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Case Report

De Quervain's Tenosynovitis in Weight Lifter: A Case Report

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ABSTRACT

Objective and clinical features: A 23-year-old male weightlifter player presented complaining of right-sided wrist and thumb pain at the base of the styloid of the radius while doing twisting movement of wrist and lifting activities. Player reported that his pain started 2 month ago which increased gradually during training sessions of weight lifting. His pain was worst since 2 days when he reported to Physiotherapy OPD which affected wrist, hand and thumb activities.

Intervention and outcomes:
The combination of conservative treatment approach consisted of eccentric exercise training, Technique modification, Manual therapy, protective guard and patient education. Outcomes measures included verbal pain rating scale and a return to Activities of Daily Living (ADLs). Patient symptoms resolved and at 3 month follow up reported no recurrence of wrist pain.

Result: The described treatment regime, which involved eccentric exercise training of wrist muscles and slight modification of technique aided in the complete resolution of the patient impairment and functional limitations.

Discussion: The result of this case report add to our current knowledge of rehabilitation with the use of conventional physical agents, Eccentric exercise training, manual therapy and technique modification provided successful results with this patient. The rehab protocol included aggressive stretching, (Active Range of Motion exercise) AROM and strengthening of (Extensors Pollicis Brevis) EPB and (Abductor Pollicis Longus)APL rarely in rehab process that resulted in quicker recovery and early returns to functional activities.

Keywords: Tenosynovitis, Technique modification, Manual therapy

INTRODUCTION

De Quervain's tenosynovitis is a common cause of hand and wrist pain. It is common tendonitis of the wrist. The condition was first described by Fritz de Quervain in 1985. [1] It is caused by impaired gliding of the tendons of the APL and EPB muscles caused by thickening of extensor retinaculum.

Repetitive abduction of thumb and ulnar deviation of the wrist creates tension on the tendon. Sustained and repeated movements can produce friction at the retinaculum sheath. Gradually this can lead to swelling or narrowing of the fibrosseous canal. [2] This creates resultant impairment of wrist; hand and thumb function with activities such as lifting, pushing, pulling and gripping.

Predisposing movements include forceful grasping with ulnar deviation or repetitive use of the thumb (which includes many athletic pursuits, such as golf, weight lifting and racquet sports. [3]

The prevalence of DQST was found 0.5% in man and 1.3% in women. [4] Patient with de Quervain's usually present complaining of radial wrist pain with thumb

movements and tenderness over the first dorsal compartment. [5] Diagnosis is usually done 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. [6] Finkelstein's test was first described in 1930 and has recently been described as being performed in four stages: [7]

1st with the application of gravity assisted gentle active ulnar deviation at the wrist.
2nd the patient actively deviates the wrist in an ulnar direction.
3rd further passive ulnar deviation by the examiner.
4th examiner passively flexes the thumb into the palm.

CASE REPORT

A 23-year-old male player presented complaining of right-sided wrist pain and thumb pain while doing twisting movements of the wrist and weight lifting activies. Player reported that he was having pain since 2 months which increased gradually. His pain increased 2 days back during clean jerk event in training session of weight lifting following which all the movement of wrist became very painful. He applied ice over it for twice a day but condition remained same and affected his training schedule. He stated that only rest with icing relieved his pain. He also took anti inflammatory medication-ibuprofen. Player was non-smoker and non-alcoholic. Previous history included player felt the same pain 1 year before in the right Wrist when he was lifting weight 130kg but he ignored and continued the training session. Pain intensity was increased to such an extent that patient had to take rest for 1week. During rest period he was off the game and did icing regularly which relieved his symptoms and he again resumed with his training. His Training history included Warm-up for 20minute before practice session; General body warm-up included stretching and mobility exercise, Cool-down for 20min. After practice session he regularly applied stretching and icing. He practiced for 6days a week; hours in a day: 6hr. morning 3hrs, Evening 3hrs. week in a month: 4week, month in a year: 12month.

Table 1-Range of motion at Wrist and Thumb

Right side			Left side	
A.R.O.M	P.R.O.M	Wrist Movement	A.R.O.M	P.R.O.M
0-75(end range painful)	0-80	Flexion	0-80	0-85
0-70	0-75	Extension	0-70	0-73
0-15(end range painful)	0-20	Radial deviation	0-20	0-22
0-30	0-35	Ulnar deviation	0-30	0-35
		Thumb.mov(CMC)		
0-65(end range painful)	0-70	Abduction	0-70	0-75
0-15	0-20	Flexion	0-15	0-20
10-0 end range painful)	10-0	Extension	15-0	15-0
		MCP mov		
0-50	0-55	Flexion	0-50	0-55
50-0 (end range painful)	50-0	Extension	50-0	50-0
		IP mov		
0-80	0-85	Flexion	0-80	0-85
0-15	0-20	Extension	0-15	0-20

On pain assessment (Visual Analog Scale) VAS during training session was 8 out of 10 and VAS at rest was 2 out of 10. The pain was constant, dull in nature and increased during continued practice, pinching, griping and weight lifting activities.

On observations his built was endomorphic, fusiform swelling was seen over radial styloid process, muscles wasting was not present and any deformity was not present. There was no Bruising and Echymosis. On palpation the patient reported tenderness grade 2nd (Anatomical snuffbox), temperature was slightly increased), crepitus was absent, skin texture was normal and muscles spasm was not present.

Sensory evaluation: Superficial sensation: intact, (Touch, Pain, Temperature)
Deep sensation: intact (Vibration, Proprioception)
Screening tests for curved spine bilateral neural tension tests and provocative test for elbow joints was also done but the results were unremarkable.

- Active Ranges of motion and resisted isometric contraction of the right wrist revealed painful and resisted at wrist flexion and radial deviation at end range. Thumb ranges of motion on the right revealed painful active and resisted abduction, extension, opposition

Table 2- Resisted Isometric contraction of Wrist and Thumb muscles

Wrist Movement	Resisted Isometric Contraction
Flexion	Strong and painful
Extension	Strong and pain free
Radial deviation	Strong and painful
Ulnar deviation	Strong and pain free
Thumb movement	
Abduction	Strong and painful
Flexion	Strong and pain free
Extension	Strong and painful
Opposition	Strong and pain free
MCP movement	
Flexion	Strong and pain free
Extension	Strong and pain free
IP movement	
Flexion	Strong and pain free
Extension	Strong and pain free

Table 3-Manual Muscle Testing of Wrist &Thumb Muscles

Muscles	Right-side	Left side
wrist		
flexors	-4	5
extensors	+4	5
Extensor policis longus	-4	5
Abductor policis longus	-4	5
Flexor policis longus	4	5
Opponens policis	+4	5

Diagnosis test

A Finkelstein's Test [8]

The special orthopedic test used to diagnose de Quervain's disease, Finkelstein's test, (shown in the picture below). This test is performed by the patient making a fist around their thumb, and then ulnarly deviating their wrist. In this position, the synovial tissue that surrounds the extensor pollicis brevis and abductor pollicis longus tendons is stretched. If they are inflamed and a patient is suffering from de Quervain's disease, a positive sign will be indicated by pain in the first compartment of the extensor retinaculum. Even unaffected patients can feel an uncomfortable stretch with this pain, so the full DQST is necessary for the valid diagnosis of de Quervain's disease (Fig 1).

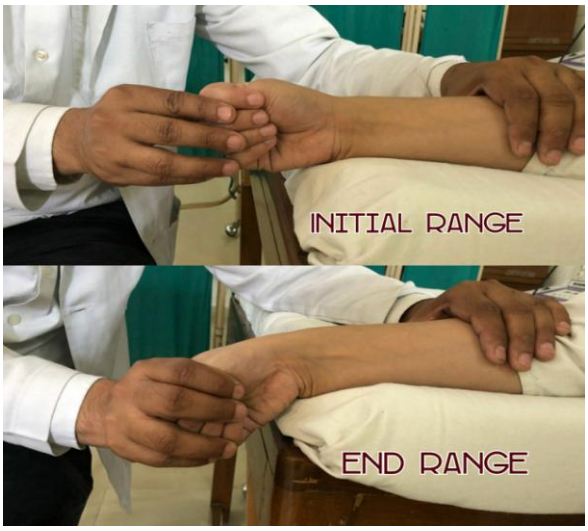

Fig 1-Fienkelstien Test

Table 4- Differential diagnosis

Differential diagnosis	+ve findings	-ve findings
1st CMC osteoarthritis	pain at the level of cmc joint no inflammation sign occurs ,age factors	This type of signs not occurs in De-Quervain's
Intersection syndrome	Inflammation of an adventitial bursa between the APL and ECRB due to friction at the intersection	Anatomical site is different in de-Quervain's
Wartenbergs syndrome	Compression of superficial radial nerve. Numbness, tingling, burning sensation	In de-Quervain's no compression occurs
Ganglion	Formation of synovial cyst communicating with the joint space	In de-Quervain's no synovial cyst formation
Scaphoid fracture	Tenderness present at the base of snuff box	In de- Quervain's its not present like this

Provisional Diagnosis: De Quervain's Tenosynovitis

GOAL OF TREATMENT

➢ Short term
- Reduce Pain
- Reduce swelling
- Protection with wrist band
- Increase R.O.M

➢ Long term
- Strengthening of muscles around wrist joint muscles and thumb muscles
  Extensor- extensor pollicis longus, extensor pollicis brevis, 1st dorsal interrosei
  Flexor – flxor carpi ulnaris, flexor carpi brevis, flexor carpi radialis
  Thumb- abductor pollicislongus, abductor pollicis brevis, adductor pollicis
- Home exercise Program
- Return to the game

➢ **Management 1st week**
- Icing 20min*3times a day
- Ultrasound 0.8w/cm^2 *6min
- TENS *10minute
- Static stretching of thenar muscles
- Applied Protective support wrist with figure of 8bandage or wrist band
- During sleep elevation of affected hand
- Advice Rest and temporarily discontinuance aggressive training session

➢ **Management of 2nd week**
- TENS was discontinued
- DTFM(Deep Tendon Friction Massage) over right anatomical snuff box area for 5minute a Day (Fig 2)
- Tendon gliding exercises
- Active and Passive R.O.M 3times daily
- Eccentric exercise pain free range of Wrist and thumb with theraband.
- Wrist flexors: Flexor Carpi Ulnaris, Flexor Carpi Radialis, Palmaris Longus (Fig 4)
- Wrist extensors – extensor carpi radialis longus, ECRB, Extensor carpi ulanris (Fig 5)
- Thumb extensors muscle
- Thumb abductors muscle

➢ **Management of 3rd week**
- Ulnar deviator- flexor carpi ulnaris ,
- Radial deviator - flexor carpi radialis , extensor carpi radials longs (Fig 3)
- Strengthening ex. With theraband wrist and thumb of above mentioned muscles
- Ice was applied for 15min. after every training session
- Thumb Spica was applied during sports training (Fig 6)

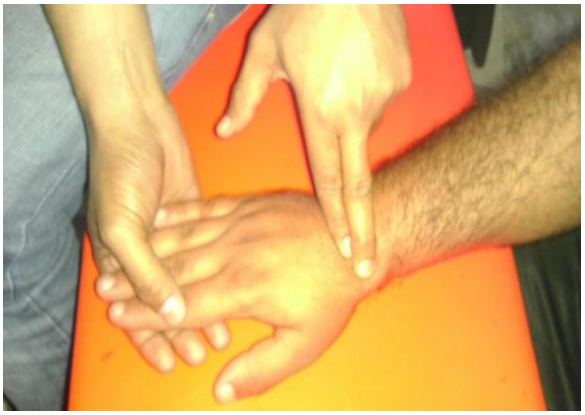

Fig 2-Deep Tendon Friction Massage at anatomical Snuff Box

Fig3-Eccentric strengthning of Radial Deviator Muscles

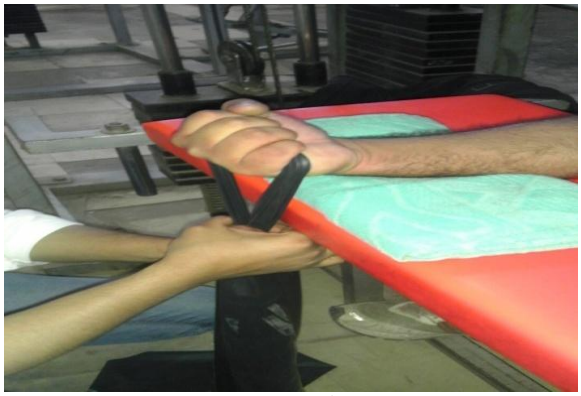

Fig 4-Eccentric Strengthning of Wrist Flexor Muscles

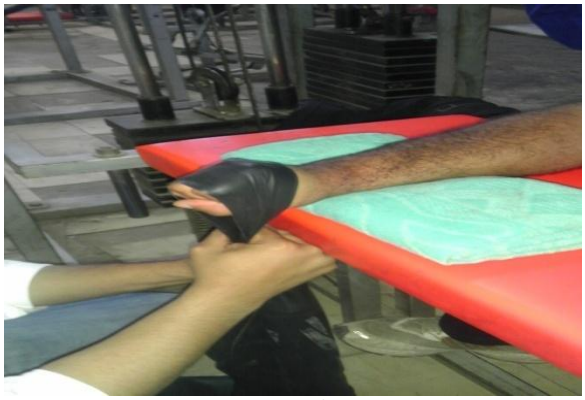

Fig 5- Eccentric Strengthning of Wrist Extensor Muscles

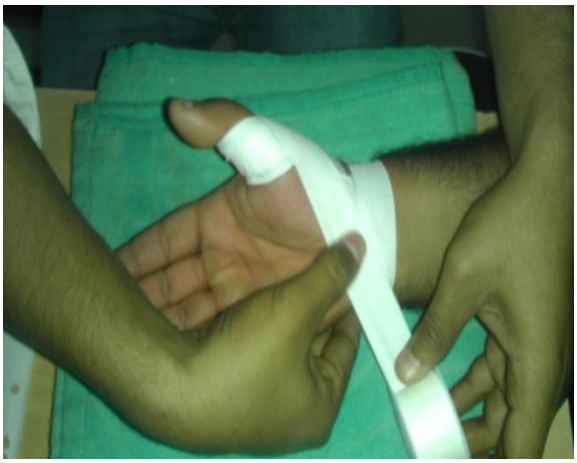

Fig 6- Thumb Spica taping

Patient was treated for 3 weeks. At the end of 3rd week, patient reported zero pain on VAS scale at rest and 1/ 10 during weight lifting activities. The patient gradually resumed his sports specific training at 6th week. He was a given a home exercises programme which included similar type of exercises for 2 weeks. Physical examination revealed pain free and full ranges for thumb and wrist. On follow up at 5th week patient reported no wrist pain.

DISCUSSION

Injuries of hand and thumb can be challenging, since most patients frequently use them in their in daily lives, thus delaying healing time. Predisposing factors include pregnancy, musicians, assembly workers, golfers, mountain bikers, weight lifters. [9-11] Risk factors include repetitive movements, hand position, frequency of movement and static postures. [12]

There are many recommended conservative treatments, which include rest, early mobilization. Light weight thumb Spica taping was done to reduce ulnar deviation and thumb flexion. [13] Others conservative measures include heat, cold, modalities (Ultrasound), deep tendon friction massage. [14,15]

Active treatment options included active pain free range of motion exercises, strengthening, tendon gliding, and eccentric training exercises. [15,16]

This case had a favorable outcome. Eccentric exercises with theraband were started early during 2nd week which helped in quicker recovery of patient. He was successfully treated by using conventional Physiotherapy interventions such as electrotherapeutic agents (TENS, US, Manual therapy (DTFM) and eccentric strengthening exercises with theraband which were started early in rehabilitation program of the patient.

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