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Occupational De Quervain's Tenosynovitis in a Physiotherapy Intern: A Case Report of Repetitive Manual Therapy and Ergonomic Modification

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Abstract

Background: De Quervain's tenosynovitis (DQT) is an overuse condition affecting the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) tendons in the first dorsal compartment of the wrist. De Quervain's tenosynovitis is commonly caused by repeated thumb and wrist movements. Physiotherapists performing soft tissue manual therapy such as myofascial release (MFR) and ultrasound treatment are at risk of developing this work-related musculoskeletal disorder.

Objective: To report a case of occupational De Quervain's tenosynovitis in a physiotherapy intern and discuss the importance of early diagnosis, activity modification, and ergonomic correction.

Case Description: A 24-year-old right-hand dominant physiotherapy intern with a complaint of pain over the volar and dorsal aspect of the right thumb for the past four days was brought to the out-patient physiotherapy clinic. The patient was undergoing clinical internship where she was frequently involved in MFR of approximately 5 patients a day and ultrasound application. The pain was exacerbated by activities such as MFR, forceful grip, pinching, and lifting of the patient's thumb. On examination, pain on palpation of the first dorsal compartment of the wrist, positive Finkelstein's test, full range of motion (ROM) of the thumb with pain at end range, and thumb muscle strength of 4/5 due to pain were noted. The patient's pain was severe with a Numeric Rating Scale (NRS) score of 9/10.

Interventions: The patient was managed with physiotherapy interventions for DQT such as patient education, activity modification, ergonomic correction, pulsed ultrasound, thumb taping, Grade I and II mobilization, cryotherapy, pain-free active ROM, and tendon glide exercises for the APL and EPB tendons. Isometric strengthening, grip and pinch exercises, and guidance on proper hand position during MFR were also performed.

Outcome Measures: The primary outcome measure was the reduction in pain intensity recorded using the Numeric Rating Scale (NRS). Secondary outcome measures included the improvement in thumb ROM, Manual Muscle Test (MMT), and Finkelstein's test and the patient's ability to perform routine clinical procedures.

Results: After two weeks of conservative physiotherapy management, the patient's pain score reduced from 9/10 to 2/10 on the NRS. The patient's thumb and wrist movements became pain-free, and her muscle strength improved from 4/5 to 5/5. Finkelstein's test was negative, and the patient was able to resume her clinical internship with minimal discomfort.

Conclusion: The case highlights the occurrence of De Quervain's tenosynovitis (DQT)as an occupational overuse injury among physiotherapy interns. Early diagnosis, conservative physiotherapy management, activity modification, and ergonomic correction reduced pain and improved the patient's functional ability, facilitating an early return to clinical practice while reducing the risk of recurrence.

Keywords: De Quervain's Tenosynovitis (DQT) ,Occupational Overuse Injury ,Physiotherapy Intern ,Conservative Physiotherapy ,Ergonomic Modification ,Myofascial Release (MFR) ,Thumb Overuse

Background

De Quervain's Tenosynovitis (DQT) is a painful condition affecting the tendons of the first dorsal compartment of the wrist, mainly the abductor pollicis longus (APL) and extensor pollicis brevis (EPB). These two tendons are located on the radial side of the wrist and play an essential role in thumb abduction and extension. The tendon sheaths allow free movement of the APL and EPB during activities such as gripping, pinching, lifting, and other activities involving the thumb.

De Quervain's tenosynovitis (DQT)is commonly caused by repeated thumb and wrist movements that put pressure on the APL and EPB tendons. The constant irritation of the tendon sheaths results in pain and tenderness over the radial aspect of the wrist. Activities that require gripping, pinching, lifting, and repetitive thumb movements can aggravate the condition. If the inciting activities are not modified, the pain may progress to the point where it interferes with work and daily activities.

De Quervain's tenosynovitis (DQT) can be caused by occupational overuse of the thumb and wrist during work. It has been reported in a variety of occupations, including office workers, musicians, athletes, hairdressers, and healthcare workers. DQT has also been reported among mothers who frequently lift their infants. Physiotherapists and physiotherapy interns can also develop DQT due to repeated thumb movements during soft tissue mobilization and prolonged use of the ultrasound applicator. Poor wrist positioning, pressure on the thumb, and prolonged work without rest can aggravate the condition.

The APL and EPB tendons are involved in thumb abduction, extension, and other movements that put pressure on the tendon sheaths during gripping, pinching, and lifting. Myofascial release (MFR) is a physiotherapy soft tissue mobilization technique that requires repeated thumb abduction, extension, and pressure to release trigger points. As a result, the APL and EPB tendons experience increased strain during MFR. Similarly, prolonged ultrasound application can cause pain and discomfort due to the prolonged gripping and positioning of the ultrasound applicator. Therefore, physiotherapists and interns who frequently perform MFR and ultrasound treatment are at risk of developing De Quervain's tenosynovitis due to the constant strain on the thumb tendons and tendon sheaths.

Physiotherapy Intervention

Physiotherapy management of the patient was based on her clinical presentation and the demands of her clinical internship. The patient was advised to take a short break from activities that put pressure on the thumb tendons. Since MFR was the main activity aggravating her symptoms, she was guided on how to avoid putting pressure on the thumb during MFR. She was also instructed on how to modify her hand position to reduce strain on the thumb and wrist. The patient's ultrasound applicator position was also modified to reduce the risk of developing De Quervain's tenosynovitis.

The patient was guided on how to perform gentle thumb and wrist movements to maintain ROM and prevent stiffness. The interventions also included isometric exercises followed by resisted thumb abduction and extension to improve muscle strength. Tendon-loading exercises for the APL and EPB were

gradually introduced to improve the tendon's tolerance to work activities. Grip and pinch strengthening exercises were also introduced to improve functional activities. The patient was guided on how to resume her clinical activities while avoiding putting pressure on the thumb. She was also advised to take regular breaks during clinical work, maintain good hand position, and gradually increase the workload to prevent recurrence.

Case Presentation

A 24-year-old female physiotherapy intern (Rt hand dominant) with a complaint of persistent pain over the volar and dorsal aspect of the right thumb for the past four days was brought to the out-patient physiotherapy clinic. The patient was undergoing clinical internship where she was frequently involved in MFR of approximately 5 patients a day and ultrasound application. The pain was exacerbated by activities such as MFR, forceful grip, pinching, and lifting of the patient's thumb. The patient reported no history of trauma, fracture, inflammatory arthritis, and previous injuries to the thumb or wrist.

On examination, pain (NRS) was 9/10, and the active ROM of the thumb was full but painful at the end of ROM. MMT of the thumb muscles was 4/5 due to pain. Tenderness was present over the first dorsal compartment of the wrist, and Finkelstein's test was positive, suggestive of De Quervain's tenosynovitis After the diagnosis, the patient was managed with physiotherapy interventions for De Quervain's tenosynovitis such as patient education, activity modification, ergonomic correction, pulsed ultrasound, thumb taping, Grade I to II joint mobilization, cryotherapy, pain-free active ROM, and tendon glide exercises for the APL and EPB tendons. Isometric strengthening, grip and pinch strengthening using a soft ball and resistance band, and guidance on proper hand position during MFR were also performed.

Case Uniqueness

The uniqueness of this case lies in highlighting De Quervain's tenosynovitis an occupational overuse injury among physiotherapy interns. The case also emphasizes the importance of early diagnosis, activity modification, and ergonomic correction to promote early recovery and reduce the risk of recurrence.

Result

After two weeks of conservative physiotherapy management and ergonomic modification, the patient showed significant improvement. The patient's pain reduced from 9/10 to 2/10 on the NRS. The patient's thumb and wrist movements became pain-free, and her muscle strength improved from 4/5 to 5/5. Finkelstein's test was negative, and the patient was able to resume her clinical internship with minimal discomfort.

Discussion

De Quervain's tenosynovitis is a common overuse painful condition affecting the tendons of the 1st dorsal compartment of the wrist, associated with repetitive manual movements. This case presented a 24-year-old physiotherapy intern who developed the symptoms due to repetitive MFR and prolonged use of ultrasound within a short time. Repetitive manual loading of the thumb tendon causing persistent pain and reduced functional activity. On comparing previously published literature mentioning post partum women ,office workers ,manual labour, athletic, and smartphone overuse these case highlights a physiotherapy intern indicating that healthcare professionals performing repetitive manual techniques are also at risk of developing occupational thumb overuse. Also the importance of ergonomics education and prevention

strategies .

The case is uniqueness lies how patient should significant improvement through conservative physiotherapy management that included activity modification, therapeutic exercise (early recognition of symptoms) And ergonomic correction that aid early return to clinical duties . The findings however are limited by the single case design short followup period and lack of imaging confirmation.

Conclusion

This case highlights occupational thumb overuse as a work-related risk among physiotherapy interns performing repetitive manual therapy techniques. Early recognition, conservative physiotherapy management, and ergonomic modifications were effective in reducing pain, improving function, and enabling an early return to clinical duties while promoting proper hand mechanics, activity modification.

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