SunKrist Publishing
Accelerate Scientific Knowledge in Open Access

SunKrist Journal of Orthopedics and Musculoskeletal Disorders

Research Article *Volume: 2, Issue: 1* *Scientific Knowledge*

Simple and Patient-Friendly Clinical Diagnostic Tests for de Quervain's Disease

Anindya Lahiri[1*] and Gordon AG McKenzie[2]

[1]Department of Plastic and Hand Surgery, Sandwell & West Birmingham Hospitals, UK

[2]West Middlesex University Hospital, UK

1. Abstract

De Quervain's tenosynovitis is a relatively common cause of radial sided wrist pain. The standard clinical tests, including both Eichhoff and Finkelstein's tests, are very painful; even in a normal individual without any inflammation of the tendons. We propose a set of simple, gentle and more patient-friendly clinical tests with high accuracy.

2. Keywords: de Quervain's; Tenosynovitis; Prospective; Clinical diagnosis; Finkelstein's test

3. Introduction

Described eponymously in 1895, de Quervain's tenosynovitis is a relatively common disease presenting with radial sided wrist pain. Risk factors include female gender and manual work. Exacerbating factors include any movements stressing the components of the first dorsal compartment; namely the tendons of extensor pollicis brevis (EPB) and abductor pollicis longus (APL). Frictional forces transmitted between the EPB and APL and the zone 7 pulley of the first dorsal compartment cause a primary tendinopathy and secondary thickening of the pulley [1].

During physical examination, patients typically exhibit tenderness and swelling overlying the first dorsal compartment. The most common clinical diagnostic test performed is Eichhoff test, although this is often confused both in the literature and anecdotally with Finkelstein's test. Numerous other tests have also been described, which are summarized in (Table 1) [1-5].

The standard clinical tests, including both Eichhoff and Finkelstein's tests, are very painful; they can even be painful in a normal individual, i.e. one who does not have any appreciable inflammation in the first dorsal wrist compartment. This reduces the sensitivity of the clinical tests. In a patient with severe de Quervain's disease, these tests can reduce an adult patient to tears or make them cry out in pain. Because of this, the senior author (AL) has abandoned the use of the standard techniques for some years and uses alternative gentler and more patient-friendly tests with equal efficacy.

We propose that the diagnosis of de Quervain's tenosynovitis can be reached by gentler and more humane tests, which are preliminarily validated by the present study attempting to estimate the diagnostic accuracy of a novel series of four diagnostic tests.

4. Materials and Methods

A series of 25 consecutive patients with suspected de

*Corresponding author: Anindya Lahiri, Consultant Plastic and Hand Surgeon, Department of Plastic and Hand Surgery, Sandwell & West Birmingham Hospitals, UK, E-mail: anindyalahiri@hotmail.com

Received Date: August 19, 2020; **Accepted Date:** August 25, 2020; **Published Date:** August 27, 2020

Quervain's disease were prospectively analyzed. All patients were clinically assessed and treated by the senior author who is an attending plastic surgeon with a special interest and advanced training in hand surgery.

Table 1: Summary of current tests used in the diagnosis of de Quervain's tenosynovitis.

Test	Description	Advantages	Disadvantages
Finkelstein test[5]	• The examiner grasps the patient's thumb with one hand whilst holding the ulnar forearm with the other hand in a resting position in neutral pro-supination. Firm traction is applied to the patient's thumb longitudinally in the direction of slight ulnar deviation of the wrist.	• The so-called standard test	• Very painful for the patient • Can be painful in a normal individual • Often confused with Eichhoff test • Examiner-dependent passive test • Stresses unrelated articular areas • Accuracy unknown
Eichhoff test[2]	• The patient opposes the thumb inside the palm whilst clenching the fingers over the thumb. Passive ulnar deviation is applied to the wrist like the Finkelstein test	• Widely taught and known • Involves some active contribution from the patient	• Very painful for the patient • Often confused with Finkelstein test • Produces positive results in normal individuals (low NPV) • Stresses unrelated articular areas
Brunelli's test[3]	• The patient maintains the wrist in radial deviation whilst undergoing thumb abduction resisted by the examiner. Pain felt above the radial styloid differentiates de Quervain disease from arthritis of the first metacarpal	• Single test	• Stresses unrelated articular areas • Painful • Can be painful in a normal individual

Extensor pollicis brevis (EPB) entrapment test[4]	• With the patient's palm flat on the table and the wrist in ulnar deviation, the examiner firstly resists thumb metacarpophalangeal joint extension (EPB compartment) and the patient is asked to compare this to resisted palmar abduction of the thumb (APL compartment). Pain during the first or second phase suggests EPB or APL tendo vaginitis respectively.	• Identifies tendo vaginitis specific to the EPB or APL sheath where a septum is present as an anatomical variant in the first dorsal compartment • Sensitivity of 81% and specificity of 50% for separate EPB compartments	• Accuracy for diagnosis of de Quervain's disease *per se* is not known
Wrist hyperflexion and abduction of the thumb (WHAT) test[1]	• The patient is asked to hyperflex his wrist with a fully extended and abducted thumb. Simultaneously, the examiner gradually applies an increasing abduction resistance to the patient's thumb with his index finger, until the patient can no longer counter the force against the examiner. Pain on resistance from the examiner signifies a positive result.	• Involves active contribution from the patient • Greater focus on first dorsal compartment and better control of tension in unrelated articular areas • Ostensibly identifies subluxation of APL and EPB after surgical decompression of the first compartment • Sensitivity of 0.99, PPV of 0.95 and NPV of 0.67	• New test only evaluated on a small number of patients (n = 100) at a single centre by two consultant hand surgeons • Low specificity of 0.29

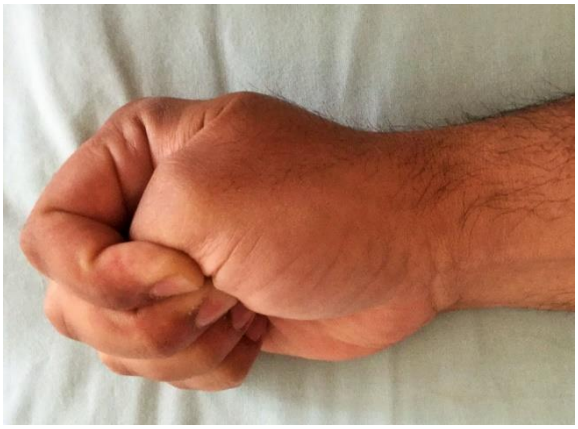

Figure 1: Making a fist while clenching the thumbs inside the fingers.

All patients where de Quervain's disease was clinically suspected were included over a period of 12 months. Patients who had multiple pathologies (e.g. a co-existing carpal tunnel syndrome or thumb base arthritis) were excluded. Data were collected on a prospectively maintained database before the index tests (described below) were undertaken and the reference standard performed. The diagnosis was always confirmed by complete resolution of pain from a corticosteroid injection, 1% lidocaine (lignocaine) injection or from later surgical decompression in this order of escalation. This can be regarded as the 'gold' or 'reference standard' as it reaches a clinically acceptable outcome for the patient and physician in the disease course.

The four consecutive tests proposed involve:

Direct pressure on the tendons of APL and EPB in the anatomical snuffbox in both wrists. A positive result is pain in the affected wrist and absence of significant

pain in the unaffected wrist. Pressure on the radial styloid or base of thumb should be avoided as they can be painful from other causes.

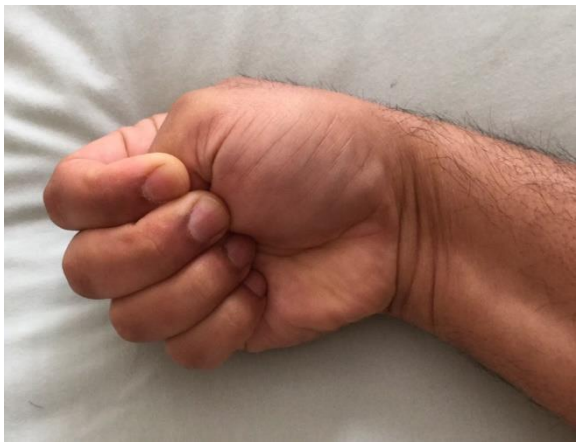

Figure 2: Making a fist with ulnar deviation.

Tapping over the first dorsal compartment extending proximally over the tendons of APL and EPB along the radial border of forearm, in a similar fashion to Tinel's test. In some patients test number one above may be positive in the absence of de Quervain's disease. However, the 'tapping test' tends to be negative in them.

Asking the patient to hold the thumbs by making a fist while clenching the thumbs inside the fingers (Figure 1). A positive result is pain in the affected wrist and absence of significant pain in the unaffected wrist.

In mild de Quervain's disease, the patient may be able to hold the thumb inside a fist, though with some pain. If any doubt, the patient is then asked to hold tight on the thumb and try to actively deviate the hand ulnarly (Figure 2) - this stretches the tendons of the first compartment and is always painful even in milder cases. The main advantage of this manoeuvre over Eichhoff's test is that this test gives the control to the patient thus avoiding any unnecessary pain.

Pain was assessed for each test using a 10-point numerical rating scale. In doubtful cases, the diagnosis was confirmed by injection of a small volume of lidocaine 0.1% in the first compartment, which should produce immediate pain relief. There were no adverse events. Institutional board review for ethical approval was not required as this data was collected as part of routine clinical practice by the senior author. Informed consent was obtained for all patients by the senior author prior to any intervention being performed and no patients are identified. Images included are of the senior author who consents to their usage herein.

5. Results

A total of 25 patient's data were analyzed (Table 2). All patients who satisfied the inclusion criteria and were not excluded underwent both the above index tests and the reference standard.

Table 2: Summary of demographics, clinical details and overall results for the diagnostic tests.

Age (*n = 25*)**:**	
Mean (years)	44.0
Standard deviation	10.5
Gender (*n = 25*)**:**	
Male (%)	8 (32%)
Female (%)	17 (68%)
Prevalence (*n = 50*)	
Diseased hands (%)	30 (60%)
Non-diseased hands (%)	20 (40%)
Laterality of diagnosis (*n = 25*)**:**	
Unilateral left (%)	8 (32%)
Unilateral right (%)	12 (48%)
Bilateral (%)	5 (20%)
Treatment (*n = 25*):	
Unilateral injection (%)	
Unilateral surgery (%)	12 (48%)
Bilateral injection (%)	6 (24%)
Unilateral injection, contralateral surgery (%)	3 (12%)
Unilateral injection, contralateral lignocaine (%)	2 (8%)
Bilateral surgery (%)	1 (4%)
	1 (4%)
Diagnostic accuracy (*n = 50*):	
Sensitivity (95% CI)	100% (86-100%)
Specificity (95% CI)	100% (80-100%)
Positive predictive value (95% CI)	100% (86-100%)
Negative predictive value (95% CI)	

	100% (80-100%)

The interval between index tests and the first treatment was determined by the United Kingdom National Health Service Constitution Regulations. This means that all National Health Service patients have a legal right to start non-emergency attendant-led treatment within a maximum of 18 weeks from the initial referral by the patient's family physician. Mean age of this cohort was 44.0 years (range 26 to 62 years) with a female predominance of 68%. Prevalence of de Quervain's disease in this study was 60% (30 diseased hands, 20 non-diseased hands). Sensitivity and positive predictive value were 100% (95% CI: 86 to 100%). Specificity and negative predictive value were 100% (95% CI: 80 to 100%). As true and false positive rate were zero respectively a receiver-operator curve could not be plotted. The minimum and maximum score (out of 40) when the four tests scores were combined was 14 and 28 respectively. In 18/25 (72%) patients the fist and ulnar deviation test was not used. Five patients had bilateral disease where four had presented with one hand clinically worse than the other and one patient could not specify which hand was worst. In 3/5 (60%) patients the tests could correctly identify the hand that was more severely affected with a mean difference in score of 5.7 points. In the two patients where the severity that the tests detected did not correlate with the laterality of severity in bilateral disease given in the history, the difference was by two points.

6. Discussion

De Quervain's disease is a very painful condition and historically used clinical tests (Table 1) can cause further unnecessary pain to the patient, their accuracy is unknown or they lack specificity. In the present study we sought to estimate the diagnostic accuracy of a gentler and more humane novel series of tests. The wrist hyperflexion and abduction of the thumb (WHAT) test is the most recent test proposed, which demonstrates favourable sensitivity and ostensibly superior accuracy over Eichhoff's test [1]. However, the WHAT test lacks specificity (the probability of correctly excluding a patient who does not have the disease).

The tests proposed by the present study show 100% diagnostic accuracy and, in our experience, are less painful for the patient and easy to perform. It is important to note that these tests take no more than one minute to perform in clinical practice, where it is not necessary to utilize a pain scale. This was a preliminary evaluation at a single centre, with a limited number of patients and an unblinded single surgeon. We therefore have sought to publicize this series of tests with the hope of promoting further studies evaluating their accuracy in a larger cohort of patients with different examiners.

References

1. Goubau JF, Goubau L, Van Tongel A, Van Hoonacker P, Kerckhove D, Berghs B. The wrist hyperflexion and abduction of the thumb (WHAT) test: a more specific and sensitive test to diagnose de Quervain tenosynovitis than the Eichhoff's Test. J Hand Surg Eur. 2014; 39: 286-292.
2. Einchhoff E. Zur pathogenese der tenovaginitis stenosans. Bruns' Beitrage Zur Klinischen Chirurgie. CXXXIX. 1927: 746-755.
3. Brunelli G. [Finkelstein's versus Brunelli's test in De Quervain tenosynovitis]. Chir Main. 2003; 22: 43-45.
4. Alexander RD, Catalano LW, Barron OA, Glickel SZ. The extensor pollicis brevis entrapment test in the treatment of de Quervain's disease. J Hand Surg Am. 2002; 27: 813-816.
5. Finkelstein H. Stenosing tendovaginitis at the radial styloid process. J Bone Joint Surg. 1939; 12: 509-540.

Citation: Anindya Lahiri, Gordon AG McKenzie. Simple and Patient-Friendly Clinical Diagnostic Tests for de Quervain's Disease. SunKrist J Orthop Musculoskelet Disord. 2020; 2: 1007.