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Case Report

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Conservative Treatment of Trigger Thumb and First Carpometacarpal Joint Osteoarthritis Utilizing Adductor Pollicis Myofascial Trigger Point Therapy

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ABSTRACT

Conservative treatment of trigger thumb and first carpometacarpal osteoarthritis include activity modification, nonsteroidal anti-inflammatory drugs, splinting, steroid injection, hyaluronate injection and surgical intervention. These case reports describe the clinical treatment and rehabilitation of three patients, one with a trigger thumb and two with first carpometacarpal osteoarthritis, who were treated with adductor pollicis myofascial treatment. Treatment included trigger point dry needling, myofascial massage and a therapeutic stretching home program. The patients responded to intervention and returned to painless function after follow-up. There were no untoward side effects. This paper introduces a new method of management of thumb pain using myofascial therapeutic treatments for the adductor pollicis.

Keywords: Myofascial Pain Syndrome, Trigger Thumb, Thumb Carpometacarpal Osteoarthritis, Conservative Treatment, Rehabilitation, Adductor Pollicis

Introduction

The model of Travell and Simons from the Myofascial Pain and Dysfunction: The Trigger Point Manual, posits that the muscle dysfunction is often primary and leads to the fascial breakdown [1]. These are three cases of thumb pain manifesting as "structural" phenomenon of the thumb.

Trigger thumb (TT) and First Carpometacarpal Osteoarthritis (FCMC-OA) are common presentations of non-traumatic thumb pain [2]. Standard treatment for both of these problems includes activity modification, splinting, NSAIDS and corticosteroids injections. If there is no improvement, surgical intervention is often the next step [2-6]. Hand therapy is often mentioned as an option in FCMC-OA but not for TT [7]. Conservative treatments for TT and FCMC-OA do not specifically recommend myofascial trigger point treatment as one of the standard treatments [8]. Travell and Simons discuss the option of myofascial treatment of the AddPoll for FCMC-OA and flexor pollicis brevis for TT but not the AddPoll for TT [1]. The anatomy of the AddPoll and palpation, location and needling of the AddPoll trigger point are well described by Travell and Simons [1] but the corrective stretching for the AddPoll recommended does not adequately stretch the AddPoll based on the specific anatomy of the AddPoll.

Two patients with FCMC-OA and one patient with TT are presented which also manifest with concurrent myofascial dysfunction of the AddPoll. This article introduces a detailed, specific method of rehabilitating these cases using myofascial treatment that can be used in the conservative management of TT and FCMC-OA. Patients with these diagnoses that failed to respond to conventional conservative treatment can be treated with AddPoll myofascial treatment including trigger point dry needling and stretching of the AddPoll prior to considering surgical intervention.

AddPoll consists of two distinct parts, the oblique and transverse heads. The transverse head originates from the distal two thirds

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of the palmar aspect of the third metacarpal and the oblique head originates from the base of the second and third metacarpals and the capitate bones. Both heads insert into the ulnar aspect of the base of the first proximal phalanx [9]. Addpoll assists in the flexion of the MCP joint of the thumb as well as in adduction and in opposition as shown in electromyographic studies [9]. Addpoll Trigger Point causes pain in the palmar aspect of the base of the 1st MCP joint. Symptoms include a painful pincer grip and diminished abduction of the thumb [9]. Trigger thumb will manifest as painful snapping sensation when extending and flexing the thumb which can also lock in flexion [2,4].

Methods

Assessment

Charts of patients with chronic thumb pain and inability to extend their thumb were reviewed. Each patient underwent a thorough history and physical examination of the cervical spine, elbow, wrist, and hand for mobility and tenderness. Muscle trigger point tenderness of the AddPoll was performed by pincer palpation of the first web space. This was also used to elucidate referred pain, pain recognition and local twitch responses. Thumb circumduction is performed to elicit basal joint pain [9]. This is analogous to the grind test described by Van Heest and Kallemeier [5]. A careful, thorough exam is essential since the differential diagnosis includes elbow or cervical dysfunction.

Treatment

Myofascial treatment is administered to the AddPoll muscle by dry needling and ischemic compression (myofascial massage) which is followed by controlled stretching. The patient is then instructed in AddPoll therapeutic stretching. Trigger point treatment of the AddPoll is performed as described by Travell and Simons [1]. With the patient comfortably lying in supine, the hand is placed in pronation. The needle is inserted dorsally, while the examiner's hand palpates and fixes the AddPol TP on the palmar side, which is used as a guide for the needle. The needle is then moved in a fan like motion in all directions to ensure complete neutralization of the trigger point [10].

Following the dry needling treatment, the patient is instructed in a progressive 2-position AddPoll stretches over the first two treatment sessions, reflecting the two anatomic parts of the AddPoll. Firstly, the oblique head of the AddPoll is stretched in the plane of the palm. A gentle counter-force is applied to the distal end of the proximal phalanx while allowing the distal phalanx to slightly flex (fig. 1 Position-1 AddPoll stretch). Using the myofascial stretching technique previously described [10] is essential because of the narrow therapeutic range of stretching an injured muscle. A controlled hold-relax stretch for 25-30 seconds, with the gain in motion achieved on the exhale and sensation felt only in the muscle belly [10]. Overstretching can occur, when sensation is felt at the base of the first metacarpal or CMC joint, and must be assiduously avoided. During the next session, the Position-2 stretch (fig. 2 Position-2 AddPoll stretch) where therapeutic stretching of the transverse head fibers is instructed and then added to the Position-1 stretch in the home program. Using the same hold-relax stretching technique described above, a force is applied to the distal end of the proximal phalanx while allowing the distal phalanx to slightly flex perpendicular to the plane of the palm. The patient is carefully instructed with handouts describing the twice daily home program which consists of: 1) hot water hand bath for 15-20 mins., 2) massage to the AddPoll in the palm and 3) AddPoll therapeutic stretches, performing 3-4 repetitions. During each follow-up trigger point treatment session, the therapeutic stretches are observed and re-instructed carefully detailing the limits of safe stretching.

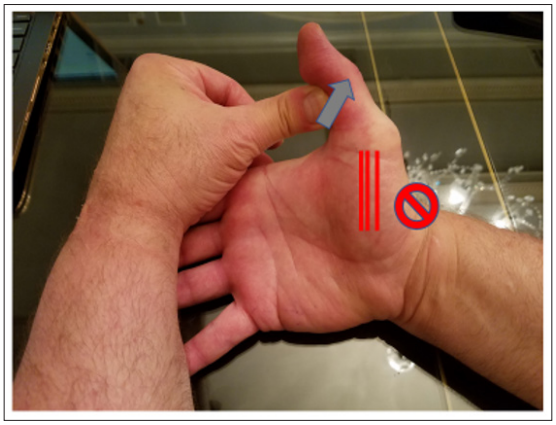

Figure 1: Position-1 Stretch for Oblique Head

Applying gentle force to the distal aspect of the proximal phalanx parallel to the plane of the palm. Sensation of stretch only in area of muscle and not at base of 1st MCP

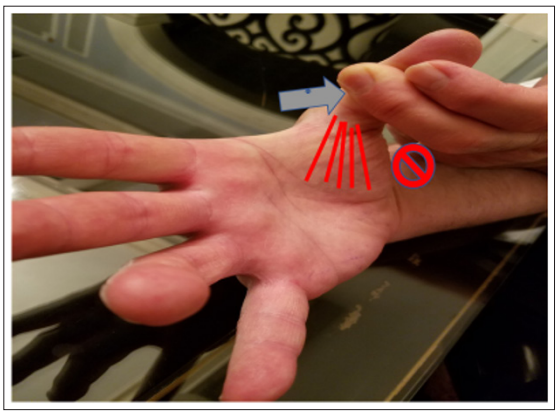

Figure 2: Position-2 Stretch for Transverse Head.

Applying gentle force to the distal aspect of the proximal phalanx perpendicular to the plane of the palm. Sensation of stretch only in area of muscle and not at base of 1st MCP

Case Studies

Case 1: Left Trigger Thumb

Mr. S.S. is a 57-year-old right-handed stagehand who was being treated for a left cervical radiculitis. On 08/26/16, he reported working on scaffolding one week prior to presentation and recalled when descending the scaffolding, landed hard and jammed his left thumb into the railing. Since that time he was having left thumb painful snapping movement and mild left radio-lateral base of the thumb/wrist pain. There was no wrist pain or thumb pain at rest. He was having thumb painful snapping with movement but there was no locking. There was no worsening of the cervical pain and there was no UE paresthesia, weakness or problems with fine motor activities. He had increased left thumb pain and snapping in the AM and was having pain using the left hand at work. The physical examination showed mildly

decreased left wrist ROM in supination, wrist palmar and dorsi-flexion, as well as, snapping of the left thumb MCP joint with fullness of the volar flexor tendon and trigger point tenderness of the AddPoll and supinator. The Finkelstein's sign was negative. Neurologically, he had mild 4.5/5 weakness of the left thumb extension. A trigger point injection was administered to the left supinator and instructed to two-position forearm stretches. The next week, he came back with continued left thumb painful snapping and no improvement in the pain with the forearm stretches. He was treated with trigger point injection to the left supinator and left AddPoll. The AddPoll position-1 stretching was added to the home stretching program. The next week, he noted decreased left thumb pain and less intense snapping sensation with thumb flexion. Subsequently, he was treated with trigger point injection to the left AddPoll seven more times over the next four months. A course of PT was administered to the left hand with treatment to the left adductor pollicis and 2-position AddPoll stretches shown. 6.5 months after the onset of the pain, the patient reported minimal thumb pain when fully abducting and extending the left thumb. There was no pain at rest and he rarely was having left thumb pain with activity. There was no longer any snapping, triggering or difficulty using his left hand. There was no pain or difficulty using his left hand at work.

Case 2: FCMC-OA

L.B. is a 68-year-old, right-handed, photographer who was previously under treatment for L C5-C6 radiculitis and cervical spinal stenosis. He presented to this office in August 2016 complaining of left basal thumb pain. He had consulted a hand specialist, who did x-rays of his hands which showed degenerative changes of the left first carpo-metacarpal joint. An intra-articular corticosteroid injection was administered but there was no improvement in the pain. He was having pain doing fine motor activities such as three chuck grasp, lifting and carrying things. He was having pain especially when holding the fishing line or when holding a camera. There was no L hand weakness. The physical exam showed crepitus w/ circumduction of the L thumb at the basal joint but no effusion and trigger point tenderness of the L adductor pollicis. Hand x-rays, dated 01/25/16, showed mild joint space narrowing and peripheral spurring. He was diagnosed w/ L CMC osteoarthritis. He was treated w/ 10 trigger point dry needling sessions to the L AddPoll muscle every other wk over 5 months. He was instructed initially in position-1 AddPoll stretch and then after 3 sessions position-2 AddPoll stretch was added to the home program. Over the next 4 months, he was treated w/ once monthly dry needling and the stretching exercises and home exercise program was reviewed. The patient noted improvement in the L thumb pain. There was considerably less frequent L thumb pain w/ carrying and lifting. 7 months after the last treatment, he noted continued improvement. There is mostly no thumb pain unless carrying a heavy camera on his L palm. He continues to do the adductor pollicis stretching daily.

Case 3: FCMC-OA

Ms. E. H. is a 75-year-old, right-handed, life coach who had previously been seen in this office for treatment of lumbar pain/lumbar disc degeneration and left C5-C6 radiculitis/cervical disc degeneration. She presented to this office on 11/28/16 for diagnosis and treatment of right thumb pain of several months' duration. The patient complained of sharp right basal thumb joint pain especially when working in the kitchen or when the thumb was forcibly abducted. When doing a "high-five", she would have sharp pain at the radio-lateral base of the thumb. There was no weakness or dropping any objects out of her right hand and there were no RUE paresthesias. There was no decreased wrist ROM but right web space on thumb abduction was decreased by 50% as compared to the left web space. Right Finkelstein's sign was negative. There was no tenderness at the base of the lateral thumb, but there was crepitus of the thumb with movement and pain with thumb circumduction. There was right AddPoll trigger point tenderness with pain recognition. Over 5.5-months time, she was treated with a series of seven dry-needling trigger point treatments to the right AddPoll muscle and instruction in a AddPoll position-1 and subsequently position-2 stretch. She noted marked improvement in the right thumb pain. She was able to abduct her thumb with improvement in the thumb excursion with full movement of the web space as compared to the left. There is no thumb pain working in the kitchen and there is no pain when giving "high-fives." There was still mild pain when fully abducting and extending her thumb but there was no sharp pain. In a follow-up exam 8 months later, there was no longer any thumb pain with activity of daily living and she was able to "high five" without pain or hesitation.

Discussion

A new physical medicine and rehabilitation approach has been introduced that can be used to treat TT or FCMC-OA prior to surgery. Treatment in these cases varies somewhat from Travell and Simons [1]. The TP needling procedure is performed the same way, though dry needling is utilized. Dry needling has been shown by Hong to be equally effective as TP injection with lidocaine [11]. The corrective stretching described herein, although more complicated, more precisely addresses the shortening of the AddPoll muscle fibers by optimally lengthening both bundles of the AddPoll muscle.

Treatment algorithms for TT does not even include mention of physical rehabilitation or hand therapy. Only activity modification, NSAIDS, splinting, steroid injection, surgical release or percutaneous release are considered [3,12,13]. In a study, by Patel and Bassini, corticosteroid injections followed by splinting for all trigger fingers, only gave 50% of patients with TT improvement in symptoms [13]. Surgery, both percutaneous or open, have reported excellent results but have complications such as infection, digital nerve injury, scarring, joint contractures and tenderness. In a study by Kerrigan and Stanwix, the most cost-effective course of treatment was found to be two steroid injections, then if needed, definitive surgery [12]. This methodology could give practitioners another treatment option prior to surgery.

Treatment in this case of TT varies from Travell and Simons. Treatment for the trigger thumb is administered to the AddPol only and not to the flexor pollicis longus [1]. The strain of the AddPol, as in Case 1, leads to imbalance between the intrinsic and extrinsic thumb muscles. This imbalance leads to rubbing of the flexor tendon in the flexor sheath, whose excess forces causes the bulbous, painful expansion of the flexor tendon and the "triggering" phenomena. Eliminating this imbalance leads to decreased painful, bulbous flexor tendons and curing of the trigger thumb in this case. A similar observation in trigger fingers, where an imbalance between the intrinsic and extrinsic

finger muscles leading to rubbing of the flexor tendon in the flexor sheath, whose excess forces causes the bulbous, painful expansion of the flexor tendon and the "triggering" phenomena treated successfully with finger interosseous muscle dry needling and myofascial stretching (unpublished observations). Further controlled studies are needed to see if AddPoll myofascial treatment can lead to overall cost savings given the considerable cost of surgery when the surgeon, anesthesiologist and facilities fees are included in the analysis. In addition, there is no morbidity or mortality associated with AddPoll myofascial treatment, which is the not case with surgery, where complications and additional costs also must be considered.

Treatment goals for FCMC-OA are predominantly relief of pain and improvement of hand function [5]. "Surgical interventions can be effective. However, are more prone to complications and therefore, conservative options should be considered first" [6]. Since FCMC-OA radiographic findings do not directly correlate with physical exam findings and the pain is often out of proportion to degenerative changes, AddPoll trigger point may be an important factor in thumb pain and dysfunction [2]. In Travell and Simons, the differential diagnosis of thumb pain, TPs of the AddPoll can be found in FCMC-OA but they do not specifically say that treatment can improve pain and function of first CMC arthrosis [1]. In a systematic review of conservative treatments for FCMC-OA, it was found that manual hand therapy and therapeutic exercise had moderate quality improvements in pain [6]. Treatment consisted of joint mobilization but myofascial trigger point therapy is not mentioned as one of the standard treatments in any of the studies [6-8]. In addition, stretching of the first web space is stated to help prevent adduction contracture and MCP hyperextension deformity however no mention is made specifically to the stretching AddPoll or its importance in improving function or relieving pain [5]. In a meta-analysis review of randomized controlled trials for FCMC-OA, splinting, resistance training and intra-articular hyaluronic acid injection improved function [15]. No intervention for stretching were included in the review. In these cases, the combination of dry needling trigger point treatments and therapeutic stretching of the AddPoll yielded considerable improvement as seen in Case 2 and 3.

Conclusions

- AddPoll myofascial treatments, with a precise, controlled, progressive therapeutic stretching program as applied, has not been previously described. This course of treatment has been beneficial in relieving TT and FCMC-OA in our cases.
- AddPoll myofascial treatment with TP dry needling and a home therapeutic stretching program for cases of TT or CMC-OA can be considered before considering surgery.
- Further randomized controlled clinical trials are needed to compare this treatment to surgery as a cost saving measure for the treatment of TT.
- Further studies are needed comparing AddPoll myofascial treatments to other conservative thumb pain treatments. This methodology can prove to be a cost saving approach to the treatment of non-traumatic thumb pain.

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References

1. David G Simons, Janet G Travell, Lois S Simons, Myofascial Pain and Dysfunction: The Trigger Point Manual Volume 1 Upper half of Body 2nd edition. Baltimore Maryland: Williams and Wilkins. 1983. 24: 774-785.
2. Crop JA, Bunt CW. Doctor, My Thumb Hurts. J of Fam Prac. 2011. 60: 329-332.
3. Ryzewicz M, Moriatis J. Trigger Digits: Principles, Management, and Complications. The Journal of Hand Surgery. 2006. 31: 135-146.
4. Akhtar S, Bradley MJ, Quinton DN, Burke FD. Management and referral for trigger finger/thumb. BMJ. 2005. 331: 30-33.
5. Van Heest AE, Kallemeier P. Thumb Carpal Metacarpal Arthritis.J Am Acad Orthop Surg. 2008. 16: 140-151.
6. Valdes K, Marik T. A Systematic Review of Conservative Interventions for Osteoarthritis of the Hand. J Hand Ther. 2010. 23: 334-350.
7. Villafane JG, Valdes K, Berjano P, Wajon A. Clinical Update: Conservative management of Carpometacarpal Joint Osteoarthritis. J Rheum. 2015. 42: 1728-1729.
8. Anne J Spaans, L Paul van Minnen, Moshe Kon, Arnold H Schuurman, A R Ton Schreuders, et al. Conservative Treatment of Thumb Base Osteoarthritis: A Systematic Review. J Hand Surg. 2015. 40: 16.
9. Weathersby HT, Sutton LR, Krusen UL. The kinesiology of muscles of the thumb: an electromyographic study. Arch Phys Med Rehabil. 1963: 44: 321-326.
10. Ingber R. Myofascial Pain in Lumbar Dysfunction. Physical Medicine and Rehabilitation: State of the Art Reviews. 1999. 13: 473-492.
11. Hong CZ. Lidocaine injection versus dry needling to myofascial trigger point. The importance of the local twitch response. Am J Phys Med Rehabil. 1994. 73: 256-263.
12. Kerrigan CL, Stanwix MG. Using Evidence to Minimize the Cost of Trigger Finger Care. J Hand Surg. 2009. 34: 997-1005.
13. Patel MR, Bassini L. Trigger Fingers and thumb: when to splint, inject, or operate. J Hand Surg Am. 1992. 17: 110-113.
14. McAuliffe JA. Tendon Disorders of the Hand and Wrist. Journal Hand Surg. 2010. 35: 846-856.
15. Nicola Veronese, Lee Smith, Francesco Bolzetta, Alberto Cester, Jacopo Demurtas, et al. Efficacy of conservative treatments for hand osteoarthritis : An umbrella review of interventional studies. Wien Klin Wochenschir. 2021. 133: 234-240.

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