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ORIGINAL ARTICLE

# Prevalence of De-Quervain's Tenosynovitis among Medical Students of Allama Iqbal Medical College

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## ABSTRACT

**Background:** De Quervain's tenosynovitis is an inflammatory disease due to the chronic overuse of tendons of first dorsal compartment of wrist. Modifications in normal kinematics and anatomical determinants of a tendon in students are common which may be the cause of this disease and little is known about the prevalence of this disease in medical students.

**Objective:** The purpose of the study was to determine the prevalence of De Quervain's tenosynovitis among medical students.

**Methodology:** A cross-sectional survey was conducted among undergraduate students studying in Allama Iqbal Medical College Lahore. 137 students were included by non-probability convenience sampling technique.

**Results**: The results of this study showed that 44(32%) students out of 137 students who filled the questionnaire were experiencing pain in the wrist while 93 (68%) were pain free. It was noted that the disease is more common in female students.

**Conclusion:** In analysis of medical student's population, the epidemiology of stenosing tenosynovitis of the first extensor compartment had been described. Female gender, work related factors, repeated and sustained bending of wrist in extreme posture were risk factors of developing the disease.

**Key Words:** Stenosing Tenosynovitis, De Quervain's, Extensor Compartment.

## INTRODUCTION

The entrapment tendinitis/tenosynovitis of the abductor pollicis longus and extensor pollicis brevis tendons at the level of dorsal styloid process of radius is known as De Quervain's tenosynovitis. A chronic overuse syndrome of the wrist and hand and a common cumulative movement disorder[(1)] De Quervain's tendinitis is defined as a painful symptom of the wrist; thumb abductor is stenosed tenosynovitis around the radio styloid process this definition was first given by Fritz De Quervain in 1895. The prevalence of this condition is increasing gradually with the new occupational and professional [(2)]. Tendons of the abductor pollicis longus (APL) and the extensor pollicis brevis (EPB) affected in this disease. Movements of the thumb like extension and moving the thumb away from the palm perform with the help of these two muscles [(3)].

Gripping and grasping, moving the wrist in radial and ulnar direction, repetitive or unaccustomed use of the thumb thickened the fibrous tendon sheath due to which inflammation and stenosis of the tendon sheath occur. The causes of De Quervain tenosynovitis in students is overuse of the thumb as in: in writing, short messaging service (SMS, typing, computer users, unnecessary grasping and pinching of objects over a prolonged time.

Activities like stapling, writing, brushing hair, shaving, using eating utensils, or even grasping the steering wheel of vehicle may exacerbate symptoms. Or if a person sent more than 250 text messages on cellular telephone[(4)]. Pain and swelling are the main symptoms. These symptoms usually develop gradually over a period of time. Patient may feel pain as the condition progresses and felt with everyday activities [(4)]. Finkelstein test is used to diagnose de quervains tenosynovitis. In this test the thumb is passively flexed carpometacarpal and meta carpophalangeal joint with the wrist in ulnar deviation. The test is positive if the patient experiences increased pain with the thumb clenched tightly within the fist[(5)].

Differential diagnosis of de quervain's tenosynovitis include Intercarpal instabilities, Scaphoid fracture,

superficial radial neuritis (wartenberg's syndrome), C6 cervical radiculopathy, osteoarthritis of 1st CMC [6]. Immobilization of thumb and wrist with a cockup splint as an initial treatment will reduce pain and swelling. Other treatments options were avoiding repetitive movements, icing, NSAIDs,corticosteroid injections into the tendon sheath and Physical Therapy. Patients who are not responsive to conservative management then the Surgical procedure is an effective treatment [7].Stretching of the muscles of the thenar eminence can relax and lengthen the tight musculature. Strengthening can also give positive results[8].

Ali M, Asim M et al in 2014 check the association of De Quervain's tendinitis with SMS texting in different physical therapy schools of Karachi. The results of this study concluded that the thumb pain and frequent text messaging have a positive association [9]. Eapen C, Kumar B and Bhat AK in 2014 do a clinical ultrasonic evaluation of patients with thumb pain and extensor pollicis longus injury in addition to de quervain and the results of this study showed positive finkelstein test in 40% of cases. The use of mobile phones for text messaging repetitively can damage the extensor pollicis longus of the thumb and the tendons of the first compartment of the wrist joint [10].

John V. Ashurst gives a case report on tenosynovitis caused by texting in May 2010 in which he concluded that the overuse of the thumb musculature is the common cause of de quervain tenosynovitis. The excessive use of mobile phones for texting can aggravate the disease. Naproxen, cockup splints and limitation of texting resulted in complete recovery of patient suffering from this disease [11]. Avci S, Yilmaz C, Sayli U (2002) check the precise etiology of De Quervain's tenosynovitis and concluded that an acute trauma or an extreme, unaccustomed/new exercise. The cumulative micro traumamay be the most common cause[12]. Rossi C, et al. (2005) see the prevalence of De Quervain disease in volleyball players. This study shows that increased training time and consequent micro trauma associated with professional volleyball activity can increase the likelihood of de Quervain disease[13].

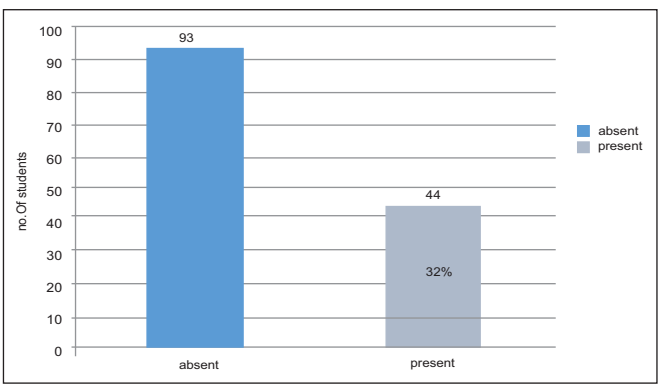
## METHODOLOGY

A cross-sectional survey was conducted among undergraduate students studying in Allama Iqbal Medical College Lahore. The study has been completed in 3 months. Undergraduate Medical students from AIMC were selected for the purpose of completion of the study. To estimate a proportion Confidence level = 95%, Acceptable difference = 0.08, Assumed proportion = 0.42 of tenosynovitis[14]. Size of population was 2000 medical students, required sample size was 137. Sample size calculation for single proportion $n= (Z/E)^2 p (1-p)$. Sample was selected through non probability convenience sampling technique. The following inclusion and exclusion criteria have been used. Undergraduate Medical students with 18 to 25 years of age, well-nourished; no signs of physical deformity were included but the students with any systemic disorder and with a history of other associated disorder of wrist were excluded. Questionnaire was developed for: Assessment of patient, goals to be achieved and symptoms as well as the ability to perform certain activities. Following steps were adopted to collect the data. Self-design questionnaire was used to collect data. In addition to the questionnaire, Finkelstein test was used for diagnosis.

## RESULTS

The results of this study showed that 44 (32%) students from the total 137 students were experiencing pain in the thumb/wrist and 93 (68%) students were pain free.

Figure I : Presence and absence of De Quervain's tenosynovitis among medical students.



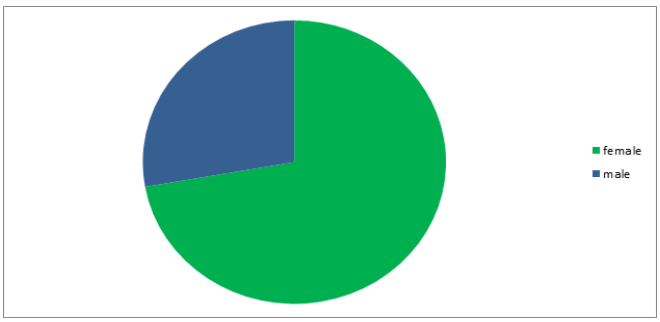
Students giving the history of previous injury were not included in study. Total number of students were 137 (n=137) participated in the study, out of these students females were 109 (80%) and remaining 28 (20%) were males.

### Table I : De Quervain's Tenosynovitis in medical students

| Gender | | | De Quervain's tenosynovitis | | Total |
|---|---|---|---|---|---|
| | | | Absent | Present | |
| Female | | Count | 71 | 38 | 109 |
| | | within medical students % | 52 | 28 | 80.0 |
| Male | Total | Count | 22 | 6 | 28 |
| | | within medical students % | 16.0 | 4.0 | 20.0 |
| | | Count | 93 | 44 | 137 |
| | | within medical students % | 68.0 | 32.0 | 100.0 |

It was found that the disease is more common in female students than males.

### Figure II: Medical students with De Quervain's Tenosynovitis according to gender distributions




Finkelstein test when done on students having restriction with thumb movement 44 students showed positive results. It was noted that as thumb restriction increased progressively more and more people showed positive Finkelsteintest. Out of 137 students 44 were suffering from De Quervain's tenosynovitis.

The frequency will be calculated as follow:

$$\frac{\text{No.of student with De Quervain stenosynovitis}}{\text{No.of students in study}} \times 100 = \frac{44 \times 100}{137} = 32\%$$

### Table II: Association of restricted thumb movement with Finkelstein test

| Restriction with thumb movement | | | Frequency | Finkelstein test | |
|---|---|---|---|---|---|
| | | | n=137 | positive | nagivtive |
| Yes | | Count | 48 | 42 | 6 |
| | | within medical students % | 35 | 30 | 5 |
| No | Total | Count | 89 | 2 | 87 |
| | | within medical students% | 65 | 1.5 | 63.5 |
| | | Count | 137 | 44 | 93 |
| | | within medical students % | 100 | 32.0 | 68.0 |

So 32% of undergraduate medical students studying in Allama Iqbal medical college without history of previous injury were suffering from De Quervain's tenosynovitis and remaining showed absence of disease.

## DISCUSSION

De Quervain stenosing tenosynovitis is common in volleyball players. A study conducted in 2005 on de Quervain's disease in volley ball players the authors studied 45 consecutively enrolled volleyball players (27 professional, 18 non-professionals). 40% volleyball players were suffering from the disease. In this study the total number of medical students (n=137) were participated, female students are 109 (80%) and remaining 28 (20%) were male. In questionnaire each activity of daily living (ADL) item was graded 0, 1, 2 and 3.

If more than 1 item was in grades 1, 2 and 3 finkelstein test was performed to diagnose De Quervain's tenosynovitis. 137 students who filled the questionnaire 44 (32%) students were experiencing pain in the thumb/wrist and another 93 (68%) students were pain free. Finkelstein test when done on students with pain at the base of thumb, positive results were obtained.

As the frequency of usage of mobile phone increases or abnormal usage of thumb musculature as in writing will increase the pain and people showed positive Finkelstein test. New occupational demands like long time work at computer, athlete who follows high resistance training or people who are using hands for support and maximal exertion in

these persons severity of this disease increases. The use of computers and mobile phones among younger peer group for the access and exposure to different types of information and communication has intensely increased over recent years causing such problems.

Due to the overuse of the thumb musculature pain arises that spread over the surface of the radial aspect of the wrist and severity decreases by ulnar deviation of the hand and this study showed that De Quervain tenosynovitis is due to the overuse of thumb musculature. Every participant was examined twice to minimize inter observer variation and questionnaires were filled out carefully by students themselves. Sample size was representative of undergraduate medical students of Allama Iqbal medical college and frequency of De Quervain's tenosynovitis in young medical students was determined by dividing the no. of cases to no. of students under study.

## CONCLUSION

This study shows that the disease is frequent in 32% of medical students of Allama Iqbal medical college. Abnormal usage of thumb musculature during hand movements as in prolonged writing, frequent usage of mobile phones for texting and other overuse conditions can increase the likelihood of de Quervain disease. Female gender is more involved in the study .

## LIMITATIONS

Following limitations were present in the study; the greater number of female students in this study so the male to female ratio was not equal and as this was a cross sectional study, changes over time cannot be determined.

## REFERENCES


1. Moore JS. De Quervain's tenosynovitis: stenosing tenosynovitis of the first dorsal compartment. Journal of occupational and environmental medicine. 1997;39(10):990-1002.
2. Ilyas AM, Ast M, Schaffer AA, Thoder J. De quervain tenosynovitis of the wrist. Journal of the American Academy of Orthopaedic Surgeons. 2007;15(12):757-64.
3. Kang H, Koh I, Jang J, Choi Y. Endoscopic versus open release in patients with de Quervains tenosynovitis A randomised trial. Bone & Joint Journal. 2013;95(7):947-51.
4. Abrisham SJ, Karbasi MHA, Zare J, Behnamfar Z, Tafti AD, Shishesaz B. De qeurvian tenosynovitis: clinical outcomes of surgical treatment with longitudinal and transverse incision. Oman medical journal. 2011;26(2):91.
5. Patel KR, Tadisina KK, Gonzalez MH. De Quervain's disease. Eplasty. 2013;13.
6. Rossi C, Cellocco P, Margaritondo E, Bizzarri F, Costanzo G. De Quervain disease in volleyball players. The American journal of sports medicine. 2005;33(3):424-7.
7. Mehdinasab SA, Alemohammad SA. Methylprednisolone acetate injection plus casting versus casting alone for the treatment of de Quervains tenosynovitis. Arch Iran Med. 2010;13(4):270-4.
8. Mehdinasab SA. de Quervain's Tenosynovitis. Archives of Iranian Medicine. 2010;13(4):271.
9. Ali M, Asim M, Danish SH, Ahmad F, Iqbal A, Hasan SD. Frequency of De Quervains tenosynovitis and its association with SMS texting. Muscles, ligaments and tendons journal. 2014;4(1):74.
10. Eapen C, Kumar B, Bhat AK, Venugopal A. Extensor Pollicis Longus Injury in Addition to De Quervain's with Text Messaging on Mobile Phones. J Clin Diagn Res. 2014;8(11):20.
11. Ashurst JV, Turco DA, Lieb BE. Tenosynovitis caused by texting: an emerging disease. The Journal of the American Osteopathic Association. 2010;110(5):294-6.
12. Avci S, Yilmaz C, Sayli U. Comparison of nonsurgical treatment measures for de Quervain's disease of pregnancy and lactation. The Journal of hand surgery. 2002;27(2):322-4.
13. Eerkes K. Volleyball injuries. Current sports medicine reports. 2012;11(5):251-6.14. Winkelhaus J, Cameron D, Fite J, Ritchie L, Arundale BA-C, Purkey B. De Quervain's Tenosynovitis. Timeline. 2011;11(28).