

Comparative Study of Functional Outcome of Local Steroid Injection Versus Conservative Treatment in De Quervain's Disease: A Prospective Study

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ABSTRACT

Background: De Quervain's disease is a painful stenosing tenosynovitis of the first dorsal compartment of the wrist that commonly causes radial-sided wrist pain and functional limitation. Both conservative treatment and local steroid injection are widely used, but comparative data from Bangladesh are limited. The current study aimed to compare the functional outcome of local steroid injection versus conservative treatment in patients with De Quervain's disease. **Methods & Materials:** This prospective comparative study was conducted from July 2024 to December 2025 at two healthcare setting in Rangpur. A total of 150 patients with tenosynovitis of the first dorsal compartment of the wrist and positive Finkelstein's test were included. The patients were divided into two groups: conservative treatment group (n=75), and steroid group (n=75). Baseline characteristics, pain severity, functional outcome, and adverse effects were assessed. **Results:** The mean age was 38.2 ± 8.1 years in the conservative group and 36.8 ± 7.9 years in the steroid group ($p=0.286$). Baseline VAS pain score was 7.3 ± 1.2 and 7.4 ± 1.1 respectively ($p=0.596$). Mean VAS pain score was 1.3 ± 0.7 in the steroid group versus 3.5 ± 1.4 in the conservative group ($p<0.001$). Mean DASH score was 14.2 ± 6.5 versus 32.4 ± 10.2 ($p<0.001$). Excellent or good outcome was achieved in 69.3% of the steroid group compared with 49.3% of the conservative group ($p=0.013$). Poor outcome was lower in the steroid group (10.7% versus 29.3%, $p=0.004$). Among steroid-treated patients, local fat atrophy occurred in 37.3%, hypopigmentation in 34.7%, and acute flare in 8.0%. **Conclusion:** Local steroid injection provided better pain relief and functional improvement than conservative treatment in patients with De Quervain's disease, although local adverse effects were relatively common.

Keywords: De Quervain's Disease; Steroid Injection; Conservative Treatment; DASH Score; Functional Outcome.

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INTRODUCTION

De Quervain's disease, also known as de Quervain tenosynovitis, is a painful stenosing disorder of the first dorsal compartment of the wrist involving the abductor pollicis longus and extensor pollicis brevis tendons as they pass over the radial styloid [1]. Clinically, it presents with pain and tenderness over the radial side of the wrist, usually aggravated by thumb motion, gripping, lifting, and wrist deviation, and it is commonly diagnosed on the basis of history and physical examination, often supported by a positive Finkelstein test [2-4]. The condition is important because it affects hand function in routine daily activity and may substantially impair occupational performance, household work, and infant care. Although often described as an inflammatory tenosynovitis, current understanding also emphasizes tendon sheath thickening and degenerative change within the fibro-osseous tunnel, which contributes to pain and restricted tendon gliding [2]. Available epidemiologic data indicate that de Quervain's disease is a common cause of radial-sided wrist pain, particularly among women of working age. In a prospective case-control study, Stahl et al. reported that the condition has been estimated to affect approximately 0.5% of men and 1.3% of women in the general

working population, supporting the view that it is not rare in routine musculoskeletal practice [5]. Regional hospital-based evidence is also available. In a descriptive cross-sectional study from a tertiary care orthopedic outpatient department in Nepal, Rokaya et al. found a prevalence of 1.33% among attending patients, with female predominance and a mean age around the fourth decade of life, findings that are broadly compatible with the demographic pattern observed in many clinical series from similar low- and middle-income settings [6]. While robust Bangladesh-specific prevalence data remain limited in the open-access literature, these regional findings suggest that de Quervain's disease represents a relevant clinical burden in South Asian practice as well. Several associated factors have been described in the literature. Female sex is consistently overrepresented, and the disorder has also been linked to repetitive manual activity, forceful thumb use, and biomechanical overloading of the wrist and hand. However, the relationship with occupation is not always straightforward, and some studies suggest that classical overuse explanations may not fully account for all cases [5]. Pregnancy and the postpartum period have also been recognized as important contexts for the development of de Quervain's disease. In a population-

based epidemiologic study from South Korea, Bae et al. reported that pregnancy-related de Quervain tenosynovitis affected approximately 2.1% of pregnant women, with age of 30 years or more, multiple gestation, cesarean delivery, and hypertensive disorders of pregnancy identified as associated factors [7]. These observations support the broader clinical impression that hormonal influences, fluid retention, infant lifting, and repetitive wrist positioning may all contribute to disease occurrence in susceptible women. Management of de Quervain's disease includes activity modification, nonsteroidal anti-inflammatory drugs, splintage, physiotherapy-based conservative measures, local corticosteroid injection, and surgery for resistant cases. Current evidence increasingly favors corticosteroid injection as an effective nonsurgical treatment. In a randomized controlled trial in general practice, Peters-Veluthamaning et al. demonstrated that local corticosteroid injection produced superior short-term improvement compared with placebo injection, supporting its clinical value in routine outpatient care [8]. In a prospective randomized trial, Ippolito et al. further showed favorable outcomes with corticosteroid injection and found no additional benefit from three weeks of immobilization when added to injection

alone [9]. More recently, a systematic review and network meta-analysis by Challoumas et al., incorporating 30 studies and 1,663 patients, concluded that local corticosteroid injection, particularly when combined with thumb spica immobilization, was associated with significant pain-relieving and functional benefits and had the highest probability of being the most effective nonsurgical intervention [10]. In another open-access study from Nigeria, Omoke and Nnadozie reported favorable clinical outcome following local corticosteroid injection in a resource-constrained setting, further supporting its practical utility outside highly specialized centers [11]. Despite this growing evidence base, conservative treatment remains widely used in everyday practice, particularly in settings where cost, patient preference, injection-related fear, or service limitations influence treatment selection. Comparative data from Bangladesh are limited, and locally generated evidence remains important because treatment response, follow-up compliance, and care-seeking patterns may differ from those reported in international studies. In this context, the present prospective study was undertaken to compare the functional outcome of local

steroid injection versus conservative treatment in patients with de Quervain’s disease.

METHODS & MATERIALS

This prospective comparative study was conducted from July 2024 to December 2025 at Pirganj Upazila Health Complex, Rangpur, and Technologist Diagnostic Center and Rangpur General Hospital, Rangpur. A total of 150 patients clinically diagnosed with De Quervain’s disease were included in the study and allocated into two groups, with 75 patients in the conservative treatment group and 75 patients in the local steroid injection group. Patients were selected according to predefined eligibility criteria. The inclusion criteria were tenosynovitis of the first dorsal compartment of the wrist and a positive Finkelstein’s test. Patients with wrist fracture, osteoarthritis, or history of previous steroid injection were excluded from the study. The diagnosis was made clinically from history and physical examination findings. Patients in the conservative treatment group received nonoperative conservative management, while patients in the steroid group received local corticosteroid injection into the first dorsal compartment under aseptic

precautions. The injection consisted of 1 ml triamcinolone acetonide, equivalent to 40 mg, mixed with 0.5 ml of 2% lidocaine. The injection site was identified clinically over the radial styloid. The procedure included identification and marking of the first dorsal compartment, preparation of the injection site, and administration of corticosteroid injection using standard technique. The procedural steps are shown in Figure 1(A–C). Data were collected using a predesigned structured clinical assessment form. Baseline variables included age, sex, symptom duration, and baseline VAS pain score. Outcome variables included VAS pain score, DASH score, categorical functional outcome, and adverse effects. Functional outcome was assessed at 6 months follow-up. Data were analyzed using Statistical Package for the Social Sciences, SPSS. Continuous variables were expressed as mean ± standard deviation and compared between groups using independent sample t-test. Categorical variables were expressed as frequency and percentage and analyzed using chi-square test. A p value of less than 0.05 was considered statistically significant.



Figure 1 (A–C): Technique of Local Corticosteroid Injection for De Quervain’s Disease
Composite figure showing the sequential procedure: (A) identification and marking of the first dorsal compartment, (B) positioning and preparation, and (C) corticosteroid injection under aseptic precautions.

RESULTS

A total of 150 patients were included in the study, with 75 patients in each group. The mean age was 38.2 ± 8.1 years in the conservative group and 36.8 ± 7.9 years in the steroid group, with no significant

difference between the groups, p=0.286. Female patients constituted 57.3% of the conservative group and 56.0% of the steroid group, p=0.869. The mean duration of symptoms was 10.4 ± 4.2 weeks in the conservative group and 9.8 ± 3.9 weeks in

the steroid group, p=0.366. Baseline VAS pain score was also comparable, 7.3 ± 1.2 in the conservative group and 7.4 ± 1.1 in the steroid group, p=0.596 (Table I).

Table I
Baseline Characteristics (n=150).

Variable	Conservative (n=75)	Steroid (n=75)	p value
Age, years, mean ± SD	38.2 ± 8.1	36.8 ± 7.9	0.286
Female, n (%)	43 (57.3)	42 (56.0)	0.869
Symptom duration, weeks, mean ± SD	10.4 ± 4.2	9.8 ± 3.9	0.366
Baseline VAS pain, mean ± SD	7.3 ± 1.2	7.4 ± 1.1	0.596

At 6 months follow-up, the steroid group showed significantly better clinical and functional outcomes than the conservative group. The mean VAS pain score was markedly lower in the steroid group, 1.3 ± 0.7 , compared with 3.5 ± 1.4 in the conservative group, $p < 0.001$. Similarly, the mean DASH score was significantly lower in the steroid group, 14.2 ± 6.5 versus 32.4 ± 10.2 in the conservative group, $p < 0.001$. Excellent or good outcome was achieved in 52 patients, 69.3%, in the steroid group compared with 37 patients, 49.3%, in the conservative group, $p = 0.013$. In contrast, poor outcome was more frequent in the conservative group, 29.3%, than in the steroid group, 10.7%, $p = 0.004$ (Table II).

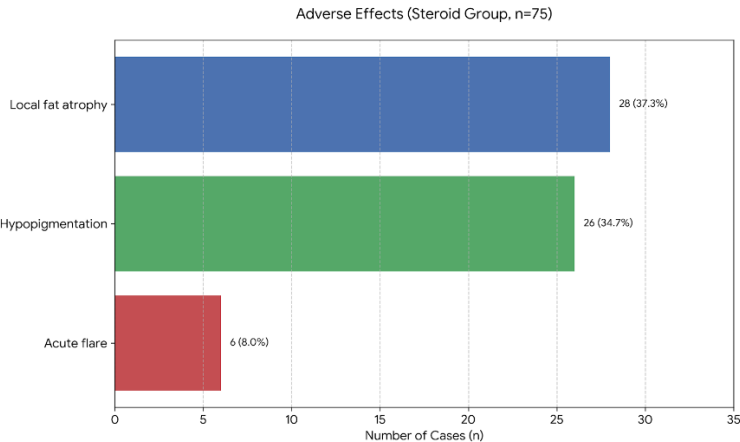
Table II
Functional Outcome at 6 Months.

Outcome	Conservative (n=75)	Steroid (n=75)	p value
VAS pain, mean ± SD	3.5 ± 1.4	1.3 ± 0.7	<0.001
DASH score, mean ± SD	32.4 ± 10.2	14.2 ± 6.5	<0.001
Excellent + Good, n (%)	37 (49.3)	52 (69.3)	0.013
Poor, n (%)	22 (29.3)	8 (10.7)	0.004

Among the 75 patients in the steroid group, local fat atrophy was the most common adverse effect, observed in 28 patients, 37.3%, followed by hypopigmentation in 26 patients, 34.7%. Acute flare was recorded in 6 patients, 8.0% (Table III).

The adverse effects of corticosteroid injection were reversible. Acute flare subsided within three to five days, while hypopigmentation and local fat atrophy resolved within six to nine months.

Table III
Adverse Effects (Steroid Group, n=75).



DISCUSSION

The present prospective comparative study found that the two treatment groups were well matched at baseline. The mean age was 38.2 ± 8.1 years in the conservative group and 36.8 ± 7.9 years in the steroid group, female patients constituted 57.3% and 56.0% respectively, mean symptom duration was 10.4 ± 4.2 weeks versus 9.8 ± 3.9 weeks, and baseline VAS pain scores were 7.3 ± 1.2 and 7.4 ± 1.1 , with no statistically significant differences between groups. This baseline comparability strengthens the interpretation that the differences observed at follow-up were likely related to treatment effect rather than major pre-treatment imbalance. A similar comparative framework was used by Ilyas

et al., who evaluated injectable steroids versus conservative management and likewise interpreted post-treatment differences in the context of comparable pre-intervention groups [1]. In the current study, pain outcome at 6 months was clearly better in the steroid group. The mean VAS pain score fell to 1.3 ± 0.7 in the steroid group, compared with 3.5 ± 1.4 in the conservative group, $p < 0.001$. This finding is consistent with the Bangladeshi study by Morshed et al., who reported marked pain improvement after corticosteroid injection, with mean VAS decreasing from 8.27 ± 1.23 before treatment to 1.46 ± 2.34 at 6 months [12]. Their findings support the present observation that local corticosteroid

injection provides substantial symptomatic relief in De Quervain’s disease. The functional outcome findings of the present study also favored steroid injection. At 6 months, the mean DASH score was 14.2 ± 6.5 in the steroid group compared with 32.4 ± 10.2 in the conservative group, $p < 0.001$. This pattern is in line with the report of Morshed et al., where QuickDASH improved from 77.33 ± 13.59 to 22.97 ± 17.28 after corticosteroid injection [12]. Although the functional scales were not identical, both studies demonstrated that steroid treatment was associated with clear improvement in upper limb function. The categorical treatment outcomes in the present study further support the superiority of steroid injection. Excellent or

good outcome was achieved in 52 patients, 69.3%, in the steroid group compared with 37 patients, 49.3%, in the conservative group, $p = 0.013$. Poor outcome was observed in only 8 patients, 10.7%, in the steroid group, whereas 22 patients, 29.3%, in the conservative group had poor outcome, $p = 0.004$. These findings are comparable to the work of Ilyas et al., who found significantly better pain and clinical improvement with injectable steroids than with conservative treatment, including fewer patients remaining clinically positive after intervention ^[1]. Peters-Veluthamaningal et al. also reported that corticosteroid injection was an effective intervention in general practice, supporting the present finding that steroid-based treatment is more effective than conservative measures alone ^[8]. The broader literature also supports the direction of the current results. Challoumas et al., in a systematic review and network meta-analysis of 30 studies involving 1,663 patients, concluded that corticosteroid injection, particularly when combined with thumb spica immobilization, had the highest probability of being the most effective nonsurgical treatment ^[10]. Similarly, Rowland et al. found in their systematic review and meta-analysis that corticosteroid injection was associated with better symptom resolution, pain relief, and functional benefit ^[13]. These higher-level studies strengthen the external consistency of the present findings, particularly the lower VAS score, lower DASH score, and higher proportion of favorable outcome in the steroid group. However, not all studies have reported uniform superiority under every treatment configuration. Ippolito et al. found that corticosteroid injection was effective, but additional prolonged immobilization did not significantly improve outcomes over injection alone ^[9]. This does not contradict the present study, because our comparison was between steroid injection and conservative treatment rather than between different steroid-based regimens. Instead, it suggests that the main therapeutic advantage may lie in the injection itself. An important finding of the present study was the frequency of local adverse effects in the steroid group. Local fat atrophy occurred in 28 patients, 37.3%, hypopigmentation in 26 patients, 34.7%, and acute flare in 6 patients, 8.0%. These complications are biologically plausible and have been documented in the literature. Brinks et al., in a systematic review of extra-articular corticosteroid injections, recognized skin and subcutaneous tissue changes as known local adverse effects ^[14]. A De Quervain-specific report by Bakirci et al. also described reversible hypopigmentation and atrophy following corticosteroid injection ^[15]. Nevertheless, the complication rates observed in the

present study appear relatively high and may reflect differences in technique, depth of injection, steroid preparation, or ascertainment during follow-up. Overall, the present study demonstrates that local steroid injection produced better pain relief and functional outcome than conservative treatment in patients with De Quervain's disease, while also being associated with notable local adverse effects. These findings support the use of steroid injection as an effective nonsurgical treatment option, but they also highlight the importance of careful technique and patient counseling regarding possible complications.

LIMITATIONS

This study was conducted in a limited number of centers with a relatively modest sample size, which may affect the generalizability of the findings. Detailed subgroup analysis and long-term follow-up were not available. In addition, adverse effects were reported only in the steroid group, and variables such as occupation, hand dominance, and recurrence were not assessed.

CONCLUSION

This prospective comparative study showed that local steroid injection produced better pain relief and superior functional outcome than conservative treatment in patients with De Quervain's disease. At 6 months, the steroid group had lower mean VAS pain score, lower DASH score, a higher proportion of excellent and good outcomes, and a lower proportion of poor outcomes. However, local adverse effects such as fat atrophy, hypopigmentation, and acute flare were also observed in a notable proportion of patients.

RECOMMENDATION

Local steroid injection may be considered an effective treatment option for patients with De Quervain's disease, particularly when early pain relief and functional improvement are desired. Careful injection technique and proper counseling regarding possible local adverse effects are important. Further multicenter studies with larger sample size and longer follow-up are recommended to assess long-term outcome, recurrence, and complication profile.

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

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