Suprafibrous Injection with Corticosteroid in de Quervain's Disease

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Abstract

Between February 1996 and August 2001, 115 suprafibrous injections with corticosteroid were performed on 103 patients. Initial satisfactory result was found in 105 wrists (91.30%). The average duration of follow-up was 34 months. Seventy-one wrists (61.74%) had no recurrence of the symptom. The average pain free interval in the patient who had recurrence of the symptom after having an initial satisfactory result was five months. The success rate following one to three suprafibrous injections was 77.39 per cent. Suprafibrous injection is technically easier and has less risk of intratendinous injection than intrasynovial injection. The accuracy of injection and anatomical variation of the first extensor compartment of the wrist affect the result of intrasynovial injection but will not affect the result of suprafibrous injection in de Quervain's disease

Key word : De Quervain's Disease, Treatment, Injection, Corticosteroid, Suprafibrous Injection

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De Quervain's disease is initially treated conservatively. Local corticosteroid injection has been advocated as the preferred conservative method because of its success rate of 50 to 80 per cent of patients following one to two injections[1-4]. In the past, intrasynovial injection had been advocated and it was believed that accuracy of intrasynovial injection gave a good result[2-4].

A review of literature discloses that no study has shown the accuracy and efficacy of a true

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intrasynovial injection; thus, influence of location on the injection's success rate remain unclear. The pathology of de Quervain's disease is mainly in the fibrous sheath of the first extensor compartment[5-7] and at least one study reported normal synovial lining in this disease[5]. The incidence of a separate compartment at surgery, which is higher than that seen in anatomic specimens in several series[1,8-12], may affect the result of the intrasynovial injection[2]. Trying to give corticosteroid intrasynovially may introduce a risk of intratendinous injection that may develop collagen necrosis and tendon rupture[13]. Suprafibrous injection allows a greater concentration of corticosteroid to the main region of pathology and posts no risk of intratendinous injection. The result of this technique will not be affected from separation of the first extensor compartment of the wrist.

To our knowledge, there has been no published study on suprafibrous injection with corticosteroid for de Quervain's disease. The authors undertook this study to determine the role of suprafibrous injection with corticosteroid in this disease.

MATERIAL AND METHOD

Between February 1996 and August 2001, one hundred and three consecutive patients who had 115 involved wrists were included in a study of the treatment of de Quervain's disease with suprafibrous injection with corticosteroid. Nine patients had bilateral involvement at the same time and three had both wrists involved at different times. Ninety-three patients (90.29%) were female and ten (9.71%) were male. The average age of the patients was forty-seven years (range, seventeen to eighty-two years).

Patients occupations included housekeeper (35), secretarial and clerical work (16), light manual labor (14), cook (8), retirement (8), salesperson (7), manager (4), student (4), teacher (3), hairdresser (2), butcher (1), nun (1). There were 6 pregnant women and 5 postpartum. Sixty-one (53.04%) of the involved wrists were on the left non-dominant side, forty-two (36.52%) were on the right dominant side, six (5.22%) were on the left dominant side and six (5.22%) were on the right non-dominant side.

All the patients were diagnosed with de Quervain's disease from their history of pain over the radial aspect of the wrist aggravated by excessive use of the thumb and wrist especially in ulnar deviation of the wrist, localized tenderness around the radial styloid and positive Finkelstein's test. The authors excluded patients with rheumatoid arthritis, arthritis around the wrist and thumb, trauma to the wrist and thumb and prior surgery around the wrist especially for de Quervain's disease by history and physical examination. All the patients were treated by local steroid injection after being informed of the different treatment methods, conservative and surgical, as well as their complications.

The injected solution consisted of 0.5 ml triamcinolone acetonide suspension (10 mg/ml) and 0.5 ml of 1.0 per cent lidocaine hydrochloride. Suprafibrous injection was performed by directing a 25 or 26 gauge needle distally at a 45 degree angle on the region of the first extensor compartment of the wrist under sterile technique. When the fibrous roof of the first extensor compartment was felt, aspiration was attempted to confirm that the needle did not penetrate the superficial veins then the injected solution was introduced between the fibrous sheath and the subcutaneous tissue or on the fibrous roof, with care not to inject it into the subcutaneous tissue or into the first extensor compartment (Fig. 1). After the injection the patients were allowed to use their wrist as usual without any restriction of activities or immobilization.

The patients were evaluated every week until initial satisfactory result was achieved. If the patient's wrist was relieved of pain, could function normally and did not require further treatment after injection, it was considered an initial satisfactory result. If the pain persisted, restricting full function of the wrist and further treatment in the form of non-steroidal anti-inflammatory drugs (NSAIDs), repeated injection or surgical decompression was need, it was considered an initial unsatisfactory result.

The average duration of follow-up was thirty-four months (range, eleven to seventy-seven months), after exclusion of the patients in whom non-operative treatment failed and an operative release was done. The authors recorded the time to recurrence, complication, type of treatment in each recurrence, the incidence of separation of the first extensor compartment of the wrist in the patients who were operated on because of failed conservative treatment.

RESULT

One hundred and five (91.30%) out of 115 wrists that were treated with suprafibrous injection had satisfactory results initially. Ten wrists (8.70%) had unsatisfactory results initially. These included six wrists that had pain relief after taking oral NSAIDs for one week, two wrists that received repeated injec-

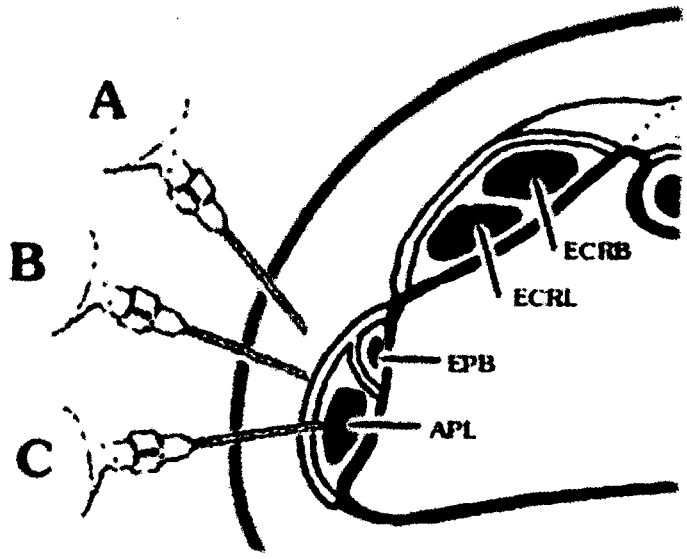

Fig. 1. Diagramatic cross-section of distal radius, showing separation of the first extensor compartment of the wrist and three positions of the tip of the needles for corticosteroid injection: A, into subcutaneous tissue. B, on the fibrous sheath or suprafibrous injection. C, into the first extensor compartment.

Note : Abductor Pollicis Longus tendon (APL), Extensor Pollicis Brevis tendon (EPB), Extensor Carpi Radialis Longus tendon (ECRL), Extensor Carpi Radialis Brevis tendon (ECRB).

tion one month after the first injection and had a satisfactory outcome and two wrists that underwent surgical decompression due to failure from the first injection.

The success rate following one to three suprafibrous injections was 77.39 per cent. These included 71 wrists (61.74%) that had satisfactory results initially after the first injection and had no recurrence, 14 wrists (12.17%) that were injected twice for two attacks and each had satisfactory results, two wrists (1.74%) that were injected three times for three attacks and each had satisfactory results, two wrists (1.74%) that had unsatisfactory results initially but both of them had satisfactory results after having repeated injection one month after the first injection.

Two wrists (1.74%) that had satisfactory results initially had recurrence of the symptom. Both of them had satisfactory results after taking oral NSAIDs for three weeks. Four wrists (3.48%) that had unsatisfactory results initially had pain relief after taking oral NSAIDs for one week. All of them had no recurrence at the time of their last follow-up.

Twenty wrists (17.39%) finally underwent surgical decompression because of failed conservative treatment. These included 16 wrists that had one to two recurrences of the symptom after having satisfactory results initially, two wrists that failed after the first injection and two out of six wrists that had unsatisfactory results initially after injection and had pain relief after taking oral NSAIDs for one week but both of them had recurrence of the symptom. The operative findings were complete separation of the first extensor compartment in 11 wrists, incomplete septum 5 wrists and single compartment 4 wrists.

The average duration of follow-up was thirty-four months (range, eleven to seventy-seven months), after exclusion of the patients in whom non-operative treatment failed and operative release was done. The average pain free interval between suprafibrous injection and recurrence of the symptom was five months (range, three to eleven months).

Complications included skin hypopigmentation in 5 wrists (4.35%), hyperesthesia at the injected site in 1 wrist (0.87%), which subsided in one to two months. There was no occurrence of subcutaneous atrophy, hematoma, ecchymosis, infection or tendon rupture at the latest follow-up.

DISCUSSION

The etiology of de Quervain's disease remains obscure. The majority of the reports on the pathology shows thickening of the fibrous sheath of the first

extensor compartment of the wrist[5-7]. This condition has become known as true de Quervain's disease or stenosing tenovaginitis[14]. Myxoid degeneration within the intercellular matrix of the fibrous sheath is the most striking histopathological finding[5-7]. Fibroblast proliferation and an increase of collagen fibrils were observed in the fibrous sheath[7]. Both fibrous and synovial sheaths showed increased vascularity[5-7]. Some studies have reported no evidence of inflammation and thus believe that this disease does not have an inflammatory etiology[5,6], but others have reported inflammatory cell infiltration in both fibrous and synovial sheaths[7], and hence the term tenosynovitis or de Quervain's tenosynovitis[14]. Some patients have experienced repeated attacks after conservative treatment. If conservative treatment fails or if there are multiple repeated attacks on the same wrist, surgical decompression gives a reasonably good result[4,15].

Local injection with corticosteroid has been advocated as the preferred conservative treatment for de Quervain's disease[1-4]. In the past intrasynovial injection with corticosteroid was advocated and it was believed that the accuracy of intrasynovial injection determined the result[2-4]. Many reports claiming a high success rate of treatment with corticosteroid injection had no proof that the corticosteroid was actually delivered into the synovial sheath[3,4]. A review of literature revealed only one study reported by Zingas C et al on the accuracy of intrasynovial injection in which it was found that only 16 out of 19 injections were truly intrasynovial even in the hands of an experienced hand surgeon[2]. The patients in this series were followed-up for only three months, and therefore it was not known whether the patients who expressed satisfaction initially had any recurrence after three months. The suprafibrous injection with corticosteroid in the present study showed an initial satisfactory result in 91.30 per cent. The success rate following one to three suprafibrous injections was 77.39 per cent which is comparable to the success rate of conventional intrasynovial injection [1-4]. This echoes the findings of Taras JS et al who concluded that intrasynovial injection offers no apparent advantage over subcutaneous injection in the treatment of trigger digits[16].

It was believed that hypopigmentation was a result of leakage of corticosteriod during intrasynovial injection. The present study showed that only five wrists (4.35%) were affected with this complication and all of them recovered spontaneously within one to two months. However, all of the presented patients were not darker-skinned individuals who are particulary prone to this complication and the authors used only half the conventional recommended dosage of corticosteroid.

In conclusion, intrasynovial injection with corticosteroid in de Quervain's disease that was advocated in the past may not be necessary. Suprafibrous injection can be used instead of intrasynovial injection for the treatment of this disease due to the following reasons:-

1. Suprafibrous injection is technically easier than intrasynovial injection and can even be performed by a general practitioner.

2. The accuracy of injection and anatomical variation of the first extensor compartment of the wrist affect the result of intrasynovial injection but will not affect the result of suprafibrous injection.

3. The risk of intratendinous injection that may be found in an attempted intrasynovial injection is not an issue with a suprafibrous injection. Tendon rupture that is the likely result of an inadvertent intratendinous injection leading to collagen necrosis [16] and is the most serious complication from a local corticosteroid injection, is not a risk in a suprafibrous injection.

4. High initial satisfactory result (91.30%). It is possible that suprafibrous injection allow a greater concentration of the corticosteroid to remain in the region of main pathology.

5. The success rate following one to three suprafibrous injections is comparable to the success rate of a conventional intrasynovial injection.

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การฉีดคอร์ติโคสตีรอยด์ไปบนผนังส่วนที่ประกอบด้วยเส้นใยในผู้ป่วยโรคเดอเกอร์แวง

ไพศาล อภิมนต์บุตร, พบ, ณรงค์ พุทธราชา, พบ**

ระหว่างเดือนกุมภาพันธ์ พ.ศ. 2539 ถึง สิงหาคม พ.ศ. 2544 ผู้ป่วยจำนวน 103 ราย ได้รับการรักษาโดยการฉีดยาคอร์ติโคสตีรอยด์ไปบนผนังส่วนที่ประกอบด้วยเส้นใยของช่องทางผ่านของเอ็นหลังข้อมือช่องแรกจำนวน 115 ข้อมือ พบว่าได้ผลพอใจเบื้องต้น 105 ข้อมือ คิดเป็น 91.30% จากการติดตามผลการรักษาเฉลี่ย 34 เดือน พบว่า 71 ข้อมือ คิดเป็น 61.74% ไม่มีอาการปวดซ้ำ ในผู้ป่วยที่มีอาการปวดซ้ำหลังจากได้รับการฉีดยามีระยะเฉลี่ยของช่วงที่หายปวดจนถึงวันที่ปวดซ้ำอีกเท่ากับ 5 เดือน ผลสำเร็จของการรักษาโดยการฉีดยาไปบนผนังส่วนที่ประกอบด้วยเส้นใย 1 ถึง 3 ครั้งเท่ากับ 77.39% การฉีดคอร์ติโคสตีรอยด์ไปบนผนังส่วนที่ประกอบด้วยเส้นใยเป็นวิธีที่ง่ายกว่าและมีความเสี่ยงต่อการฉีดเข้าเอ็นน้อยกว่าการฉีดเข้าปลอกหุ้มเอ็น ความแม่นยำในการฉีดเข้าปลอกหุ้มเอ็นของแพทย์ผู้ฉีดและความแปรปรวนของลักษณะทางกายวิภาคของช่องทางผ่านของเอ็นหลังข้อมือช่องแรกของผู้ป่วยมีผลต่อผลการรักษาที่ใช้วิธีฉีดเข้าปลอกหุ้มเอ็น แต่จะไม่มีผลต่อผลการรักษาโดยการฉีดไปบนผนังส่วนที่ประกอบด้วยเส้นใยของช่องทางผ่านของเอ็นหลังข้อมือช่องแรกในผู้ป่วยโรค เดอเกอร์แวง

คำสำคัญ : โรค เดอ เกอร์แวง, การรักษา, การฉีดยา, คอร์ติโคสตีรอยด์, การฉีดยาไปบนผนังส่วนที่ประกอบด้วยเส้นใย

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