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Long term outcomes of surgical release of De Quervains stenosing tenosynovitis

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Abstract
Introduction: *De Quervain`s tenosynovitis is a condition that involves stenosis of the first dorsal compartment of wrist which contain abductor pollicis longus and extensor pollicis brevis running through it. Histopathologicallly there is no inflammation but thickening of tendon sheath and myxoid degeneration due to mucopolysacchride accumulation. So this causes intrinsic degenration of the involved tendons. Due to thickening of tendon sheath and retinaculum there is impairment in normal movement of APL and EPB tendons resulting in wrist pain and impaired wrist movement. Pain is progressive if left untreated and thus causes decreased wrist function.*
Aims and objectives: *To observe the long term outcomes of surgical release of stenosing De Quervain`s Tenosynovitis done through same surgical technique and by same surgeon.*
Materials and methods: *This study was done in orthopaedic department of GMC Srinagar from January 2020 to Dec 2021, 55 patients with De Quervains tensynovitis were treated surgically with same surgeon between 19 - 70 years of age. All patients were treated with same surgical technique. Most of the patients were females with 42 in number and rest were males. In 38 patients dominant side was involved. In 4 patients there was bilateral De Quervain`s tenosynovitis. Two patients had history of Rheumatoid Arthritis. Patients with arthritis of trapeziometacarpal joint, scaphotrapeziotrapezoid joint and radiocarpal joints and patients with intersection syndrome and fractures around the radiocarpal joint were excluded from study.*
Results: *In this study fifty patients were successfully contacted till final follow up with four patients with bilateral involvement making total of 54 patients with final follow up. Five patients lost final follow up. Mean age was 42.07 years (range 19 -70 years) with 42 females and 13 males. Patients with dominant side involvement were 38 in number. In all patients there was complete relief of symptoms and all patients returned to their normal daily activities. Finkelstein's test was negative in all patients. There were no sensory deficits of the superficial radial nerve. In none of the patients were seen signs of neuroma, tendon subluxation or dislocation. All cases had cosmetically acceptable scar with no scar complications.*
Conclusion: *This technique gives reliable and enduring results with no complications or recurrence*
Key words: *De Quervain`s tenosynovitis, abductor pollicis longus, extensor pollicis brevis, first dorsal wrist compartment, tendon sheath, retnaculam*

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I. Introduction

De Quervain`s tenosynovitis is a condition that involves stenosis of the first dorsal compartment of wrist which contain abductor pollicis longus and extensor pollicis brevis running through it. It was recognised by De Quervain in 1895[1]. Histopathologicallly there is no inflammation but thickening of tendon sheath and myxoid degenration due to mucopolysacchride accumulation[2]. So this causes intrinsic degenration of the involved tendons. Due to thickening of tendon sheath and retinaculum there is impairment in normal movement of APL and EPB tendons resulting in wrist pain and impaired wrist movement[3]. Pain is progressive if left untreated and thus causes decreased wrist function.

Primarily this condition is treated on conservative basis using orthosis to immobilise wrist and thumb, medication like anti-inflammatory drugs and local corticosteroid injections. Steroid injections are given in first dorsal wrist comaprtment containing ABL and EPB tendons [2,4]. Success rate of corticosteroid injections has been reported to be 62-80% with upto two injections when properly injected[5]. Failure to respond to conservative therapy for 3-6 months require surgical release to open the tendons and to relieve pressure on the tendons. Subcutaneous dystrophy is seen with repeated injections [6]. Most common reason for failure to Injections is missing the compartment and presence of subcompartments. Presence of multiple slips is another

cause of failure of conservative management [7]. Surgical management involves release of the first dorsal compartment by a simple incision for chronic de Quervain tenosynovitis[8]. Complications include radial sensory nerve injury including scarring and adhesions of the nerve, volar subluxation of abductor pollicis longus and extensor pollicis brevis, , inadequate decompression and reflex sympathetic dystrophy[8].

II. Materials And Methods

From Jnauary 2020 to Dec 2021, 55 patients with De Quervains tensynovitis were treated surgically with same surgeon between 19 - 70 years of age in Orthopaedic department of GMC Srinagar.. All patients were treated with same surgical technique. Most of the patients were females with 42 in number and rest were males. In 38 patients dominant side was involved. In 4 patients there was bilateral De Quervain`s tenosynovitis. Two patients had history of Rheumatoid Arthritis. Patients with arthritis of trapeziometacarpal joint, scaphotrapeziotrapezoid joint and radiocarpal joints and patients with intersection syndrome and fractures around the radiocarpal joint were excluded from study.

All patients had clinical signs and symptoms of De Quervains Tenosynovitis. Pain,tenderness and thickened retinaculum and associated swelling on first dorsal compartment. All patients had clinical evidance of stenosing De Quervains tenosynovitis with positive Finkelstein test [9]. Failure of response to local steroid injections one, or maximum two with 1 ml triamcinolone (40 mg) and 4 ml of 1% lidocaine after 3 months were taken for surgical release of stenosing De Quervains Tenosynovitis. All patients undergo imaging studies like x rays to rule out arthritis of radiocarpal joints ,trapeziometacarpal joints and scaphotrapeziotrapezoid joint and fractures around radiocarpal joints. Ultrasound an important tool for diagnosis like shows thickened retinaculum, edamatous APL and EPB tendons and increased fluid around the tendons in first dorsal compartment.

Surgical Technique

All cases were done under local anesthesia and tourniquet control under outpatient conditions. Make an incision carefully through the skin only. An oblique incision coursing along the extensor brevis tendon is made and carry subsequent soft tissue dissections through dermis and subcutaneous fat after identifying and protecting Lateral antebrachial cutaneous nerve above cephalic vein ,radial sensory nerve branches and veins. Retract the skin edges and use blunt dissection to expose the retinaculum over the first dorsal compartment tendons. First dorsal compartment tendons proximal to the stenosing dorsal ligament and sheath are identified and then open the first dorsal compartment on its dorsoulnar side. Most dorsal the extensor pollicis brevis (EPB) tendon is identified by its distally oriented muscle fibers while abductor pollicis longus (APL) tendon has no such muscular fibers in this distal area. And the compartment was explored for anatomic variations and any aberrant tendons, if any septum was seen that too was excised. Releasing the EPB tendon first and then the APL usually reveals the presence or absence of a septum. Tenosynovectomy was also performed in case of tenosynivitis. Volarly based retinacular flap is care of so that it remains over the released tendons to prevent volar tendon subluxation. Skin incision is closed with running suture and apply only a small pressure dressing. .Movement was encouraged immediately and is increased as tolerated, Forceful wrist flexion is avoided during first two weeks after surgery, which may predispose the tendon subluxation. No splint was used postoperatively. Sutures were removed after 2 weeks

Patients were analyzed for medical records to collect data based on gender, side, age, sensory disorder, risk factors, , associated ipsilateral pathology, multiple septum and multiple-slip abductor pollicis longus tendon, neurolysis of the superficial branch of the radial nerve, postoperative complications, complex regional pain syndrome (CRPS). Results were taken at last follow-up done at a minimum 6 month follow-up after calling them to hospital. Patients were assessed regarding questionnaire on functional impairment, pain on VAS, scar issues and satisfaction. Finkelstein test was also done at last follow up.

III. Results

Fifty patients were successfully contacted till final follow up with four patients with bilateral involvement making total of 54 patients with final follow up. Five patients lost final follow up.Mean age was 42.07 years (range 19 -70 years) with 42 females and 13 males. Patients with dominant side involvement were 38 in number. Perioperative complications include two surgical site infections, four transient sensory radial nerve lesions. Successful outcome is said to be absence of pain and triggering which was obtained in all patients. In all patients there was complete relief of symptoms and all patients returned to their normal daily activities. In all cases Finkelstein's test was negative. There were no sensory deficits of the superficial radial nerve. Aberrant tendon slips and multiple compartments were not seen in any of the patients. Mean pain on visual analogue scale (VAS) was 0.37 (range 0-10), 42 patients were pain free (VAS = 0) and 12 patients had mild pain (mean VAS=1.66) but normal function of the hand. None of the patients had CRPS. In none of the

patients were seen signs of neuroma, tendon subluxation or dislocation. All cases had cosmetically acceptable scar with no scar complications.

Image showing complete release of ABL and EPB tendons.

IV. Discussion

Given the description by de Quervain`s in 1895 its evaluation and treatment has evolved since then. Earlier Nonoperative treatment was felt to be unsuccessful, and surgical operative decompression being uniformly recommended[10,11]. Later on after identification of compartments, the injection of steroid into the sheaths of ABL and EPB was very effective for treating

De Quervains tenosynovitis [12]. Some authors advocated an immobilisation splint use keeping thumb in relative abduction in order to resolve the tenosynovitis in the first dorsal compartment [11]. We had done surgical release without a splint In the cases with recurrent De Quervains tenosynovitis following injection therapy.

In our series of 54 patients results and assessment done at minimum of six month follow up were favourable with complete resolution of pain and very satisfied in 77.77%(42) of patients and mild degree of pain and satisfied in 22.22%(12) of patients. There were no cases with with tendon dislocation or neuroma formation or recurrernce.

Belsole [13] reported 36 complications in 19 patients after release of the first extensor compartment for de Quervain disease. Of these 36 complications, eight were related to subluxation of the tendon, eight related to injury of the nerve, and seven were related to inadequate decompression[13,8]. Several studies had reported symptomatic tendon subluxation[13,14,15]. So several preventive techniques have been described. Conventional surgery can lead Volar tendon subluxation and when the hand is used for manipulative activities requiring wrist flexion and pinch can cause chronic tenosynovitis.This is a rare but serious complication. Incising the retinaculum on its dorsal aspect to create a volar-based restraining flap can avoid this complication[16]. Ramesh and Britton [14] created a U-shaped sling for the extensor pollicis brevis and abductor pollicis longus tendons using a part of the extensor retinaculum. Littler et al. [16] described first-compartment reconstruction, with supernumerary septum resection and first-compartment reconstruction excluding the extensor pollicis brevis. More recently, Van Der Wijk et al. [17] had done first-compartment pulley enlargement plasty in a series of 45 patients, with good medium-term results and notably no subluxations. In our series no tendon dislocation was seen at final follow up.

Mellor and Ferris [18] had 10 complications in 22 procedures in 21 patients, 6 of which were concerned lesions of a sensory branch of the radial nerve. Harvey et al[19] in 20 wrists reported 6 complications, including 3 transient neurologic deficits. No neurologic deficit or neuroma formation was seen in our patients.

According to certain authors [20], a longitudinal incision is preferable, however we used oblique incision with no complications.

No aberrant tendons or multiple compartments were seen in our series which are the risk factors for failure of medical management.

V. Conclusion

This technique gives reliable and enduring results with no complications or recurrence. At minimum follow up of 6 months results were satisfactory. . In case of failure of medical treatment, detection of variants on ultrasound or MRI should lead to timely surgical intervention.

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