

Case Study: Mulligan Concept Management of "Tennis Elbow"

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Subjective

Mr. C was a 49 y/o auto assembly worker who presented with a five-month history of left lateral elbow pain. He reported that his symptoms were of gradual onset with no known causative factor. He had continued with his regular hours and duties of work but had been unable to participate in his recreational hunting and fishing due to the severity of his symptoms. He reported he was right hand dominant, in good general health and denied any previous history of similar symptoms. Symptoms were aggravated by any repetitive use of the lower left arm and hand and relieved by rest. There was some residual discomfort, for 2 to 4, hours following repeated use of the left wrist and hand but otherwise pain was of intermittent nature.

Mr. C. reported that he had been referred to an on-site physiotherapy service at his work early in the onset of his symptoms. He had received a course of ultrasound and stretches for the wrist extensors and been placed on an isotonic resisted wrist extensor strengthening program. He reported that the theraband strengthening had resulted in a significant increase in his pain and disability and his discontinuance of the treatment.

Objective

Examination revealed a healthy appearing mid-aged man in no apparent distress. There was a moderate head forward posture but no other notable abnormality of the trunk and upper limbs. Scanning examination of the upper quadrant including active physiological cervical, shoulder, elbow, wrist and hand mobility was within normal limits and pain free.



Figure One: Lateral varus stress test adapted from Kaltenborn.

Passive physiological motion palpation of the cervical spine revealed some loss of mid-cervical joint play but no reproduction of typical arm pain with specific passive accessory intervertebral joint movement to end range. (1)

Upper limb neurological testing was normal as was upper motor neuron testing. Resisted isometric testing of the upper limbs revealed local left elbow pain with resisted grip and wrist extension. Resisted wrist extension was particularly reproductive of pain when tested at or near end range elbow extension. Pain-free handgrip in full elbow extension was to 64 kg on the right and 24 kg. on the left.

There was local pain to moderate depth palpation at the lateral elbow joint line and distal aspect of the lateral epicondyle. The accessory movement of forearm adduction (varus) described by both Maitland and Kaltenborn was restricted and painful at 5 degrees short of

full extension. (2) (3) (see Figure One).

Lateral glide of the forearm relative to the humerus produced by a mobilization belt (see figure Two) was pain-free and now rendered strong resisted isometric wrist extension pain-free. This technique has been described by Mulligan (4) as being effective in the management of "tennis elbow" and supported by early case study research. (5)

Analysis

A positional fault (4) of the elbow joint complex mimicking a contractile element pathology of the common extensor bundle. (6). Such a model is consistent with the concept of the "abducted ulna"(7)

Plan

To utilize the concept of “mobilization with movement” (MWM) to render the comparable sign of resisted wrist extension and grip pain-free and restore full function. Adjunct therapeutic modalities including ice and ultrasound would be included to deal with the bio-chemical component of the presentation. Passive stretches of the wrist extensors would be brought in as part of self-management.

Treatment

The patient was requested to perform three sets of ten of the pain-free mobilization with movement for tennis elbow described by Mulligan (4) against the strongest possible wrist extensor resistance. (See figure Two) He was warned that no pain must be perceived during the technique but that some post treatment muscular soreness was acceptable and best treated with local ice. He was supplied with a commercial “tennis elbow” brace and given a home program of self-mobilizations with movement as described by Exelby. (8)

When reviewed two days later he reported approximately 50% relief of pain with work and ADL’s. Re-examination revealed a significant improvement of pain-free grip (42 Kg) and a notable improvement in ability to tolerate resisted isometric wrist extension. The technique was repeated with maximum wrist extension resistance now being provided by an assistant to achieve the equivalent of end-range loading. As resisted grip was also a “comparable sign” (9) an MWM of lateral glide and strong resisted grip was added. No pain was experienced during the technique despite maximum effort. The patient was seen an additional three visits over the next two weeks with up to ten sets of ten repetitions of maximal isometric resistance being given at each session.

The patient was given a trial discharge of two weeks and advised to continue with his home program of self-mobilization with movement and stretches for the wrist extensors. (10)



When reviewed following two weeks he had remained pain-free and was functioning at his full pre-injury state. Pain-free grip was now to 58 kg. on the left. No pain was produced with strong isometric resisted wrist extension in any elbow position. Adduction accessory movement was pain-free and perceived to be of full range when compared to the right. He was discharged to self-care at that time. When contacted at the one-month point he reported full work and recreation function without symptoms.

Discussion

Numerous manual therapy procedures have been developed to assist in the management of tennis elbow. Mills (11), Cyriax (12), Kaltenborn (13), Mennell (14), Stoddard (15), Hartman (16) and Maitland (2) all describe various permutations of a varus/ extension directed manipulation applied to the lateral elbow. The rationale, indications and application procedure varies with each author, but the biomechanical effect of radio-humeral gapping remains consistent with each technique.

Mulligan’s mobilization with movement procedure departs from the above noted techniques in at least 3 points:

- 1) The mobilization component of the MWM is a true joint glide as opposed to a varus/extension maneuver. The glide is performed parallel to the treatment plane of the radio-humeral joint.
- 2) The technique combines both accessory joint glide and strong end range loading resisted isometric wrist extensor contraction.
- 3) There is complete abolition of the comparable sign of pain associated with resisted wrist extension and/or grip during and immediately following the technique application.

Mills and Cyriax both differentiate three locations for maximum tenderness in tennis elbow:

- 1) Over the radio-humeral joint line,
- 2) On the epicondyle,
- 3) In the muscle belly (11), (6)

Mills further notes that it is the joint line variety that best responds to his manipulation. (11) It has been my clinical experience that a combination of; joint line tenderness and painful restriction of adduction near extension as described by Maitland and Kaltenborn 2) (12) are strong predictors of success with Mulligan’s MWM tennis elbow technique.

Both Exelby and Wilson postulate a neurophysiological rationale for the success of this approach. (8) (17) Gunn and Milbrant's reported success of passive movement treatment of the mid-cervical spine in cases of tennis elbow that fail to respond to local treatment would seem to support this hypothesis. (1) Mulligan favours a biomechanical thesis citing a theoretical "positional fault". (4) The commonality between this and previous manipulative therapy approaches cannot be denied. More likely than not each author has noted the same clinical phenomenon and developed their own therapeutic interventions.

Therapists are encouraged to consider the use of this procedure in the overall management of what has otherwise been described by Wilson (17) as "tenacious elbow".

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