

APPLIED KINESIOLOGY AND THE FROZEN SHOULDER SYNDROME BY

By Clive Lindley-Jones B.Ed.(Hons) D.O.
M.R.O.

ABSTRACT

The literature of this common condition is critically reviewed followed by the contributions that Applied Kinesiology can make in a better understanding of this enigmatic misnomer.

INTRODUCTION.

The Frozen Shoulder Syndrome remains one of the enigmas of physical medicine. Standard orthopedic texts¹ characterise it as a baffling problem of unknown cause, there being no evidence of infection, and injury being an inconstant factor whose significance is in doubt. In this paper I will review the various explanations and treatments commonly used and add to them the range of approaches Applied Kinesiology has to offer this painful and debilitating problem.

A review of the literature on this topic is instructive. It can almost be seen as a rule that, whatever can be shown to be effective in its treatment in one source is discredited in another; confusion abounds. Few conditions have accrued such a plethora of names. Initially described as 'periarterite scapulohumerale' by Duplay (1872) and 'painful periarteritis of the shoulder'

by Putnam(1882), it gained its commonly held name of Frozen Shoulder from Codman in 1934. Codman summed up the consensus of many writers reviewed when he said of it that it was "difficult to define, difficult to treat and difficult to explain from the point of view of pathology"²

Synonyms abound, including adhesive capsulitis, periarteritis, periarticular adhesions, Duplay's disease, tendonitis of the short rotators, adherent subacromial bursitis, shoulder portion of the shoulder hand syndrome, supraspinatus tendonitis and so the names go on, showing the diversity of opinion and confusion that still surrounds this common condition.

While many like Cyriax³ feel the term 'frozen shoulder' is obsolete, merely being a synonym for 'stiff shoulder', perhaps the most honest attempt at a name comes from Tim Bunker in an amusing letter to the British Medical Journal⁴ when he proposes the term H.G.A.C., which as he says, "has the benefit of brevity (indeed it is a four letter word) and rhythm and it implies no false knowledge of etiology or histology. To the patient it can mean 'humero-glenoid acromioclavicular

¹Crawford Adams,J. *Outline of Orthopaedics*
Ed.8.1976. p.234

² Codman *The Shoulder* Boston: Todd 1934.

³ Cyriax, J. *Textbook of Orthopaedic Medicine* Bth.
Edition. Vol. 11989. p.136.

⁴ Bunker, T. *Time for a new name for "Frozen Shoulder"* The British Medical Journal Vol. 290.

syndrome' and to the doctor, "Haven't got a clue"!⁵

Somewhat hard on the undoubted efforts and sometimes scrupulous methodology of many of the papers on the treatment of frozen shoulder, Goodheart⁶ wraps them up' with the sentence that, ".....all these doubtful therapies have all offered treatment without diagnosis - a cardinal sin."

Walther⁷, like Goodheart, begins his discussion of the syndrome with the view that it is "probably the most dramatic demonstration of the use of applied kinesiology that can be made".

DEFINITIONS AND TREATMENTS

The very presence of such a wide range of names should alert us to the difficulty of finding a satisfactory definition for the Frozen Shoulder. Kay⁸ thinks we should confine our use of the term to the shoulder in which the synovial inflammation has produced adhesions between the two layers of dependent inferior folds of capsule. Management of such problems by conventional means often results in two to three years of pain and stiffness, according to Kay.

⁵ *ibid.*

⁶ Goodheart, G. *You'll be Better: The Story of Applied Kinesiology* ch. 31. p.3.

⁷ Walther, D. *Applied Kinesiology: The Advanced Approach to Chiropractic* 1976 p.286.

⁸ Kay, N. *The Painful Shoulder. The Practitioner.* February 1985 VoI.229. p.124.

Typical of the contradictory views espoused in the literature regarding methods of treatment are the diametrically opposed views to be found regarding manipulation under anaesthetic. For example Paterson and Bum,⁹ in *An Introduction to Medical Manipulation*, hold the view that, "Manipulation has no place in treatment of the shoulder. Performed under general anaesthesia, it is capable of producing severe and prolonged reaction." While three years later a study by Hill and Bogumill¹⁰ conclude that

"Manipulation was found to be a safe means of treating adhesive capsulitis and significantly shortened the course of disease".

From our point of view such forceful and gross manipulation seems anathema. Apparently what is achieved in such manoeuvres with, often some considerable loud snapping, is not adhesions being torn, according to Rowe and Leffert¹¹, but often the contracted inferior capsule of the glenohumeral joint rupturing in those cases that regain motion. In some the subscapularis as well as other structures may tear.

A serendipitous consequence of

⁹ Paterson, J. & Bum, L. *An Introduction to Medical Manipulation.* MTP Press Ltd. 1985. p.120.

¹⁰ Hill, J. & Bogumill, H. *Manipulation in the treatment of Frozen Shoulder.* Orthopaedics. September 1988. VoI.11/No.9. p.1260

¹¹ Rowe, C. & Leffert, R. *Idiopathic Chronic Adhesive Capsulitis ('Frozen Shoulder')* in *The Shoulder* Ed. Roe, C. 1988. p.161

diagnostic arthrography has been the use of Hydraulic Distension under local anaesthetic. Fareed & Gallivan¹² claim a safe reliable and highly effective treatment for frozen shoulder without attendant risks or complications. They see this approach as being the one to be considered first in management of this problem.

In their review of the literature on the subject Nash and Hazelman¹³ define Primary Frozen Shoulder as;

"... a condition of unknown etiology distinguished by painful restriction of all shoulder movements, both active and passive, characterised by prominent reduction in the glenohumeral range of movement and in shoulder external rotation."

CLINICAL FEATURES

Three phases of frozen shoulder are recognised, sometimes called *freezing, frozen and thawing*, each lasting anything between 3 to 24 month's duration. It does not occur in other joints of the body, is usually self limiting, it may involve the opposite shoulder, but rarely recurs in the same shoulder, 70% of the sufferers are female, and occurs normally between 40-60 years of age (the menopause period), the non dominantly limb is more commonly affected than the dominant and while it

is not associated with arthritis or malignancies there are a number of associated diseases that Frozen shoulder is secondary to. These include Diabetes" (33.3% of frozen shoulder patients suffered from type 1 diabetes in Hedtemann's¹⁴ study), thyroid disease, cardiac disease and cardiac surgery, neurological disorders with impaired consciousness or hemiplegia, and pulmonary disease. Interestingly in a recent paper Riley et al¹⁵ point out that in at least 8% of the patients in their study frozen shoulder was the first symptom of Parkinson's disease occurring 0-2 years prior to the onset of the more commonly recognised features of Parkinson's disease.

While it is well known that there is normally an absence of bony X-ray changes Colvin¹⁶ points out that by requesting an additional view at approximately 30 degrees abduction changes such as alteration in scapulo-humeral angle, glenoid glide, early scapulo-thoracic glide and premature acromio clavicular joint involvement may cast further light on the patient's problem. Rowe & Leffert¹⁷ also point

¹² Fareed, D. & Gallivan, W. **Office Management of Frozen Shoulder Syndrome** Clinical Orthopedics and Related Research No 242 May 1989. pp.177-183.

¹³ Nash P. & Hazelman B. **Frozen shoulder** Bailliere's Rheumatology Vol. NO.3. December 1989. pp.551-566.

¹⁴ Hedtmann A. **So called humero-scapular periatheropathy: classification and analysis based on 1,266 cases** Orthopaedics 1989 Nov. Dec: 127(6): 643-9.

¹⁵ Riley, D. Lang, A. Blair, R. Bimbaum, A. & Reid, B. **Frozen shoulder and other shoulder disturbances in Parkinson's Disease**, Journal of Neurology, Neurosurgery & Psychiatry. 1989 Jan. 52(1) : 63-6.

¹⁶ Colvin, P, **Radiological observations in established 'frozen shoulder'** in The British Osteopathic Journal Vol. XIV, No. 1. June 1982.).45.

¹⁷ op. cit. ref. 10. p.162.

out that, some patients, who do not respond to therapy, may in fact, be suffering from an unrecognised chronic (unreduced) posterior dislocation of the shoulder. This should therefore always be born in mind in unresponsive cases.

Other local symptoms, such as tennis elbow and carpal tunnel syndrome, may often overlap and coincide with frozen shoulder. One view¹⁸ holds that this is due to a narrowed cervical canal either congenital or acquired as a result of cervical spondylosis, and restriction of use of the shoulder might lead to compensatory overuse of the elbow or wrist. A more subtle view of these phenomena could be the double or triple crush syndrome, where summation of nerve irritation at various points along its path could lead to dysfunction, which one single part of the nerve irritation would not produce.

Factors which are thought to predispose to this condition such as pain, disuse and the more controversial "periarttheritic personality" mentioned by Owens-Burkhart¹⁹ may point towards the aetiological piece of this jigsaw that AK can offer.

If, as we know, the shoulder is dependent on the smooth synergistic action of twenty muscles for its normal

functioning, failure in this synergistic effort due to hypo or hyper-tonicity in one or more of these twenty could easily be a factor in early loss of shoulder motion. Immobilisation of a synovial joint has been shown to have detrimental effects on the periarticular connective tissue²⁰ so that clinically the loss of shoulder motion brought about, particularly in a patient with a low pain threshold, high degree of tension and anxiety, could be the precursors to the resulting underlying capsular connective tissue changes found in the advanced stages of Frozen shoulder.

Cailliet²¹ outlines, in his schematic style, the kind of stages such as vasospasm, hypoxia, muscle spasm and immobility, leading to diminished venous return, secondary vasospasm and congestion/disuse, leading finally to fibrous reaction and functional disability that are familiar to us. However despite his more holistic, functional style, Cailliet fails to include in his list the all important factor that Goodheart has observed, namely, that most muscle spasm is not primary, but secondary to antagonist muscle weakness.

If, as seems to be the conventional wisdom, that the best treatment for frozen shoulder is that of prevention, then early analysis and applied kinesiological treatment of the muscular dysfunction that may well be a

¹⁸ The Oxford University Textbook of Medicine O.U.P. 1987 p.16.87

¹⁹ Owens-Burkhart, H. Management of Frozen Shoulder in *The Clinic in Physical Therapy* Vol.2. Ed. Donatelli, R. Churchill Livingstone. 1987. p.83.

²⁰ *ibid*

²¹ Cailliet, R. *Shoulder Pain* Ed. 2. F.A. Davis & Co. 1985 p.83

major aetiological cause, is of paramount importance. While it is seen as a self limiting disorder, complete recovery with no residual disability is, as Cailliet²² says, neither assured nor common.

Throughout all the erudite papers reviewed, only two start to approach this miss named enigma with any great functional vision. Cailliet as mentioned being one and the other, far closer to our own way of thinking is Travell and Simons.²³

In Travell's approach, when viewed in terms of myofascial Trigger Point phenomena, the etiology and natural history of most 'frozen shoulders' was clear. They define Myofascial Trigger Points (TP's) as, "A hyperirritable spot, usually within a taut band of skeletal muscle or in the muscle's fascia, that is painful on compression and that can give rise to characteristic referred pain, tenderness, and autonomic phenomena. *A myofascial Trigger point is to be distinguished from cutaneous, ligamentous, periosteal and non muscular fascial trigger points.*²⁴

In their view the patient activates TPs in the subscapularis muscle which in turn, causes associated TPs to develop in most of the remaining shoulder muscles. Also the initiating trauma, in some cases, may activate primary TPs in several shoulder girdle muscles. In this way connective tissue changes similar to those caused by

TPs in other muscles combined with the marked limitation of motion due to active subscapularis TPs, may lead to adhesive capsulitis and subacromial fibrosis.

Travell & Simons feel that subscapularis is usually where things start going wrong, it restricts abduction at the shoulder, which sensitizes the pectoralis major and minor, latissimus dorsi and triceps to develop TPs. The restriction of external rotation similarly sensitizes the anterior deltoid and teres major and so it goes on through overload of agonists and restriction of their range of motion. Eventually all of the shoulder girdle muscles may be involved. As Travell & Simons point out;

"Regardless of the name used, the important contribution by the muscles to this common condition remains the same...the severely restricted range of motion is seldom missed but the fact that the muscles are primarily responsible is only occasionally noted. That the subscapularis muscle is critically involved is usually overlooked"²⁵

APPLIED KINESIOLOGICAL APPROACHES TO TREATMENT

What then can we add to this host of often conflicting ideas? What is the newcomer to AK to make of claims, such as those made by Goodheart²⁶ and Walther,²⁷ that long standing 'frozen shoulder' problems can be returned to at least 70% of function in less time

²² Ibid p85

²³ Travell, J & Simons, D. **Myofascial Pain and Dysfunction: The Trigger Point Manual** 1983. pp. 413-423

²⁴ Ibid p.3.

²⁵ Ibid. p415

²⁶ Op.cit. chapter 31 p.5.

²⁷ Op. cit. p.286

than it takes to talk about it? It must be said, at this point, that I have not yet personally achieved this rate of cure on a genuine frozen shoulder problem, and yet clearly, major changes are possible in very rapid time using all the armament that AK has to offer. I will not go into detail of the more generally recognised treatment modalities such as heat, ultrasound, cryotherapy, exercise, Transcutaneous Electrical Nerve Stimulation (TENS) and articulation/manipulation all of which are extensively covered elsewhere.²⁸

The first problem facing the applied kinesiologist when attempting to treat a painful frozen shoulder is that normal muscle testing methods are often greatly hampered by the very nature of the problem itself. Efforts to test the muscles of the shoulder are limited by the restriction and pain of the condition. However, the skilled practitioner can usually get round this by skillful testing and the use of therapy localisation to reflex points and muscles to minimize the amount of movement required in the effected join.

Initial treatment to the acute frozen shoulder that cannot easily be moved, can be through the use of two magnets, using the north pole of each magnet to sedate the inflammatory response

through the effect of the magnetic field twenty minutes to half an hour with shoulder capsule sandwiched between the magnets has been found to have an initial sedating effect.

Nutritional therapy to reduce the inflammatory response can also be instigated at this very acute stage. Lebowitz & Steele²⁹ suggest testing with prostaglandin inhibitor mixture (aspirin, paracetamol and ibuprofen) to see if a strong muscle weakens or a weak indicator muscle strengthens and challenging against and treating with the appropriate nutrition from:

Linseed oil (or other omega 3 & 6 oils), vitamin B6, niacin, zinc, magnesium, vitamin E, C, Evening primrose oil or blackcurrant seed oil to balance the prostaglandin series and utilise the bodies natural anti inflammatory responses.

Also possible at this time is the utilisation of AK pain control approaches such as the Melzack-Wall Gate Theory approach or the more recent Nociceptor Stimulation-Blocking Technique for acute pain relief developed by Schmitt³⁰ While more likely associated with immobility than trauma the frozen shoulder could also

²⁹ Lebowitz, M. & Steele, M. *Correcting Chronic Health Problems: A Doctors Manual* 1989. pp.68-73.

³⁰ Schmitt, W. *Nociceptor Stimulation-Blocking Technique for Acute Pain Relief* ICAK-USA Collected Papers Vol. 2 Winter. 1989-90. pp.88-97 ...

²⁸ Owen-Burkhart, H. op.cit. pp.92-100.

be tested for suitability for use of Schmitt's injury recall technique, especially given the theorised psycho-emotional component in some frozen shoulders.

Visceral reflex pain such as from the gall bladder, stomach diaphragm, angina pectoris, myocardial infarction and lung problems must also be ruled out.

Naturally careful examination of all other related areas that could be referring pain to the shoulder should be undertaken. These include the cervical spine, acromioclavicular, sternoclavicular, scapulothoracic joints and first rib/thoracic outlet, brachial plexus, problems should be assessed.

The anterior scalene muscle may be hypertonic on the involved side usually secondary to weakness on the opposite scalene group. Involvement in the scalenes or sternocleidomastoid naturally should lead to an examination of the hyoid and a screen throughout the whole of the stomatognathic system.

All five factors of the IVF must be taken into account and treated in any of the twenty shoulder related muscles, let alone those at a distance. Reactive muscle patterns may well be found, typically with the primary being in the rhomboid, inhibiting the deltoid. However, any number of patterns of reactive dysfunction may be present involving both muscle spindle and golgi tendon organ dysfunction.

As the problem causing muscle dysfunction may be in the prime movers as well as the synergists and antagonists, careful screening for these possibilities is required. If, either with direct testing or indirectly, the prime movers involved can be isolated, the five factors of the IVF must first be attended to, particularly remembering the effect of dural tension on the shoulder and pelvic girdles. Therefore careful screening for cranial faults and category 1, 2 & 3 pelvic faults is mandatory.

A common muscle dysfunction in this condition, easy to over look, is that of Subclavius. While standard teaching in AK provides only for therapy localisation to evaluate this muscle, Beardell,³¹ true to form, gives us two, dividing the muscle into clavicular and scapular divisions. However, as these involve testing the muscle with the arm raised to 180 degrees, this is of little practical use in this condition for obvious reasons. The tester will have to make do with therapy localisation and palpation. In fact the normal problem here, in this condition, will be hypertonicity in the subclavius not allowing the clavicle free movement away from the first rib. Muscle spindle and fascial flush technique will be required.

Interestingly, on a historical note,

³¹ Beardall, A. *Clinical Kinesiology* Vol. 4 Muscles of the Upper Extremities. pp.61-3.

Carlton³² pointed out, A.T. Stil³³ found that, in a large percentage of painful shoulders, the distal end of the clavicle was pushed too far back. Perhaps implicitly recognising the importance of the role of subclavius, he was "...very particular about making sure of the normal position of the clavicles without which we cannot expect freedom from misery on the regions of the shoulder". Without full subclavius action the upward motion of the humerus is stopped by the encroaching acromial process and the patient may even lordose the lumbar spine to gain a little more elevation. In fact particular care should be taken to evaluate all the muscles, such as subscapularis etc., that pull the humerus down and ensuring that it is not allowed to rise up too far under the acromion.

As Walther³⁴ indicates shoulder-arm symptoms can be caused by poor thoracic duct or right lymphatic duct drainage and the patient should be evaluated with retrograde lymphatic technique. The latissimus dorsi and its 'junior partner' teres major may well be involved. Curving in from posterior to anterior and inserting onto the humerus these two muscles may clearly play an important part in shoulder restriction. Commonly the opposite latissimus dorsi may show up as hypotonic and because

of the lack of opposition the latissimus dorsi on the involved side will show hypertonicity limiting the amount of abduction of the humerus. Walther³⁵ points out the body language indicators of inability to place the arm behind the back indicating possible upper and or middle trapezius involvement as well as possibly brachoradialis. While coracobrachialis is usually involved when the patient has difficulty combing their hair.

Because of the major role of the muscles in shoulder function, detailed analysis of the function of the rotator cuff muscles, whose tendons of insertion actually blend with the fibrous capsule itself, is needed. Acting as ligaments these muscles play an important role in repeated shoulder dislocation, another area where AK analysis and treatment can play an important role.

Frozen shoulder's propensity to occur more in women around the time of the menopause has, not unnaturally, directed attention to the possible role of hormone dysfunction in the etiology of this condition. A number of reports describe associations between hypo- and hyper-thyroidism and frozen shoulder.³⁶

³² Carllon, C. *An Osteopathic Approach for the Treatment of the Frozen Shoulder Syndrome* The American Academy of Osteopathy Yearbook 1967. p.31.

³³ Still, A.T. *Research and Practice* p.361-

³⁴ Watther, D. *Applied Kinesiology: Synopsis* 1988. p.436. "op cit. 1976. p.287.

³⁵ Op cit. 1976. p.287

³⁶ Wohlgethan, J. (1987) *Frozen shoulder in hyperthyroidism Arthritis and Rheumatic Diseases* 35: 220-226.

³⁶ Bowman, C. Jeffcoate, W. Patrick, M. & Doherty, M. (1988) *Bilateral adhesive capsulitis, oligoarthritis, and proximal myopathy as presentation of hypothyroidism* British Journal of Rheumatology 27: 62-64.

This immediately takes us visero-somatically to the function of teres minor, a key player in the rotator cuff group. Schmitt³⁷ reminds us of the important role thyroid function plays in the production of progesterone. Commonly the low progesterone patient shows symptoms of an elevated estrogen level such as prolonged and frequent menstrual periods, holding water etc. With the changes in the endocrine system at the time of menopause the part that thyroid dysfunction can play in the shoulder can clearly be seen.

While clearly each patient will be individual in their manifestation of this problem, once you have achieved sufficient pain relief to isolate the prime movers involved and have dealt with them, it is imperative to follow up in searching for strain-counter-strain patterns in the synergists, followed by facial problems in the antagonists. These can be further afield than initially thought. Evaluation of medial and lateral pterygoids at this point is wise as hidden strain counter strain dysfunction here could affect the shoulder through the stomatognathic system. Also remembering the TMJ's Lovett brother relationship to ball and socket joints and its ligament interlink relationship to any joint in the body.

Finally any dysfunction of more than a few weeks duration will have its effect on the gait mechanism. Therefore

evaluation of the gait reflexes is imperative before allowing the patient to walk their problem back into the affected shoulder.

³⁷ Schmitt W. *Common Glandular Dysfunction in the General Practice: An Applied Kinesiological Approach.* 1981.p.94.

CONCLUSION

The so-called 'frozen shoulder' can then be seen as a real challenge to the full use of the ever expanding range of applied kinesiological tools available to the inquiring practitioner. While all aspects of this mysterious problem may, as yet, be unresolved, the resolution of harmonious synergistic functioning of the, predominantly muscular support to this vital joint can be seen as primary in its early resolution.

Applied Kinesiological tools make our job easier to follow the maxim of Dr. Still's of; finding it, fixing it and leaving it alone.