Conservative care of De Quervain's tenosynovitis/ tendinopathy in a warehouse worker and recreational cyclist: a case report

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Objective: This case study was conducted to evaluate the conservative management of a patient presenting with right sided wrist and thumb pain diagnosed as De Quervain's tenosynovitis/tendinopathy.

Clinical features: A 49-year-old female warehouse worker and recreational cyclist with right-sided De Quervain's tenosynovitis/tendinopathy that began after a long-distance cycling trip.

Intervention and outcome: *Treatment included ultrasound, soft tissue and myofascial release therapy, tool assisted fascial stripping or "guasha", acupuncture, mobilizations and kinesiology taping. Home advice included icing, rest, wrist bracing, elevation and eccentric rehabilitation exercises. The positive outcome was a complete resolution of the patient's complaint.*

Summary: This case demonstrates how De Quervain's disease is a challenging condition to treat with conservative methods and can be aggravated with new exacerbating factors as treatment continues. In this case, the addition of the active care (including eccentric exercises and self-care) helped to reinforce the passive care given in the office and accelerate the recovery. (JCCA 2012; 56(2):121–127)

KEY WORDS: De Quervain's disease, tenosynovitis, tendinopathy, tendinosis, chiropractic, exercise, rehabilitation

Objectif : La présente étude de cas a été menée afin d'évaluer la prise en charge conventionnelle d'une patiente souffrant de douleurs au côté droit du poignet et du pouce associées à une ténosynovite de De Quervain/ tendinopathie.

Caractéristiques cliniques : Une ouvrière d'entrepôt de 49 ans pratiquant le cyclisme durant ses loisirs souffrait de ténosynovite de De Quervain/tendinopathie au côté droit, douleur qu'elle a commencé à ressentir après une longue randonnée à vélo.

Intervention et résultat : Son traitement a inclus l'ultrasonothérapie, la thérapie de relâchement myofasciale et des tissus mous, la friction des fascias assistée par des instruments ou «gua sha», l'acupuncture, les mobilisations et les bandes kinésiologiques. On lui avait conseillé chez elle de mettre de la glace, de se reposer, de porter une attelle palmaire, de pratiquer des exercices de soulèvement et des exercices de réadaptation excentriques. Le résultat s'est avéré positif pour la patiente dont les douleurs ont complètement disparu.

Résumé : Le présent cas démontre comment la maladie de De Quervain est un état pathologique difficile à traiter à l'aide des méthodes conventionnelles, lequel peut s'aggraver par de nouveaux facteurs exacerbant au fur et à mesure du traitement. Dans le présent cas, l'ajout des soins actifs (y compris des exercices excentriques et les soins prodigués à la maison) a contribué à renforcer les soins passifs administrés au cabinet et a accéléré la guérison. (JCCA 2012; 56(2):121–127)

MOTS CLÉS : maladie de De Quervain, ténosynovite, tendinopathie, tendinose, chiropratique, exercices, réadaptation

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Introduction

Fritz de Quervain first described De Quervain's tenosynovitis in 1895.^{1,2} De Quervain's disease is described as painful stenosing tenosynovitis of the first dorsal compartment of the hand.^{3,4} It is usually caused by overuse or an increase in repetitive activity, resulting in shear microtrauma from repetitive gliding of the first dorsal compartment tendons (abductor pollicis longus or APL, and extensor pollicis brevis or EPB) beneath the sheath of the first compartment over the styloid of the radius leading to thickening of the extensor retinaculum of the wrist (and not related to inflammation as was once thought).^{2,3,5} Predisposing movements include forceful grasping with ulnar deviation or repetitive use of the thumb (which includes many athletic pursuits, such as golf, fly-fishing and racquet sports).³

Patients usually present complaining of radial wrist pain with thumb movements and tenderness over the first dorsal compartment.²⁻⁴ Diagnosis is usually concluded by a positive Finkelstein's test (which causes a reproduction of pain at the radial styloid), as well as the presence of a tender nodule over the radial styloid.^{2–4,6} Finkelstein's test was first described in 1930 and has recently been described as being performed in four stages: first with the application of gravity assisted gentle active ulnar deviation at the wrist, then the patient actively deviates the wrist in an ulnar direction, then further passive ulnar deviation by the examiner, and in the final stage, the examiner passively flexes the thumb into the palm.^{5,6} The reliability, validity, specificity and sensitivity of this test has not been reported, but authors have claimed that the staged method of testing may be more accurate with higher sensitivity and specificity.^{5–7} It has also been suggested that a patient must have pain four days out of seven.⁸ Other tests are indicative of this condition, including a decrease in pinch and thumb strength measurements on the symptomatic side, a decrease in thumb active range of motion bilaterally (but more pronounced on the symptomatic side), and the EPB entrapment test which has been shown to demonstrate subjects with a positive test were more likely having two compartments than one.9-11

It has been reported that 8.3% of patients present with upper extremity conditions as their chief complaint in chiropractic practices.^{2,12} The incidence of De Quervain's is not known in primary care, but the prevalence has been reported in the general population in the UK as 0.5% in



Figure 1 Anatomical snuff box

men and 1.3% in women.⁸ De Quervain's has also been shown to usually present in the fifth and sixth decades of life, as well as being more common in pregnant and lactating women.⁴

Case report

A 49-year-old female presented complaining of rightsided wrist pain and thumb pain at the base of the styloid of the radius that referred up her forearm. She stated that pain had started after a mid-summer long distance fundraising bike ride. She described the pain as "achy" and occasionally "sharp" with certain movements. She did not rate the pain numerically. She also reported no weakness



Figure 2 Fibrous digital synovial sheaths of the hand

or previous episodes of this type of pain. She reported that pinching (between the thumb and her first finger), lifting a jug of water and pronation all aggravated her pain. She stated that there were no relieving factors. Otherwise she reported being "healthy," that she took no medications and that she did take some supplements, including B12, calcium, multivitamins, and Greens Plus® (a whole food high fiber chlorophyll supplement). She reported smoking 1-2 cigarettes per day "sporadically." She reported exercising regularly, including cycling, walking, hockey and yoga. She reported her diet as "good" and that she slept well, with 6.0-6.5 hours per night. Previous accidents included a fall from a ladder the previous winter, which she had fully recovered from. She also reported having an ovarian cyst removed in 1984 and a jaw fracture in 1986. Her family history included heart disease, diabetes and hypertension. The systems review was unremarkable. All red flags were normal. She reported not having any

Table 1Differential diagnoses5,13-16

- Osteoporosis and/or lytic lesions of the radial styloid,
- scaphoid fracture,
- entrapment,
- radiculopathy,
- C6 cervical radiculitis/radiculopathy,
- tethering or inflammation of the peripheral nerves (including the superficial radial nerve, known as cheiralgia paresthetica),
- carpal tunnel syndrome,
- osteoarthritis,
- intersection syndrome,
- Keinbock disease (osteonecrosis of the lunate),
- dorsal ganglion of the wrist,
- congenital synostosis between scaphoid and trapezium.

imaging performed on her right hand, wrist or arm. Her other complaint included severe eczema on both hands.

The physical examination revealed a positive Finkelstein's on the right, with the patient stating it recreated her pain. Ranges of motion of the right wrist revealed decreased active, passive and resisted extension (by 50%), painful active and passive pronation, ulnar deviation (active, passive and resisted) and active and passive radial deviation. Thumb ranges of motion on the right revealed painful active and resisted abduction, passive adduction, flexion (at the end of active and passive), resisted extension and active and resisted opposition. Soft tissue palpation revealed tight and tender right abductor pollicus longus, extensor pollicus longus and brevis (tendon palpation recreated the pain and not palpation at the muscle belly), as well as the wrist extensors.

The working diagnosis was acute right-sided De Quervain's tenosynovitis/tendinopathy. The prognosis was rated as good. The plan of management recommended treatments of twice a week for 2–3 weeks, followed by a re-evaluation. The treatments included ultrasound, myofascial release therapy, tool assisted fascial stripping using (gua sha^{17,18}) and acupuncture as necessary. Home care advice included neutral positioning, bracing, icing with elevation, pain-free range of motion exercises and self-administered soft-tissue therapy. Figure 3 Kinesiology tape for De Quervain's. Tape is placed without tension for a relaxation effect from the insertion (I) to the origin (O) [Figure 3A: without, and Figure 3B: with a corrective strip over the snuff box and parallel to tendons]¹⁹



Figure 4 (A) Concentric radial deviation "up" (B) Eccentric ulnar deviation "down"



On the second visit, one week later she reported being "sore" after the initial visit, but "better" the next day. She had started icing, but had not yet purchased a brace. Twisting and lifting of the right wrist and hand/thumb continued to aggravate her complaint. Kinesiology tape was added on this visit (see Figures 3A & 3B), as well as acupuncture (bilateral GB34, LI4; Du20, right sided snuff box/Ah shi point, LI10, LI11 and LI5). On the third visit, she stated she had purchased a Thumb Spica brace, which seemed to help. She had noticed no change in her pain with the addition of acupuncture to her previous treatment and therefore it was not repeated on subsequent visits. She found that the kinesiology tape seemed to help, so that was continued. On subsequent weekly visits aggravating factors included not wearing the brace, heavy lifting, and doing less home care. By the seventh visit, the patient reported an improvement in her elbow and thumb with more icing and wearing the brace. Discussion did occur for alternative assessment and treatment options, including a referral for a diagnostic ultrasound, NSAIDS and corticosteroid injections, which she chose not to pursue. A re-evaluation was performed on the eighth visit which revealed a positive Finkelstein's test. In addition to the self-care she was previously prescribed, she was given a small "gua sha" tool to do gentle softtissue release on alternate days at home. Subsequent visits showed less of an improvement since the patient had not done as much home care. The patient then felt some improvement after seeing a registered massage therapist, since she only had pain directly over the tendon after their treatment. Subsequent visits showed an improvement in her condition with time off from work, after which the pain in her forearm resolved. An increase in seasonal work demands aggravated her complaint, but with rest, more icing and soft tissue therapy, she reported tenderness only at the base of her thumb with palpation. Eccentric exercises were prescribed (working up to 3 sets of 15 repetitions, see Figures 4A & 4B), but the patient took some time to commence them.²⁰ Patient visits were then staggered once every two weeks, but she experienced a few set-backs due to walking her newly adopted dog, starting the spring cycling season and accidentally hitting her wrist on a hard surface. Again, with treatment and an increase in home care, her condition improved. After four more visits, she had only mild soreness/"burning" and an overall improvement. Another re-evaluation revealed that active and passive ranges of motion were normal at the wrist and elbow, while resisted thumb abduction and Finkelstein's were still painful on the right side. After purchasing a new bicycle with more comfortable handle bars the patient rarely reported mild pain. Patient visits were then staggered to once every three weeks. She had additional set-backs related to accidentally hit her wrist on a hard surface, increased occupational lifting and prolonged painting without wearing her brace. Once the patient increased the frequency ofher eccentric exercises and home care, she felt an improvement. After three more visits the patient's complaint was completely resolved, even while she started practicing yoga and increased her work demands. On her final visit 14 months after the initial visit she continued to remain pain-free, at which point she was discharged. On long-term 22 months follow-up the patient reported that she remained pain-free in her arm, hand and thumb.

Discussion

Injuries of the hand and thumb can be challenging, since most patients frequently use them in their daily lives, thus delaying healing time. Predisposing factors include pregnancy, lactation and newborn care, musicians, dental hygienists, assembly workers, golfers, machinists, mountain bikers and video game playing.^{4,21-26} Risk factors include repetitive movements, hand position, frequency of movement and static postures.²⁷

There are many recommended conservative treatments, including rest, early immobilization, or corticosteroid injection.³ Lightweight Thumb Spica splints have been recommended to reduce ulnar deviation and thumb flexion.^{1,25} Other conservative measures include heat, cold, diathermy, strapping, rest, transverse friction massage, counter irritants and medications (such as NSAIDS in the early stages).^{2,16,25,28} Guasha is a traditional East Asian therapeutic surface myofascial frictioning tool that has been shown to increase microcirculation and decrease local and distal pain.¹⁸ Active treatment options include active pain-free range of motion exercises, strengthening, tendon gliding, self-administered friction massage and eccentric training exercises.^{20,25}

Many reports have been made on the efficacy of injections. A Cochrane review found that corticosteroid injections showed positive results, but had limited applicability to larger populations due to the small number of subjects.^{4,29} A literature evaluation reported an 83% cure rate with injection alone when compared with other therapies (including splinting alone, splinting plus injection or NSAIDs).^{6,28,30} One or two injections of triamcinolonacetonide was shown to lead to short and long term improvements when compared with a placebo injection.² A recent randomized prospective study found that casting alone had less successful outcomes when compared to methylprednisone acetate injections plus casting.³¹

A suprafibrous corticosteroid injection technique has been found to be more accurate, less risky and easier than an intrasynovial injection.³² Injections have the potential for rare side effects which may make patients hesitant to pursue them as a treatment option.^{31,33} These include temporary pain, skin color changes, subcutaneous fat atrophy, flare, non-tender nodules and superficial thrombophlebitis, tendon rupture or infection.^{31,33}Anatomical variations may predispose patients to having De Quervain's disease or make certain treatments more challenging to perform

and succeed with.^{34,35} These include an extended EPB to the thumb-interphalangeal joint, which then resides in the first dorsal compartment, as well as multiple tendons of the APB muscle.^{34,35}

Ultrasound has been found to be helpful in detecting anatomic variations in De Quervain's cases by visualizing the intra-compartmental septum in the first extensor compartment.^{36,37} Detecting this variation assists injection accuracy and improves treatment results, since the EPB compartment can be missed because of it's separate, small and deep location.^{36–38} MRI has also been suggested to reliably detect increased tendon thickness or the APL and EPB and peritendinous edema in patients with a confirmed diagnosis of De Quervain's disease.³⁹

For non-progressive cases, surgical release/decompression may be recommended since many patients with De Quervain's have been found to have the EPB tendon in its own compartment.³ Surgical cure rates are reported as 88–91%.^{2,40} Unfortunately, surgery is more invasive, more costly and can be associated with more complications.²

This case had a favorable outcome, but many treatment modalities were used. These modalities were chosen with the goals of reducing inflammation and pain, increase ranges-of-motion and strengthen the affected muscles and tendons. It is difficult to determine which modality was most effective, but it appeared that the patient experienced relief after the treatments. Also, considering that once the patient was more consistent with the home care and exercises, her complaint resolved quickly. Her recovery may have occurred in a more rapid manner with more closely spaced treatments and the reduction or removal of the multiple aggravating factors. Unfortunately, this did not occur due to occupational, recreational, financial and time constraints.

Summary

Conditions of the wrist and hand can be challenging to treat since patients use their upper extremities in many daily activities. This case report demonstrates a single patient; therefore it is difficult to extrapolate the results to other cases. The resolution of her symptoms could also be due to the natural history of the condition. Generally, most recent reviews have found no strong evidence for or against conservative treatments for this condition. Further research with greater subject numbers, randomization and controls would assist in clarifying which conservative treatments are effective for this condition, since most evidence that is available are case reports.⁴¹ The results of this case may suggest that conservative treatment may be useful in treating De Quervain's disease before more invasive procedures are pursued.

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