70 years.

After a period of pain, localized mostly in the shoulder and/or upper arm, begins the onset of severe limitation of movement of the glenohumeral joint in all directions. This limitation is caused by the retraction of the glenohumeral joint capsule and adhesions of the subdeltoid bursa. Due to this condition of the glenohumeral joint the arm is not able to be elevated forward, actively or passively, more than 90 degrees. This movement is made possible by rotation of the scapula and forced posterior movement of the clavicle. Further forced movement of the arm through the use of mobilizing exercises, is often followed by severe pain but without an increase in the range of shoulder movement.

Cineradiography of the primary frozen shoulder reveals that not only is the movement pattern of scapula and clavicle changed, but also the relationship between the coracoid process and the clavicle. Further forward elevation of the arm is made impossible due to obstruction of the coracoid process by the clavicle. This obstruction results in the compression of the tissues lying between these bones causing pain. Postmortem examination confirms this theory. Guided by these observations it is thus illustrated that patients with a frozen shoulder suffer pain, not only from the primarily affected tissues around the shoulder, but also from the compression of the tissues between the coracoid process and the clavicle during forward elevation of the arm. (Stenvers and Overbeek 1978). Based on these results a new method of shoulder mobilization was conceived and used in the treatment of 53 patients with primary frozen shoulder in the period of from April 1982 until April 1988.

The following questions were formulated:

1. Do the cineradiography findings give reasonable cause to change to a less painful form of exercise which leads to functional recovery of the shoulder?
2. Is there an influence on this condition of the shoulder by using this alternative form of therapy?
3. Does MRI contribute to the insight into primary frozen shoulder syndrome?
4. What is the best treatment program for patients with a primary frozen shoulder?

In chapter 1 a description of the primary frozen shoulder is given, followed by an historical overview of this condition. In the section where the etiology is described it becomes obvious that there are many investigators interested in the cause of this condition. Minor injuries, rotator cuff degeneration, psychological and immunological factors and the role of genetic predisposition for postinflammatory fibrosis of periarticular tissues, are described aspects of this condition. Until now there has been no clear answer as to where this condition originates. There is also some attention focused on the secondary frozen shoulder which has more demonstratable etiological causes. In chapter 2 the anatomy is discussed. Besides attention on the participating bone and peri-articular tissues, the involved musculature of the glenohumeral joint is also described.
In the final part of this chapter the tissues lying between the coracoid process and the clavicle are also described. Between these bones were found to lie an artery, vein and nerve all originating from the brachial plexus.

Chapter 3 deals with the aspects of the physical examination of the frozen shoulder patient. All imaging techniques used in the diagnosis of the primary frozen are discussed in chapter 4. The standard radiograph gives no information specific to the frozen shoulder. On the contrary, arthrography is able to demonstrate some of the specific abnormalities of the frozen shoulder. Decreased joint volume and diminished filling of the various bursae around the shoulder are often seen.

Through the use of arthroscopy it was possible to visualize four stages of capsule reaction in the frozen shoulder. The information gained by ultrasonography is not clear enough to make a definite diagnosis of this condition.

Cineradiography has been of great value in the study of the abnormal dynamics of the bones in the frozen shoulder and the extend to which the glenohumeral joint is restricted. The value of MRI of the frozen shoulder becomes evident in the later stages of this investigation. 11 patients with frozen shoulder syndrome were examined using MRI and many abnormalities were found. Fluid collections were seen intra-articularly as well as in peri-articular tissues. Thickening of the joint capsule and contraction of the axillary fold were also demonstrated.

In chapter 5 all therapies applicable to the frozen shoulder are reviewed. Manipulation under anaesthesia, joint distension and injection therapy proved to be the most used forms of therapy.

A recently performed study on the effect of corticosteroid injections showed that, while there was a decrease in pain, there was no associated improvement in shoulder movement.

Our newly introduced form of therapy is described in chapter 6. The differences between previously used forms of shoulder mobilization and our applied form of mobilization are biomechanically analyzed.

Chapter 7 describes the methods used in this investigation and the results that were obtained through the use of patient surveys and physical examinations.

The answers to the formulated questions are as follows:

1. The method of frozen shoulder mobilization, that we developed after cineradiographic observations, leads to a satisfactory recovery of function and diminished pain. Pain occurring during treatment is reduced to an acceptable level for the patient.

2. In how far the treatment is influencing the normal development of the condition, was difficult to judge. The various authors Grey(1978), Clarke (1975), Reeves (1975) and Rowe (1988) are not in agreement over the timescale of the condition. There is no known data regarding the treatment duration. The average length of patient treatment was 7 months. The number of treatments required by patients who had received previous attention for their condition did not differ from those who had no treatment beforehand. There is the impression that aggressive forms of treatment cause a negative effect on frozen shoulder development.

3. MRI demonstrates many of the various abnormalities of the frozen shoulder. Following MRI investigation it is necessary to access whether seen abnormalities are characteristic of frozen shoulder syndrome. Intra-articular fluid collections as
well as those in the subcoracoid recess had not earlier been reported. In 6 out of 7 patients where the frozen shoulder had existed for more than 12 months both intra-and peri-articular fluid collections were found.

4. The optimal treatment for primary frozen shoulder syndrome should consist of the following components:
   - An intra-articular corticosteroid injection as described by de Jong (1991), whose affect is directed towards the relief of pain caused by inflammation of the capsule. In our opinion, we would recommend these intra-articular injections to be administered under fluoroscopic control with use of contrast media.
   - In cases of severe pain, cold, applied several times a day over a period of a few days to 1 week, should be used.
   - A common form of heat treatment in the form of infrared radiation is used in preparation before massage of the shoulder muscles.
   - Mobilization of the glenohumeral joint by moving the scapula in opposition to the humerus, as described in this study.
   - If there is recovery of movement endo-and exorotation of the humerus should be encouraged.