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RESEARCH ARTICLE

A LITERATURE REVIEW ON DE-QUERVAIN'S TENOSYNOVITIS

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Abstract

Background: Wrist pain is a very common complaint that can have a dramatic changes on the people productivity at work , sporting artistic pursuits and activity of daily living, now a day's it is more common , specially the people using mobile phone's more than 5 to 6 hours or repetitively use of hand and wrist, it is commonly known as de quervain's tenosynovitis a repetitive use of wrist and thumb lead to an inflammation of the abductor pollicis longus and extensor pollicis brevies tendon and all the layers of their associated tendon sheath. The aim of our study is to find out any recent updates on the treatment of de-quervain's tenosynovitis.

Methodology: It is a descriptive study (Review of literature) was performed using article related to de-quervain's tenosynovitis dated between 1951 to February 2020 the pub med, Google scholar we search, biomed central, standardized keywords were used alone or combination. These were words or phrase De-quervain's tenosynovitis, test for de-quervain's tenosynovitis, treatment for de-quervain's tenosynovitis.

Conclusion: Our finding suggested, the physiotherapy and pharmacology treatment are the most effective treatment in de-quervain's tenosynovits. If it fails, the treatment option will be surgery.

Introduction:-

Tenosynovitis is an inflammation of inner lining of the tendon sheath that houses the tendon. The common sites of tenosynovitis are the hand, wrist and forearm [1]. In wrist it commonly occurs at the radial side i.e. 1st dorsal compartment, the entrapment of 1st dorsal compartment is one of the common causes of wrist and hand pain [2]. De-quervain's tendinitis is commonly met in clinical practice where 1st dorsal compartment tendons are involved [3]. De- quervain's disease is quite often encountered in the clinical practice of orthopaedics and the general treatment procedure is as follow: Non surgical procedure such as limiting the use of thumb braces and inter-sheath steroids injection and if these process are ineffective , the tendon sheath of the 1st dorsal compartment is surgically released[4]. The musculotendinous unit controls the position and orientation forces application and joint stability of the

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thumb. The impaired gliding is believed to be as a result of thickening of the extensor retinaculum at the 1st dorsal compartment of the wrist with subsequent narrowing at the fibro-osseous canal [5].

Extensor retinaculum is a thick fibrous band present at the back of wrist. It sends septa which are attached to bony ridges at the lower end of forearm bones to form six Osseo fibrous compartments for tendon of extensor muscles of forearm. Each tendon is surrounded by synovial sheath which facilitates its gliding. 1st compartment is present along the lateral aspect of styloid process containing tendons of abductors pollicis loungs (APL) and extensor policis brevis (EPB). On an average, approximately 0.5% of men and 1.3% women of working age suffer from de-quervain's tenosynovits, resulting in 2 million working days lost per year in Germany [6, 7, 8].

There were 11, 32 cases of de-quervain's tenosynovits in the population at risk of 12,117,749 person – year. Women had significantly higher rate of de- quervain's tenosynovitis at 2.8 cases per 1000 person-year, compared to men 0.6 per 1000 person- years. Age greater than 40 was also significant risk factor, with this age category showing a rate of 2.0 per 1000person- year compared to 0.6 per 1000 in person under 20 year. There was also a racial difference with black affected at 1.3 per 1000 person-year compared to whites at 0.8 [9, 10, 11].

De- quervain's believed to result from repetitive, forcefully and ergonomically stressful work from anatomic variation, hormonal influence or pregnancy, rheumatoid disease, trauma, or drug such as floroquinonle [6]. More commonly found in premenopausal or pregnant women, de-quervain's tenosynovitis has been linked to overuse, all though no clear have supported this motion [12]. De-quervain's tenosynovitis is often associated with pregnancy (extending to several months postpartum). It is also overuse injury associated with fly fishing, golfing, piano playing and carrying a child in the arm for prolonged periods [13].

Methodology:-

The literatures was collected using article related to de-quervain's tenosynovitis dated between 1951 to February 2020 the pub med, Google scholar search, biomed central, standardized keywords were used alone or combination. These were words or phrase De-quervain's tenosynovitis, test for de-quervain's tenosynovitis, treatment for de-quervain's tenosynovits, texting tenosynovitis, blackberry thumb and washerwoman's sprain ,radial styloid tenosynovitis, mother's wrist and mommy thumb.

Search were limited to studies using human subjects and written in English. Free full text articles were identified and included from different textbooks.

Anatomy:

The anatomy of the dorsal compartment of the wrist is central to understanding the patho-physiology of de-quervain's disease. Many of the muscle that produced finger motions exits outside the hand (extrinsic muscles) and are opposed by muscle within the hand (internsic muscle)[14]. The extensor retinaculum, a thickening of the deep fascia, bridges the grooves on the dorsal aspects of the lower ends of the radius and ulna, and being attached by deep processes to the ridges between them converts into sex osteofibrous canals in which the various extensor tendon are contained [32].The 1st dorsal compartment is approximately 2cm long and is located over the radial styloid proximal to the ratio carpal joint. The abductor pollicis longus (APL) and the extensor pollicis brevis (EPB) tendon pass through this compartment. The APL originates on the distal 3rd of the radius and has multiple slips (2 to 4), with variable insertions on the base of the thumb metacarpal and trapezium. The primary function of the APL is to abduct the thumb and assist with radial deviation of the wrist. The EPB originates on the dorsal surface of radius and the introsseous membrane and insert on the base of proximal phalanx of the thumb. The EPB function extends the Metacarpophalangeal joint and weakly abducts the thumb [14, 15].

The EPB is a muscle peculiar to man and unlike the abductor is not generally represented in lower animals. It is truly in its phylogenetic infancy, as its separation from the ABL, a fact sharply noticed in standard anatomy books. Occasionally it is absent, being represented only by a tendinous ligaments passing from the radial styloid to the base of the 1st phalanx of the thumb [16, 17]. EPL its origin from ½ dorsal sides of the radius, the membrane introsseous and the insertion is at base of the proximal phalanx

of the thumb. Function of EPL in wrist joint is radial abduct and thumb extension, innervations radials nerve and artery supply is introsseous posterior artery. APL its origin from the dorsal side of the radius and ulna, the membrane introsseous and its insertion is the base of ossis 1st metacarpal. Function of APL is wrist joint radial abduction and thumb abduction, innervations is posterior introsseous nerve. (Radial nerve), artery supply is posterior introsseous artery [18, 15, 14].In some of the literature search this condition has various synonyms including De-Quervain's disease, 1st dorsal compartment tenosynovitis, texting tenosynovitis, blackberry thumb and washerwomen's sprain ,radial styloid tenosynovits , mother's wrist and mommy thumb.(12,20) De-quervain's tenosynovitis is an inflammation of the abductor pollicis longus and extensor pollicis brevis tendons and all layers of their associated tendon sheath [4] it is also defied as local pain over the radial styloid and tender swelling of the 1st extensor compartment with pain symptoms reproduced by resisted thumb extension [25].

Pathophysiolgy:

There is the stenosis of the 1st dorsal compartment is caused by the attritional force secondary the friction; the attritional force produce swelling and thickening of the extensor retinaculum of the 1st dorsal compartment the narrowed fibro osseous canal, resulting in the pain and decreased motions[5,17]. The histopathology of the de-quervain's disease generally does not involve inflammation but related instead to the thickening of extensor retinaculum [18]. Clark et.al examined the micro anatomic finding of the tendon sheath and synovium of symptomatic patient; these author found thickening of the tendon sheath to be up to 5 times that of controlled subjects because of deposition of dense fibrous tissue, increase vascularity of the tendon sheath and accumulation of muscopolyschharide, which are indicators of myxoid degeneration, the synovial lining were preserved and were histologically normal [14].

The operating findings are constant. The tendon sheath is thickened, sometime for as much as one and half inches, the greatest thickening being over the styloid process. It may be 3 to 4 time the normal thickness of 3 to 4 millimetre. The sheath may be almost cartilaginous is consistency. The synovial surface is often discoloured and may have lost its normal structure and extend above more than below the styloid process occasionally a small access of fluid is present[15]. The author postulated that the change are opposed to the common histological changes seen in chronic inflammation which may be indicated that the de- quervain's is a result of intrinsic degenerative mechanism rather an inflammatory one[14].

As the Abductor pollicis longus and extensor pollicis brevis tendon passes through the 1st dorsal compartment of the wrist beneath the extensor retinaculum and can angle sharply when the wrist is deviated radially. Various repetitive pronation and supination movements of the forearm, ulnar and radial deviation of the wrist, abduction/ extension of the thumb have been described as moments that create stress on tendon passing through the extensor retinaculum, The firm grip (example; wearing a cloths) or finger, thumb, grip of the wrist that create the greatest stress on the structure of 1st dorsal compartment. This position cause that taut abductor polices longus tendon to apply a tensile force on the fibrous extensor retinaculum. The extensor retinaculum thickening to resist the strain resulting in more pain and pressure [19].

Several studies have identified anatomic variation of 1st dorsal compartment. Variation including septation of the 1st dorsal compartment and the presence of multiple slips of abductors pollicis and occasionally of the extensor pollicis brevis tendon. These anatomic variations may have an effect on underline path physiology of de- quervain's tenosynovitis [14].

Causes:

Pregnancy, odema, prolonged repetitive activities of wrist, direct below to radial styloid or direct injury, acute strain. Historically over exertion from household duties was the most common reported cause, occupations requiring repetitive typing, lifting and manipulation have been considered as risk factors as well as causes. Renney et al. Studies female workers in highly repetitive jobs and showed de-quervain's disease to be the wrist. Pregnant and lactating women represent an increase cohort of patient with new onset self limited de-quervain's disease [2, 8, 14]. It is reported that perimeno pausal, pregnant women and lactating mothers have higher risk due to endocrine influences on fluid retentions or

mechanical stress on the thumb [8].The literature review reveals the precise aetiology of de- quervain's tenosynovitis which include an acute trauma. However more commonly it may be the result of cumulative micro trauma, thus the adults who use their hands and thumbs in repetitive de-quervain's [20]. Odema is also one of the cause if odema is surrounded the tendon which are located in the wrist on the side of thumb [22] so the three most common cause of stenosing tenosynovitis appears to stem from work related activities repetitive gripping, pinching, direct injury and women especially those with small children lead in being affected by de-quervain's tenosynovitis [15].

Mechanism of injury:

De-quervain's tenosynovitis is mostly occurred by repetitive motions in the wrist. Specially, thumb extension in combination with wrist flexion, ulnar deviation and repetitive gripping [14]. Muckart described the mechanism by which the strong angulations result in a tearing of stress to retinaculum. The aggravating stress is greatest when radial deviation of the wrist is combined with a gripping motion of the thumb. People who use their thumb in repetitive pinching, extension activities of the wrist and hand are susceptible to inflammation and progressive stenosis in the 1st dorsal tunnel of the wrist [31].

Charcteristics / clinical presentaion:

Pain and weakness, irritations and swelling along the radial side of wrist during activities like wringing the hand, cutting with scissors etc [15], it is classically associated with localized tenderness and swelling in the region of styloid process of the radius and wrist pain radiating proximally into the thumb, decreased abduction range of motion of the carpometacarpal joint of thumb [19]. Pain and swelling may make it difficult to the thumb and wrist, irritation of the nerve lying on the top of the tendon sheath may cause numbness on the back of the thumb and index finger [2, 23].

Finkelstein sign/test:

It is a diagnostic test, which was proposed by an American surgeon, "HARRY FRINKELSTEINN", MD (1865-1939) in 1930. This test is performed by folding the thumb across the palm or place stress on the APL, and EPB by placing the thumb into the fist, passively deviates the wrist toward the ulnar side, if pain in the 1st dorsal compartment over the radial styloid and may indicate a tenosynovitis of the APL and EPB tendon [3]. A positive finkelstain's test also called a 'EICHOFF TEST'. Another new test the so called WHAT (Wrist hyper flexion abduction of the thumb) test seem to be an improvement but more experiences with the test is needed to confirm this [7].

Treatment:

Pharmocological Managment:

The patients presenting with mild to moderate pain that does not limits activities of daily living should be treated with rest , splinting, NASIDS and corticosteroids[14]. Many of the patients with de quervain's tenosynovitis are giving corticosteroids [14]. A Corticosteroid sheath injection can be offered to the patent with moderate to marked pain or with symptoms lasting more than weeks [26]. Corticosteroids injection is injected with corticosteroids and 1% with lidocaine hydrochloride [13]. The injection is consists of 1ml of corticosteroid with 0.5 to 1ml of a local aesthetic. Success has been reported with a variety of corticosteroids (e.g. Bemethasone, triamcinolone, dexamethasone, methylprednisonlone) combined with any several local synthetics (e.g. bupivacsine, lidocaine)[18]. A Small 27 or 25gauge needle is use for injection. The needle is placed in close proximity to the tendon or into the sheath but not into the tendon substance. In general one or two corticosteroid injection are offered to the patients. They are given several weeks to months apart. Corticosteroids inhibit the inflammatory process by inhibiting the prostaglandin synthesis and by reducing migration of WBC to the injured area. Steroids inhibits collagen synthesis and therefore weaken tendon if use in excess [15].

NSAIDA as they are the medication of choice for decreasing inflammation and soft tissue swelling leading to nerve compression. NSAIDS may promote healing by accelerating the formation of cross links between the collagen fibers. NSAIDS include aspirin, ibuprofen, and naproxen. A systemic NSAID is commonly prescribed for the initial 6 to 8 weeks of treatment [15, 26]. Phonophoresis with 10% of hydrocortisone can be used for oedema control {15}.

Surgical treatment:
Surgical treatment is based on the release of the fibro-osseous roof of the 1st dorsal compartment and decompressing the stenosed APL and EPB tendon. Fundamental to surgical intervention is protection of the radial sensory nerve complete decompression of the 1st dorsal compartment including release of additional tendinous slips and compartment [14]. The technique is to perform the surgery under local infiltration anthesia (3-4ml of 2% lidocaine HCL) under pneumatic tourniquet control [30]. All though multiple incisions (e.g. transverse, longitudinal, and oblique) may be used to provide excellent expose of the 1st dorsal compartment [14]. A 2-3cm transverse skin incision was carried down to the 1st dorsal compartment, about 1cm proximal to the tip of the radial styloid process [16].

The APL tendon is large and is routinely composed of two or more distinct tendon and EPB tendon is smaller dorsal and often lies in a separate compartment [14]. The retinaculum of the 1st dorsal compartment is completely incised with a sharply in the line with the APL and EPB tendons and identify any anatomical variation in the compartment. Extra septation were excised if they were found. If there was a ganglion within the 1st compartment then it was resected. Tendon may be carefully tensioned using a traumatic technique to stimulate their function aid in their identification and confirm decompression. Active and free thumb abduction and extension then can be performed on the awake patient. After confirming that the compartment is completely released then the skin incision is closed using single interrupted 4- 0 nylons suture. Postoperatively a plaster thumb spica splints applied to aid in pain control and wound healing. The splint and suture are removed 10 to 14days and then the patients is allowed to resume normal activates as tolerated [14, 30].

Goal of rehabilitaion intervention:
Resolve symptoms of de-quervain's tenosynovitis and minimize the pain relief with ADL. Resolution of acute/chronic inflammatory process. Regain independence with ADL/ Leisure/ work task. Restoration of pain free tendons glide, full range of motion and strength. Goals will reflect individual pt's functional impairments in ADL'S leisure or work task. Goals to reflect patient's education of body mechanics and ergonomics including the avoidance of posture and activities. If splinting is involved in the treatment program, goals will reflect the patient independence in their wearing schedule and the care and hygiene of splints. Goals will be measurable and reassessed every 30 days [15, 26].

The use of thumb spica splint has been shown to assist the pain management by immobilizing the thumb and wrist, there by prevent thumb MP joint flexion and the wrist ulnar deviation The splitting is effective with a corticosteroid inject in immobilizing and resting the APL and EPB tendon in a position to decrease the friction in the joint that can lead to increased pain and inflammation [18]. **Wiet et al**. Recommended a 3 week trail of splitting with the wrist in neutral and the thumb radially abducted, its reported that a 62% satisfactory outcome with injection and splitting the wrist periodic removal to flex and extend the wrist to avoid stiffness [11, 23].NOTE: Initially use to decrease acute symptoms, use of softer splint is optional after symptoms decrease or if the rigid splint is non functional [27].
Therapeutic ultrasound, Ice and heat pack, therapeutic massage, stretching and strengthening program are the treatment plane for the de quervain's tenosynovitis. [15, 27, 30, 38, 39]

Table.1:- Overview Of The Rehabilitative Exercise Prescribed in the De-Quervain's Tenosynovitis.

EXERCISE	INSTRUCTION
Thenar muscle group stretches Forearm extensor/flexor stretches	15-20 second hold,8-10 repetations for each stretch 5x/wk.
Eccentric unweighted hammer curls	3 set of 10-15 repetations 5x/wk Assist with other hand during concentric(radial deviation) movement phase
Eccentric weighted hammer curls	Add 1lb. Dumbbell once function tolerance for 15 repetations attained.

Eccentric thumb extension and abduction exercise with elastic band	2set of 10-15 repetations for each respective exercise, 5x/wk. Assist with other hand during concentric movement phase. Progress to 3 sets of 15 repetations; add resistance once functional tolerance for 5 repetations attained.
Eccentric wrist extension/ flexion with dumbbell Eccentric forearm pronation/supination with theraband	2set of 10-15repetations 5x/wk, add weight once functional tolerance for 15 repetations attained. 2sts of 10-15repetations 5x/wk, add resistance once functional tolerance for 15 repetations attained. Assist with other hand during concentric movement phase.

Result:-

Search has been made with the search terms such a quervain's disease, 1st dorsal compartment tenosynovitis, texting tenosynovitis, blackberry thumb and washerwomen's sprain , radial styloid tenosynovitis, mother's wrist and mommy thumb, from the website pub med, goggle scholar, JOSPT. We recorded 38 articles and 3 manual searches from the books. After retained the articles from the sources, the material are referred from each article in the author name, age, number of patients, treatment sessions and conclusion.(**TABLE- 2)**

Table 2:- Description of studies included in the research.

Serial Number	Author	Sample size	Age & sex	Treatment	Duration & session	Result
1.	Yip Joanne et.al (2020)	Systematic review	Systematic review	Systematic review	Systematic review	Articles related to De-quervain's tenosynovits mainly compare and focus on the effectiveness of treatments. Studies on orthotic treatments are limited that further research on this area should be conducted. More studies exploring the hand conditions in younger age groups, pregnant and postpartum women with De-quervain's tenosynovitis are also necessary.
				Conservative Group-1 (Oral tablet Diclofenac 50mg &		They concluded

2.	Wayal Utkarsha Ashok et. All (2018)	60	10-69 (39 female & 29 male)	Paracetamol 500mg twice a day for 3 weeks with thumb abduction splint) And Steroid injection, Group -2 (40 mg of Triamcinolone or Hydrocortisone mixed with 2% Xylocaine into the tendon sheath.)	1week and 3 weeks	that local steroid injection is effective in 83% of patients while 14% of patients with splints only.
3.	Greenhill DA, et al(2017)	1	65year female	Surgical intervention -1st dorsal compartment	6months follow –up	The patients had immediate relif noted during her 1st postoperative visit 2 weeks after surgery.
4.	Goel & Abzug (2015)	1	34 year female	Anti-inflammatory medication Corticosteroid injection & splint, therapeutic exercise edema, scar management.	6 weeks	A patient was able to return to work pain free.
5.	Tabinda &Mahmood (2015)	50	Female	Ketoprfene + Phonophoresis + thumb splint+ mobilization+ stretching+ therapeutic exercises	3 session /4 weeks	Reduced pain, inflammation and improve functional strength. But splint mobilization is a safe and effective therapy for de quervain's tenosynovitis during pregnancy.
6.	Da Silva & Batigalia (2015)	.....	.....	Treatment proposal	.....	Symptoms of de-quervain are decreased.
7.	Hadianfard (2014)	30	41 year	Acupuncture group methyl-prednisonlone group	5 session/ 1week	Short term improvement of pain and function in both group, but on comparing between them corticosteroid injection was a

						higher sufficient regime.
8.	Boussakri and bouali (2014)	1	26 year female	Corticosteroid injection in the 1st dorsal compartment.	20 days	Corticosteroid injection has significantly improved the management of the De quervain's tenosynovitis.
9.	Patel et al (2013)	1	47 year female	Surgical decompression of the 1st dorsal compartment.	.....	Symptoms of de-quervain's tenosynovitis decreased.
10.	Papa (2012)	1	32 year female	Activity modification, Graston technique, eccentric training.	6months	Symptoms of de-quervain's tenosynovitis decreased
11.	Katana et al (2012)	50	Both sex of all ages	Physical therapy (cry-therapy, TENS for 20 minutes, immobilization for 7 days) and kinesiotherapy.	7-10 days	Elimination of symptoms and consequence of de-quervain's disease. Reduction of pain and swelling.
12.	Moretti (2012)	100	53-54 years	Oxygen-ozone and hyaluronic and injection.	3 weeks	Shows effective methods to heal the de quervain's syndrome.
13.	Altay et al (2011)	34	48 year	One quarter partial resection of extensor retinaculum.	24 months	Relieved of their symptoms of de-quervain's tenosynovitis.
14.	Mehdinasab and Alemohammad (2010)	73	32.6 years	Methylprednisonlone acetate injection plus wrist immobilization by thumb spica cast (37), wrist casting alone (36).	12 weeks	Reduction of symptoms of de-quervain's tenosynovitis, in 37 patients. Supports of the wrist with casting with casting alone had less favourable outcome.

15.	Ashurst et al (2010)	1	48 year	Naproxen, cock –up wrist splint.	3 weeks	The treatment regime was fully successful on complete recovery of the patient.
16.	Peters-Velthamaningal et.al (2009)	.....	.....	Injection of 1ml of triamcinolone - acetonide.	12months	Reduction of symptoms de-quervain's tenosynovitis.
17.	Ilyas A et.al (2007)	24	.....	Corticosteroid injection and supportive thumb spica splinting. Surgical release of 1st dorsal compartment.	overview	Corticosteroid injection and supportive thumb spica splinting is unsuccessful in resistant cases, surgical release is useful in reducing the symptoms of de quervain's tenosynovits while taking care to protect the radial sensory nerve.
18.	O'Brien (2007)	Overview	overview	Splinting, Ergonomic education, modalities and strengthening programme.	overview	Symptoms of de quervain's have decreased pain, odema. Normal in ROM of thumb and wrist.
19.	Sawaizumi et.al(2007)	36	46 year	Triamcilone and 1% lidocaine hydrochloride.	1 month	Reduced in the symptoms of de quervain's tenosynovitis.
20.	Lin & Stubblefield (2003)	2	58 year	Wear of compression garment, the fabrication of custom made thumb spica tendon gliding exercises and NSAIDS.	1 month	It is more effective and safe in reducing the symptoms of de-quervain's tenosynovitis.

21.	Backstrom (2002)	1	61 years Female	Mobilization with movement techniques.	2 months	Promote the pain free wrist and thumb mobility.
22.	Anderson and Tichenor (1994)	1	41 year female	Manual therapy, Mobilization of the carpel bone, neural tension, transverse friction.	6 months	Re-establish full flexion and extension range of motion at wrist and resolve the de-quervain's tenosynovitis.
23.	Harvey et al (1990)	82	45 year	Corticosteroid injection and local aesthetic into the tendon sheath.	3-5 months	Injection should a good result in reducing symptoms of de- quervain's tenosynovits.
24.	Keon-cohen (1951)	Overview	Overview	Surgical protocol without damaging the sensory branch of radial nerve.	Overview	Elimination of symptoms and consequence of de-quervain's tenosynovitis.

Discussion:-

The main finding of this review is to find out the available treatment procedure on de-quervain's tenosynovitis. We found 24 articles which proposed pharmacological management, surgical management and physiotherapy management. These treatment techniques individually effective on the basis of severity. A total of 24 articles were retained. Information on the conclusion of each study in relation to the treatment of de quervain's reported in these 24 articles was provided in the **Table 2**. In which 6 articles reported on the pharmacological management on de quervain's, 6 articles reported on physiotherapy management of de-quervain. 5 articles reported on the combination of pharmacological and physiotherapy management, 5 articles reported on the surgical management. 1 article reported on overview in acupuncture management on of de- quervain's tenosynovitis. 1 article reported on systemic review on de-quervain's Pharmacological management like injection of corticosteroid, oxygen-ozen and hyaluronic acid injection, naproxen, triamcinolone acetonide are the effective in the management, short-term beneficial effects of steroid injection for symptoms of de-quervain's tenosynovitis. Physiotherapy management include thumb spica splinting, modalities (ultrasound, fluidotherapy, TENS, superficial heat, iontophoresis) and strengthening program 9 isometric contraction), kinesiotherapy, mobilization with movement, greaston techniques. Acupuncture techniques. Surgery is mostly performed when the conservative management failed.

Conclusion:-

Our finding suggested the pharmacology and physiotherapy treatment are the most effective treatment in de- quervain's tenosynovitis. If it fails, the treatment option will be surgery. Thus we conclude that the physiotherapy and pharmacology treatments are the safer treatment methods in the de- quervain's tenosynovitis.

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