# The Effects of Hand Reflexology and Hydrotherapy on De Quervain's Tenosynovitis

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## Introduction

Taber's Cyclopedic Medical Dictionary defines tenosynovitis as an inflammation of a tendon sheath and is synonymous with the term tenovaginitis. Wikipedia encyclopedia notes that de Quervain's syndrome is named after the Swiss surgeon Fritz de Quervain who identified it in 1895. This syndrome is widely encountered by hand surgeons (healthcentral.com). The exact etiology is unknown. Finkelstein's test may be used to evaluate for de Quervain's syndrome.

## Pathology

The two tendons involved are those of the extensor pollicis brevis and the abductor pollicis longus in the first dorsal compartment of the wrist. The tendons run side by side and move the thumb in radial abduction (in the plane of the hand). The extensor pollicis brevis originates on the radius and interosseous membrane, inserts at the proximal phalanx of the thumb, and extends the thumb MP joint. The abductor pollicis longus originates on the radius, ulna, and interosseous membrane, inserts at the base of the 1st metacarpal, and abducts and extends the thumb CMC joint. Both are innervated by the radial nerve. The common sheath shared by these tendons runs through the carpal ligament of the wrist. Repetitive movement creates inflammation of the common sheath; excessive mucous thickening impedes the free gliding motion of the tendons, thus leading to a chronic degeneration. Females tend to be afflicted over males by a 10:1 ratio. (JAMA1968;204, G.W. Wharton, MD and T.H. Morgan, MD, FRCS)

## Symptoms

The symptoms of tenderness, pain, edema on the radial side of the wrist, with difficulty gripping are the primary symptoms. Finkelstein's test is used to diagnose de Quervain's in people who have wrist pain. To perform the test, the examining physician grasps the thumb and the hand is ulnar deviated sharply. If sharp pain occurs along the distal radius (top of forearm, close to wrist) de Quervain's tenosynovitis is likely. A variation of this is to ask the patient to flex the thumb and clench the fist over the thumb followed by ulnar deviation. Pain is typically felt at the radiostyloid process. Further testing is typically done to rule out osteoarthritis of the first CMC joint or other syndromes.

Past treatments used for this syndrome: surgery, occupational therapy, NSAIDS, corticosteroids with or without lidocaine injections, hydrotherapy, physical therapy mobilization with movement techniques (JOSPT, 2002 Mar; 32(3):68-94), ultrasound, and electric stimulation.

## The Subject

The subject is a 56-year old female licensed massage therapist. Six months prior to the start of this case study, this Neuromuscular-trained massage therapist stopped working her usual 15-20 hours per week. During the 14 years as a massage therapist, she noted periodic inflammation in multiple areas of her body. Past diagnoses include fibromyalgia, colitis with bowel resection, reproductive system imbalances resulting in hysterectomy, and bilateral carpal tunnel syndrome. She managed her symptoms of inflammation with Ibuprofen, hydrotherapy, massage, and rest. She had noted that over the past two years, she was having increase stiffness, burning, pain, and swelling in the upper extremities and chest. The subject is left hand dominant. Sleep patterns were disrupted.

Her symptoms became more intense in the first dorsal compartment of the wrists and thumbs with contributing discomfort in the forearms, carpals, metacarpals, and phalanges bilaterally. Seeking medical attention, the subject was encouraged to take a six month medical sabbatical. The subject tested positively for de Quervain's tenosynovitis. Ibuprofen dosage was increased 2400mg per day and Pristique 50mg added for anxiety and depression. She was given immobilization splints. The subject started a water aerobic exercise program averaging five times per week during the summer months. Symptoms remained uncomfortable and the client requested consideration for this case study and a start date was chosen. Prior to commencement of this study, further medical investigation revealed positive for sero-negative arthritis. Methotrexate 2.5mg and Enbrel 50mg was added to her medication regime. The subject's generalized symptoms decreased by approximately 70%, but felt uncomfortable side effects from the medication regime. Her desire was to reduce and/or eliminate some of the meds and evaluate the effectiveness of Reflexology in managing her discomfort while beginning to work again. Her main symptoms being pain in the hands, wrists, and forearms with positive de Quervain's testing, difficulty sleeping, fatigue, tightness at the base of the occiput with headache. She described herself as "strangely delicate" explaining this as having "no feeling of power energetically" and expressed concerns of re-injury as she pursued her massage therapy career.

## The Study

Hand reflexology was the modality used. Treatment sessions were twice per week at 3pm for one hour starting November 1 for four consecutive weeks and a final evaluation session scheduled for November 29. The therapy environment and the order of techniques was duplicated each treatment. Sessions commenced with a warm water hand soak, followed by relaxation, stretching, and reflexology techniques to the upper extremity distal to the elbow. The focus was musculoskeletal, adrenal, and lymphatic reflexes, with particular attention to adhesions and areas of sensitivity for the client. The right hand was worked first. Testing for de Quervain's symptoms was done at the end of the first session of the week.

Daily input by the subject was logged on an assessment spread sheet and brought to each session.

## The Assessment Log

**The morning assessment:**

Number of hours and quality of sleep:

Range 1-10

1= deep, uninterrupted sleep

5= moderate, intermittent sleep

10= interrupted, minimal sleep

Feeling Rested?:

Yes or No

Body Scan ratings: (areas assessed - headache, cervical, shoulders, elbows, wrists, hands, thumbs)

0= no discomfort

1-3= noted discomfort without hindering of Activities of Daily Living (ADL's)

4-6= significant discomfort with mild to moderate hindering of ADL'S

7-9= intense discomfort with moderate to severe hindering of ADL'S

10= extreme discomfort with inability to perform ADL'S

Exercises:

W= walking

S= swimming

St= stretch

# = number of minutes

**The evening assessment:** - measuring overall energy throughout the day

Physical= 1 (low) to 10 (high)

Emotional= 1 (difficulty coping) to 10 (balanced emotions)

Mental= 1 (cannot focus) to 10 (focused)

Notes: Any other feedback concerning the day, including changes in medication regime

## Session one:

The Subject's log indicated feeling rested after 7.5 hours of deep uninterrupted sleep. Cervical, wrists, hands, and thumbs rated 3 {this rating described as noted discomfort with minimal hindering of Activities of Daily Living (ADL's)}. Energy assessment rated physical 7, emotional 7, mental focus 6. She indicated that her medical physician has given clearance to do two massages per week. She had performed massage therapy on one client the previous day and two clients 10 days prior. Morning stretch routine had been done.

Subjectively, the subject verbalized that her pain had reduced 70% during the month of being on the new medication regime, but did not feel connected to her body. She indicated "pain in the muscle belly of the thumbs, baby fingers, wrists, and forearms up to the elbows".

Objective findings and assessment: moderate tissue edema distal to the elbow continuing to the distal phalanxes bilaterally, adhesions and sensations were palpated bilaterally in multiple points on palmar and dorsal sides of the metacarpals, carpals, through the forearm along the muscle belly of the abductor pollicis longus and the extensor pollicis brevis. At the completion of the session, sensations in the 1st CMC and MCP joints rated an 8 reduced to a 5, in the forearms 8-10 reduced to 6-8. Adhesions softened, but did not dissipate. The subject was relaxed but alert to the multiple areas of sensation. Finklestein's test rated 6 on the right and 2 on the left. (0-10 pain scale)

## Session two:

The Subject's log indicated 8 hours of restful uninterrupted sleep. Cervical, wrists, hands, and thumbs rated 2-3. Physical energy assessment remained at 7. Mental and emotional improved to 8 the day after the treatment, then back to 7. Morning stretch routine continued.

Subjectively, the subject verbalized less intensity with the discomfort in the thumbs and forearms. Due to side effects and fear of being on so many strong meds, she readdressed her strong desire to reduce or eliminate some of the medications and planned to discuss this with her medical physician.

Objective findings and assessment: mild tissue edema was palpated in the forearms to the carpals with reduction in the hands. Adhesions and sensation were bilateral in the carpals and forearms to the elbows on dorsal and palmar sides along the ulnar/radial interosseous region. Sensation in the affected muscles rated an 8 and reduced to a 6-7. There was a noted decrease in her sensations related to adhesions palpated in the MCP joints bilaterally along the shoulder reflexes. The subject reported a level 6 sensation in the left second digit MCP joint which reduced to a 3-4 by the end of the session. Adhesions and sensation along the 5th zone were no longer present bilaterally.

## Session three:

The Subject's log indicated her sleep pattern changed the night after the last treatment with 6.5 hours of intermittent sleep and she developed a headache the next morning and noted a dip in her physical energy level from 7 to a level 6. Body scan discomfort levels of cervical, wrists, hands, and

thumbs were 2-3. The following three days of self-evaluations revealed 7-7.5 hours of restful uninterrupted sleep, then a night of wakeful sleep. A slight exacerbation of discomfort to the elbows (new) rated a 3, which abated to 0 the next day. Cervical, wrists, hand areas decreased to a level of 2. Thumbs decreased to a level of 1for one day and returned to a level 3. Shoulders were rated level 1 (new). Overall energy physically, mentally, and emotionally was rated 7. The Subject continued to stretch daily and added two thirty minute walks.

Subjectively, she shared that she had massaged two clients three days previous to this session and made a comment that she was still feeling about the same discomfort.

Objective findings and assessment: tissue edema was significantly reduced in the distal forearms and hands and mild to moderate in the proximal forearms. Adhesions and sensation present in the right forearm to the elbow on both palmar and dorsal sides and in the left forearm on the dorsal surface only. Adhesions were palpated and sensation felt in the right first MCP and CMC joint, none in left thumb. Adhesions were palpable in the carpals bilaterally on the palmar side, none on the dorsum of the carpals. There were no adhesions or sensation noted in the MCP's this session. The Subject appeared deeply relaxed and confirmed this at the end of the session. Finkelstein's test rated 1-2 on the right and 0 on the left. There was improved range of motion in the basal joint bilaterally.

## Session four:

The Subject's log indicated an average of 7 hours of wakeful, intermittent sleep and not feeling rested. Cervical, shoulders, wrists, hands and thumbs rated a 1. Energy levels: physical 5, emotional 7, and mental focus 7. Under the notes section of the log the subject wrote that she "can now wring out a washcloth". Stretch routine was done daily.

Subjectively, she reported that she had been "doing a little yard work using the grabber this morning" and "my painful discomfort is reducing this week".

Objective findings and assessment: an overall reduction in adhesions and sensation this session. Upper extremity tissue edema distal to the elbow abated. Adhesions were palpated and sensation perceived in the upper third of the forearms, CMC and MCP joints of the right thumb. MCP joint of the left thumb presented with adhesions. Adhesions and sensation were noted in the hip reflexes bilaterally. Sensations rated 3 and decreased to a 1-2 during the session. Adhesions softened, but still palpable. The Subject noted "I feel like I am making progress".

## Session five:

The Subject's log indicated 7-8 hours deeper sleep and feeling rested. She noted a moderately painful headache relating to the Enbrel injection. Shoulder discomfort reduced 0, wrists, hands and thumbs rated level 2. Energy ratings had a sudden drop that morning: physical 4, emotional 4, and mental focus 7. No stretch routine for 5 days.

Subjectively, the subject indicated that she had increased work to 3 massage clients the prior weekend. As she had been feeling better, "I did more yard work using the grabber, rode as a

passenger on a motorcycle, and climbed on and off the bike 6 times". She indicated that the wrists felt more inflamed.

Objective findings and assessment: adhesions and sensation noted in bilateral CMC joints in first zone, carpals, forearms to the elbows on palmar and dorsal sides. Adhesions and sensation were palpated in the 1st MCP joint and PIP joints of the right second digit. Sensation levels on the right rated 3-4 and on the left 2-3. Muscle tone was increasing and the Subject commented on an overall strengthening in her hands. Range of motion in the first MCP joint decreased due to an increase in compartmental edema in the carpal region. The Subject was not as relaxed during this session. Finkelstein's test rated a 0-1 on the left and 3 on the right.

## Session six:

The Subject's log indicated 7.5 hours of moderate intermittent wakeful sleep, mixed results pertaining to the quality. Cervical discomfort rated level 1, wrists, hands, and thumbs increased to level 3. Energy levels: physically and emotionally at 3, and mental focus at 6. No exercise activity was noted.

Subjectively, the Subject stated she had upper respiratory symptoms of "stuffiness and congestion in the sinuses, ears, and glands with overall fatigue" and the Enbrel injection would be omitted for that week. She reported, "the right thenar eminence is painful".

Objective findings and assessment: soft tissue edema and decreased range of motion in the right 1st CMC, MCP, and PIP joints. Muscle tone and strengthening was noted. Bilateral adhesions and sensation in carpals zones one through three in the proximal and distal forearms on the palmar side. On the dorsal side, bilateral adhesions without sensation in zones one through two at CMC and MCP joints, right third digit proximal phalanx, left second digit MCP joint. Bilateral mid through proximal forearm adhesions were palpated and sensation at level 4. Subject was deeply relaxed, sensations diminished from level 3-4 to 1-2 during the session, and adhesions reduced.

## Session seven:

The Subject's log indicated 5 to 7 hours of moderate, wakeful sleep with mixed quality of feeling rested. Cervical, wrists, hands and thumbs rates 1-2 discomfort. Energy level ratings: physical 8, emotional 10, mental focus 10. Stretch routine was restarted.

Subjectively, the Subject reported she had started antibiotics for increased sinus drainage. She had "discontinued the Methotrexate prescription last week and feel so much better off of it" and had also significantly reduced the Ibuprofen to a quarter of the dosage. She had performed two massages two days prior to the session.

Objective findings and assessment: tissue edema was noted in the carpals. On the dorsal side, bilateral adhesions were palpated and sensations present in the first digit CMC joint. On the palmar side, adhesions had reduced in the distal forearms just proximal to the carpals, the CMC joints, MCP joints, and PIP of the thumb. Sensations rated a 3-5 and dissipated during the session. The Subject reported, "I am so relaxed and feel cared for". Finkelstein's test level rated 5 on the right and 3 on the left.

## Session eight:

The Subject's log indicated 6 to 8 hours of intermittent restful sleep. Body scan self evaluation indicated the only discomfort was in hands and thumbs at a level 1. Energy level rating: physical 7, emotional 10, and mental 10. Stretch routine had been carried out.

Subjectively, the Subject reported "my hands, wrists, and shoulders feel great" and "have not felt the need to take Ibuprofen for a couple of days".

Objective findings and assessment: no tissue edema noted. On the palmar side, mild adhesions in bilateral 1st MCP joints without sensation of discomfort, one adhesion palpated on right in fifth zone carpal, and one adhesion with sensation bilaterally in distal forearm. One adhesion with sensation was palpated on the left dorsal side of proximal carpal along the tendon sheath. Sensations were rated at 1-2 and reduced to level 0. Adhesions were reduced during the session. The Subject alternated period of deep relaxation and periods of conversation. Range of motion and strength improved.

## Session nine: Final evaluation

The subject's log indicated 8 hours of deep uninterrupted sleep and woke feeling rested. Thumb and hand discomfort levels rated 1. Energy levels for physical, emotional, and mental focus ratings were all at 10. Daily stretch routine and a two mile walk completed.

Subjectively, she reported "I have felt so good" and reported she worked on one massage client two days prior.

Objective findings and assessment: Adhesions with sensation rated at a 1 in the left first digit MCP joint, bilateral proximal forearms, bilateral CMC regions on the palmar side. Adhesion and sensation left distal forearm just proximal to the carpals. Adhesions dissipated and sensations resolved. The Subject related that she appeared happy and relaxed. She reported "feeling better all over", with seeing an improvement in her penmanship, and found that she was " now paying attention" (to her body). Finkelstein's test rated 0 on the right and 0 on the left.

| **Post treatment log analysis:** | **Pre-study** | **Post-study** |
|---|---|---|
| Cervical pain | 3 | 0 |
| Shoulders | 0-3 | 0 |
| Elbows | 0-3 | 0 |
| Wrists | 3 | 0 |
| Hands | 3 | 1 |
| Thumbs | 3 | 1 |

| | | |
|---|---|---|
| Physical energy | 7 | 10 |
| Emotional energy | 7 | 10 |
| Mental focus | 6 | 10 |
| Ibuprofen | 2400mg daily | 0 (as needed) |
| Methotrexate | 2.5mg daily | 0 (discontinued) |
| Enbrel | 50mg weekly | 50mg weekly |
| Pristique | 50mg daily | 0 (discontinued) |

## Recommendations for this Subject:

The post-study recommendations given to the Subject included a weekly to bi-weekly hand reflexology sessions, continued self monitoring of symptoms with regard to her massage practice, regular hand soaks, and her usual stretch protocol. Adjusting massage techniques to reduce repetitive strain in her massage practice. Combination hand and foot reflexology may be a consideration. (Subject returned two weeks after final evaluation to experience a combination hand and foot session). Encouragement was given to continue follow up with her doctor concerning the medication regime.

## Conclusions:

The Subject in this case study had years of inflammatory years. The overall grouping of wrist and hand symptoms into other syndromes such as carpal tunnel syndrome, fibromyalgia, and arthritis may be precursors to the occurrence of de Quervain's tenosynovitis for this individual. This syndrome is widely encountered by hand surgeons (healthcentral.com). As a cumulative injury, it can be devastating to bodywork practitioners' ability to perform activities of daily living and sustain a busy practice. One hundred and fifty is the average work days lost to repetitive injuries such as tenosynovitis (www.lni.wa.gov).

This particular Subject responded well to hand reflexology. Reflexology is a complementary bodywork method producing an improvement in the inflammatory symptoms of de Quervain's tenosynovitis. Reflexology supported the Subject while decreasing and discontinuing prescription medications used for the inflammation and anxiety. Improvement in the physical, emotional and mental status of the Subject while reestablishing her career gives credence to the effectiveness of reflexology. A future study may be considered for larger numbers of Subjects experiencing progressive symptoms of inflammation.