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Treatment Outcomes of de Quervain's Disease among 52 Patients with Average 3.2 Year Review

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ABSTRACT

Introduction: De Quevain's disease (DD) is a Stenosing tenovaginitis involving the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) within the first extensor compartment of the wrist. Despite great interest in the condition, the aetiology and pathology of this interesting disease remain unclear. Tenolysis is the surgical treatment in the majority of patients following 4 to 6 weeks of non-operative treatment trial. The study aims to report the outcome of both conservative and operative treatment of 52 patients in the study.
Materials and method: This is a retrospective study of 52 patients that was conducted at Orthopaedic Hospital Wamakko, Sokoto, Nigeria, from May 2015 to September 2021. Patients with de Quervain's disease were first treated conservatively either on oral analgesics alone or in combination with physiotherapy, steroid injection, or both for 4 to 6-week period before tenolysis was considered.
Results: The average follow-up period was 3.2 years (range 2.4 to 6.2). The average age of presentation was 31years (range 20 to 67years). There were 16(31%) males and 36(69%) females. Majority of patients were housewives (21/40%) and falls within the age range of 20-40 years with 31(61%) patients. The affected side was 28(54%) on the left and 2(46%) on the right; 31(69%) were idiopathic, 8(15%) were associated with diabetes mellitus, 5(6%) occupational, 3(6%) with a history of trauma, 3(6%) with rheumatoid arthritis, and 2(%) with pregnancy. Out of total of 52 patients in the study, 47 (90%) were operated and 5(10%) were completely treated by non-operative management. The short-term postoperative complications that resolved few weeks following treatments were wound infections (4), superficial radial nerve neuritis (2), and Hypertrophic scar (2).
Conclusion: A more reliable long-term outcomes of treatment of patients with de Quervain's disease is by tenolysis as the conservative treatment may fails after a 4 to 6 weeks period of trials.

Keywords: de Quervain's disease, tenolysis, treatment outcome, first extensor compartment

INTRODUCTION

De Quevain's disease (DD) is a Stenosing tenovaginitis involving the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) within the first extensor compartment of the wrist. Despite great interest in the condition, the aetiology and pathology of this interesting disease remain unclear. It was discovered and well-described by De Quervain in the 19th century [1, 2]. The disease is associated with intrinsic and degenerative changes as opposed to generally thought extrinsic and inflammatory mechanisms [3]. The affected

tissues are characterized by the thickening of the tendon sheath and deposition of mucopolysacchride without presence and evidence of inflammation. These are features typical of myxoid degeneration that are typical of De Quervain's disease (4). Most patients present with pains and discomfort while using the affected hands in their daily activities. It usually improves on medications and may take a chronic course, especially in well-established diseases such as diabetes mellitus and rheumatoid arthritis. The relationship of the disease with pregnancy and lactation has also been established by several authors (5). Diagnosis of the disease is largely clinical and no mandatory investigative modality is required before treatment is to be instituted including that of surgical. Initial management of patients is by conservative treatment except when it fails following 4 to 6 weeks of trial (6). Tenolysis, which entails the release of the first dorsal compartment through simple incision, could be considered (7). Although tenolysis is a simple and promising procedure, it may occasionally be accompanied by complications such as the first compartment tendons volar subluxation, incomplete decompression, radial nerve paraesthesia, wound infections, scarring and complex regional pain syndrome (CRPS)(8, 9). This study aims to share our experience with the 52 patients with De Quervain's disease who were mostly treated by tenolysis in our centre and followed up for an average of 3.2 years.

MATERIALS & METHODS

This is a retrospective study of 52 patients that was conducted at Orthopaedic Hospital Wamakko, Sokoto, Nigeria, from May 2015 to September 2021. Inclusion criteria were patients of any age being evaluated for De Quervain's disease with tenderness along the radial styloid and a positive Finkelstein test. Patients with other problems mimicking De Quervain's disease as a result of trauma or infections were excluded. Those diagnosed clinically with De Quervain's tenosynovitis were subjected to further investigations, such as the radiograph and haematological investigations for associated pathologies and optimisation for surgery. All patients were first treated conservatively either on oral analgesics alone or in combination with physiotherapy, steroid injection, or both (Table 1).

Table 1: Patients' treatment modality

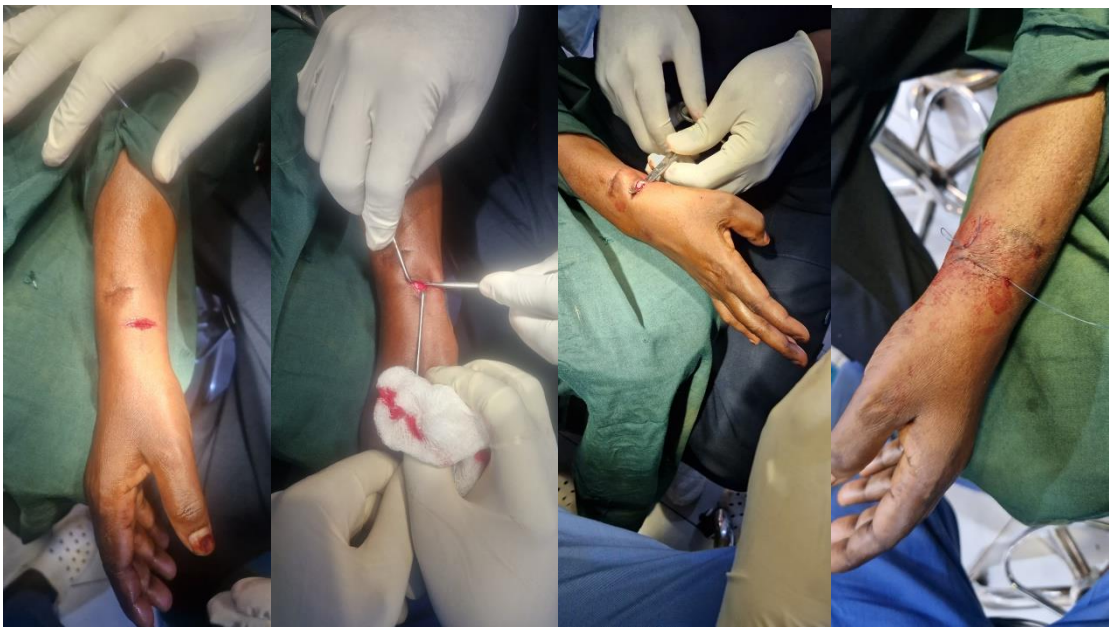
Types of Treatment offered	Average duration on treatment	Number operated	Treated non-operatively	Total number
Oral analgesic only	4w	21	0	21
Oral analgesic/physiotherapy	4w	15	2	17
Oral analgesics/S. Inj.	6w	7	1	8
Oral analgesics/S. Inj./Physiotherapy	6w	4	2	6

Table 2: patients' demography

Characteristics	Number (%)
Age (years)	
<20	0(0%)
20-40	31(60%)
41-60	17(32%)
>60	4(8%)
Sex	
Female	36(69%)
Male	16(31%)
Occupation	
Housewife	21(40%)
Civil servant	12(23%)
Trader	7(13%)
Student	5(10%)

Tailor	4(8%)
Mechanic	3(6%)
Laterality	
Right	28(54%)
Left	24(46%)

Consideration for tenolysis was based on persistent symptoms despite a 4 to 6-week period of conservative management. The patients for surgery consented and all the necessary preparations were done. These include haematological investigations such as full blood count, fasting blood sugar, rheumatoid factor, and relevant serological investigations to rule out hepatitis and HIV/AIDS. The surgical procedure was carried out under local anaesthesia using 2% Xylocaine with adrenaline. The radial styloid process was identified; a 3cm transverse skin incision was placed over the identified anatomical area (Figure 1A). Following subcutaneous tissue dissection, the superficial radial nerve was identified and retracted to avoid transection (Figure 1B). The 2 tendons of the first dorsal compartment (Abductor pollicis longus and Extensor pollicis brevis) were identified, and the covering tendon sheaths were longitudinally incised to expose the 2 tendons after removal of adhesions and any associated nodules (Figure 1C). The patient was asked to actively flex, abduct and extend the corresponding thumb for the identification of free mobility. Any additional adhesion and more tendon sheath incision could be done at this stage. The wound was subsequently sutured with Nylon 3/0 after saline irrigation (Figure 1D). A well-padded dressing was then applied, and the patient was placed on hand elevation, oral analgesic and antibiotics for a minimum of 5 days postoperatively. Patients were discharged the same day and were instructed to continue the routine house or office work as tolerated. Wound inspection and light dressing were usually done 3 days after the surgery. All patients were assessed during follow-up on complete clinical evaluation to assess the presence of pain, Thumb mobility, tenderness over the radial styloid process and the presence or absence of a positive Fenkelstein test.



1A 1B 1C 1D

Figure 1: Intraoperative pictures of a 49 year old female patient. 1A: Transverse skin incision. 1B: Subcutaneous dissection with tendon sheath exposure. 1C: The 2 tendons of both the APL & EPB were on display. 1D: Closure after tenolysis

Table 3: Patients presentation and the Predisposing factors

Predisposing/Associated factors	Number (%)
Idiopathic	31(60%)
Diabetes	8(15%)
Occupational (repetitive use)	5(9%)
Trauma	3(6%)
Rheumatoid arthritis	3(6%)
Pregnancy	2(4%)

RESULT

The average follow-up period was 3.2 years (range 2.4 to 6.2). The average age of presentation was 31years (range 20 to 67years). There were 16 (31%) males and 36(69%) females. Majority of patients were housewives (21/40%), followed by civil servants (12/23%). The age range of 20-40 years with 31(61%) patients constitutes the majority. The affected side was 28(54%) on the left and 2(46%) on the right (Table 2). During patients evaluations, 31(69%) were found to be idiopathic, 8(15%) were associated with diabetes mellitus, 5(6%) occupational with a repetitive hand use, 3(6%) with a history of trauma, 3(6%) associated with rheumatoid arthritis, and 2(%) with pregnancy (Table 3). Out of total of 52 patients in the study, 47 (90%) were operated and 5 (10%) were completely treated by non-operative management (Table 1 & 4). Out of the 47 (90%) who had tenolysis, 41 (79%) had no significant complaint at the first 2 weeks postoperatively and were considered treated as evidenced by a negative Finkelstein's test and a full return to the normal daily activities. The other 6 patients had mild to moderate pains with reduced thumb mobility, and were placed on short course of oral analgesic and physiotherapy with subsequent resolution of all the symptoms. One case of intra-operative complication following inadvertent Extensor pollicis brevis cut while decompressing its tendon sheath. It was immediately repaired with no further complication. Immediate postoperatively, there were few short-term postoperative complications that resolved few weeks postoperatively each following appropriate treatment (Table 4). These included wound infections (4), superficial radial nerve neuritis (2), and Hypertrophic scar (2).

Table 4: Post-operative outcome and complications

Operative (n=47), Non operative (n=5)	Frequency	Outcome
Resolved completely	41(79%)	-
Reduced mobility(adhesion)	4(8%)	Treated
Wound infection	4(8%)	Treated
Superficial neuritis	2(4%)	Treated
scar formation	2(4%)	Improved

DISCUSSION

The De Quervain's disease (DD) is an entrapment of the tendons of first wrist dorsal compartment and is largely idiopathic, while in some cases it is associated with pregnancy, occupation, and diseases such as diabetes mellitus, rheumatoid arthritis among others (10). The line of management usually starts with non-operative treatment in which few cases can be completely treated with oral analgesic, steroid injection, and rehabilitation exercise over the course of 4 to 6 weeks (11). Some authors use a rigid thumb splint to fix the thumb in relative abduction, allowing time for the tenovitis within the first dorsal compartment to have fully resolved (12). This is in comparison with a study that made use of dynamic thumb splints allowing active exercises with better outcomes in a more recent study (13). Though conservative treatment for DD has not been considered the number one treatment option in most literature (14), a

research conducted by Scheller A. et al (15) with 95 patients in the study where only the operative treatment (tenolysis) was considered in all the patients and the outcome was satisfactory with fewer short-term postoperative complications in 6 patients with no record of recurrence on a long-term basis in any of the operated patients. This finding was similar to our study results where 47 out of the 52 patients were treated by tenolysis with good functional long-term outcomes. To corroborate the previous studies asserting tenolysis as a gold standard of treatment, the 52 patients in our study were first given conservative treatment of oral analgesic, steroid injection, and physiotherapy within the period of 4 to 6 weeks. The majority needed surgical intervention because of failure to get satisfactory non-operative management within that time frame. We employed a standard operative procedure for tenolysis using transverse skin incision with good outcome. There was a study by Abrisham SJ et (16) that compared the outcomes of using either transverse or longitudinal skin incision, a randomized controlled clinical trial conducted in one hundred and twenty patients with De Quervain's disease who did not respond to conservative treatment and were operated with two different incisional approaches. The result favoured longitudinal incision over transverse because of less scar formation.

In terms of decompressive procedure, we did open release method with satisfactory outcomes in all our operated patients. In recent years, both ultrasound-guided tendon release and endoscopic methods have been used as an alternative to open surgical methods with varying pros and cons (17,18). In a case series of four patients treated by physiotherapy alone as reported by Rabin et al (19), a satisfactory result was recorded using a disability of the arm, shoulder and hand (DASH) score at 6 months follow-up in 3 out of the 4 patients in the study.

Even though various intraoperative complications have been reported (20,21), our only noticeable intraoperative complication was inadvertent transection of Extensor Pollicis Brevis tendon which was immediately repaired with no postoperative consequence. Although we did not encounter any anatomical variations among our operated patients, the complications related to inadvertent tendon transection are usually higher in patients with anatomical variations (22). Major postoperative complications we experienced resolved within a few weeks of the postoperative treatment period, and were largely the common complications similar to many studies reports (15,23). These include superficial wound infections, superficial radial nerve neuritis, scar and. However, we did not record any postoperative patients with subluxation of the 2 dorsal compartment tendons as has been the case in publications by several authors (24,25).

Most of our patients (41/78%) were treated of the disease and resumed near normal activities at 4 to 6 weeks postoperative period. Over time while on follow-up, the functions progressively improved in all our patients including those with minor immediate postoperative complications that resolved within a few weeks of treatment (Table 4). The assessment method used to regain Thumb and hand functions was mainly based on the clinical absence of pain, paraesthesia, tenderness, difficult thumb mobility, and positive Fenkelstein test. The DASH score for the assessment of functions in patients with De Quervain's disease before and after treatment has been widely used in many studies (26,27). We did not use such a scoring system because of a lack of uniformity in applying it across all our patients during the treatment period.

CONCLUSION

The treatment outcomes of De Quervain's disease in our study were successful and Surgical decompression or tenolysis of the two tendons of the first dorsal wrist compartment was the mainstay of treatment. It is simple, fast and reliable. It allows early

and complete symptomatic relief with low recurrence

Declaration by Authors

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