International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Operating Publisher
SciFormat Publishing Inc.
ISNI: 0000 0005 1449 8214

2734 17 Avenue SW,
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ARTICLE TITLE	CONTEMPORARY TREATMENT METHODS FOR DE QUERVAIN'S DISEASE: A SYSTEMATIC REVIEW
DOI	https://doi.org/10.31435/ijitss.3(51).2026.6639
RECEIVED	24 June 2026
ACCEPTED	11 September 2026
PUBLISHED	17 September 2026
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CONTEMPORARY TREATMENT METHODS FOR DE QUERVAIN'S DISEASE: A SYSTEMATIC REVIEW

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ABSTRACT

Introduction: De Quervain's disease (DQD) is a tendinopathy involving the tendons of the abductor pollicis longus and extensor pollicis brevis muscles, leading to pain and limited function of the thumb and wrist. Therapeutic management aims to reduce pain, improve mobility, and restore hand function. The treatment methods used include corticosteroid and platelet-rich plasma (PRP) injections, as well as immobilization using a thumb spica splint. Rehabilitation also plays an important role and includes range-of-motion exercises, strengthening exercises, ultrasound therapy, and soft tissue mobilization. In cases where conservative treatment is ineffective, surgical treatment involving the release of the first extensor compartment may be considered.
Aim of the study: The aim of this study is to review the available literature on contemporary treatment methods for De Quervain's disease and to present the current state of knowledge regarding their effectiveness. The study discusses the efficacy and safety of individual therapeutic methods, including corticosteroid and platelet-rich plasma injections, the use of orthoses, rehabilitation, and surgical treatment.
Methods and materials: A review of the literature available in the PubMed database was conducted using the following keywords: "De Quervain's disease"; "De Quervain's tenosynovitis"; "De Quervain's tendinopathy"; "Conservative treatment of De Quervain's disease"; "Corticosteroid injections"; "Platelet-rich plasma"; "Rehabilitation"; "Ultrasound therapy"; "Surgical treatment".
Conclusion: De Quervain's disease requires an individualized therapeutic approach, taking into account the severity of symptoms and the patient's response to the treatment applied. Corticosteroid injections remain an effective first-line treatment, particularly when performed under ultrasound guidance. PRP may represent a safe alternative; however, further research is required. Orthoses and rehabilitation may support the treatment process, particularly in cases of mild symptoms. In patients with persistent symptoms despite conservative treatment, surgical treatment remains an effective option.

KEYWORDS

De Quervain's Disease, Conservative Treatment of De Quervain's Disease, Corticosteroid Injections, Platelet-Rich Plasma, Surgical Treatment

CITATION

Grzesikowski, P. (2026). Contemporary treatment methods for De Quervain's disease: A systematic review. *International Journal of Innovative Technologies in Social Science*, 3(51). https://doi.org/10.31435/ijitss.3(51).2026.6639

1. Introduction

De Quervain's disease (DQD) is caused by narrowing of the fibro-osseous sheath, which becomes constricted, resulting in the development of an inflammatory process involving the tendons, particularly the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles (Fakoya, Tarzian, Sabater, Burgos, & Maldonado Marty, 2023). Risk factors for the development of the disease include female sex, and it has been observed that the disease occurs particularly frequently in the early postpartum period and during the later stages of pregnancy. De Quervain's disease occurs more than three times as frequently in women as in men in the working population (Shen et al., 2015). No association has been demonstrated between work-related trauma and the occurrence of De Quervain's tendinopathy, despite the fact that some organizations, such as the World Health Organization, classify DQD as a condition associated with occupational factors (Ramchandani, Thakker, & Tharmaraja, 2022). Based on a case report of a 14-year-old female patient who had previously been treated with somatotropin, a possible association between the use of this therapy and the development of De Quervain's disease was identified (Yurdakul, Aytüre, & Yalçinkaya, 2017). The diagnosis of this condition is primarily based on the assessment of clinical symptoms, such as pain and tenderness on the lateral side of the wrist, which may radiate toward the forearm. As a result of the inflammatory process, swelling may occur, which may cause limited thumb mobility and difficulties in grasping objects (DE QUERVAIN IN LA CHAUX-DE-FONDS, F., 2005). The most commonly used diagnostic tests include the Eichhoff test and the Finkelstein test. Following the introduction of the Wrist Hyperextension and Abduction of the Thumb (WHAT) test, its effectiveness in diagnosing DQD was compared with that of the Eichhoff test in a prospective study involving 100 patients with pain characteristic of this tendinopathy. The results demonstrated higher sensitivity and specificity for the WHAT test, indicating its greater diagnostic accuracy in the early stages of De Quervain's disease (Goubau et al., 2014).

Treatment

Corticosteroid Injections (CS)

Corticosteroid injections into the proximal region of the radial styloid process are intended to suppress the inflammatory process and constitute the basis of therapeutic management in patients with newly diagnosed DQD (Fakoya, Tarzian, Sabater, Burgos, & Maldonado Marty, 2023). The therapy results in improvement in function and reduction in perceived pain, and studies have shown that approximately 83% of patients who received an injection achieved symptomatic resolution (Cavaleri, Schabrun, Te, & Chipchase, 2016; Richie, & Briner, 2003). A properly performed injection into the tendon sheath allows for a good therapeutic effect, and a single injection results in complete resolution of symptoms in 70% of patients. In the remaining 10% of cases, such effects can be achieved after a second injection. Due to the limited occurrence of serious complications and the low cost of this procedure, it is recommended as the first-line treatment for De Quervain's disease (Harvey, Harvey, & Horsley, 1990). Unfortunately, like any procedure, injection may be associated with adverse effects such as skin depigmentation, infection, the risk of tendon rupture (APL, EPB), and inflammation of the superficial radial nerve (Nguyen, & Jones, 2012). In a study involving 75 patients, the outcomes of injection therapy using a solution containing 1 mL of 2% xylocaine and 1 mL of methylprednisolone acetate at a dose of 40 mg/mL were analyzed. The results showed that all study participants experienced immediate relief of pain, which was associated with the presence of xylocaine in the solution. In 88% of patients, the effects persisted at the second week of follow-up, indicating the high effectiveness of the therapy, whereas in the third week, the percentage of patients without pain was 84%, confirming the persistence of the beneficial therapeutic effect during the observation period (Afridi, Ahmad, & Ahmed, 2024). A systematic review analyzed the safety and efficacy of corticosteroid injections in the treatment of DQD. It was demonstrated that injections of methylprednisolone with the addition of bupivacaine provided better results compared with immobilization using a thumb spica splint, particularly in terms of rapid pain relief in pregnant or breastfeeding women (Peters-Veluthamaningal, van der Windt, Winters, & Meyboom-de Jong, 2009). In a randomized, double-blind study involving 160 patients, all participants received an injection of 10 mg of triamcinolone acetonide. Subsequently, 80 patients additionally received 200 mg of nimesulide for 7 days, while the remaining 80 patients received a placebo. After a mean follow-up period of 13.6 months, the overall treatment efficacy was 95% in both the group receiving triamcinolone acetonide injection alone and the group in which nimesulide was additionally administered. Based on the results obtained, it can be concluded that the additional use of nimesulide did not increase the efficacy of triamcinolone acetonide therapy, as the same

treatment efficacy rate was achieved in both groups (Jirarattanaphochai et al., 2004). It is recommended that corticosteroid injections be performed under ultrasound guidance due to anatomical differences in the first extensor compartment and the varying locations of the inflammatory process within the tendon sheaths among patients (Bing et al., 2018). To further support this therapeutic approach, it is worth emphasizing the importance of performing injections under ultrasound guidance, particularly due to the frequent occurrence of anatomical variants, which were identified in 52% of prospectively examined wrists. The use of ultrasound guidance enabled precise administration of the drug into the affected compartment, and after a single injection, at least 80% improvement in symptoms assessed using the VAS was achieved in 92% of patients, while long-term symptom resolution was achieved in 85% of patients with separate compartments (McDermott, Ilyas, Nazarian, & Leinberry, 2012).

Platelet-Rich Plasma (PRP) Injections

To support the tendon healing process, platelet-rich plasma injections represent an alternative in the conservative treatment of De Quervain's disease. In a systematic review including 3 randomized clinical trials and 5 experimental studies, PRP therapy was considered an effective and safe alternative to corticosteroid injections due to the support of the healing process provided by growth factors. However, further studies involving a larger number of patients are needed before PRP can be recommended as the gold standard for the treatment of DQD (Alam, Merza Abdulla Mohamed, Alawainati, & Haider, 2024). A comparison of the effects of PRP injections with corticosteroid injections was presented in a prospective, randomized, open-label controlled study involving 86 patients. The study demonstrated that both therapies were associated with comparable efficacy in reducing pain and improving hand function; however, corticosteroids were characterized by more rapid improvement achieved during the first weeks after injection (Chowley et al., 2025). Based on this, platelet-rich plasma injections may represent an alternative treatment option for patients who do not achieve clinical improvement after the use of other conservative treatment methods. An important direction for future research is the development of standardized protocols for the preparation and administration of PRP (Hidajat, Magetsari, Steven, Budiman, & Prasetiyo, 2024).

Thumb Spica Splint

In some cases, the use of a thumb spica splint is recommended primarily to increase patient comfort in cases of severe symptoms; however, its effectiveness has also been demonstrated through prevention of flexion of the thumb metacarpophalangeal joint and ulnar deviation of the wrist, which may contribute to reducing symptoms (Goel, & Abzug, 2015). In patients with mild symptoms, the use of nonsteroidal anti-inflammatory drugs and a splint may be effective in treating symptoms; however, in cases of more advanced symptoms, this therapy does not produce satisfactory results (Lane, Boretz, & Stuchin, 2001). In a study involving 3 groups, improvement was observed in 67% of patients who received corticosteroid injections and in 57% of patients in whom a splint was additionally used as part of the treatment. This indicates that immobilization in combination with injection was not necessary (Weiss, Akelman, & Tabatabai, 1994).

Rehabilitation

Another conservative treatment option for DQD is ultrasound therapy, most commonly at a frequency of 3 MHz due to the superficial location of the structures involved. The therapy aims to reduce pain, support the healing process of soft tissues, and improve their elasticity. Due to its tissue-regenerative effects, non-thermal ultrasound therapy is used in the treatment of De Quervain's disease (Hartzell, Rubinstein, & Herman, 2012). To improve the mobility of the APL and EPB tendons, active range-of-motion exercises are used, initially beginning with isometric exercises. As therapy progresses, the program can be expanded to include strengthening exercises, the purpose of which is to gradually prepare the patient to resume daily functional activities (Jaworski, Krause, & Brown, 2010). A study demonstrated that therapy involving the creation of a controlled microtrauma during assisted tissue mobilization promotes the tissue healing process and reduces pain; however, due to the small number of studies containing reliable scientific data, this technique is not routinely used (Papa, 2012).

Surgical Treatment

In patients in whom conservative treatment does not produce results within 6 months of initiating conservative treatment and corticosteroid injections, surgical treatment is used. It involves surgical release of the extensor retinaculum and, if necessary, any septa between the EPB and APL tendons (Lee et al., 2014). Numerous anatomical variations occur within the first extensor compartment, and their frequency may vary depending on the presence of De Quervain's disease. In patients with this condition, the presence of a septum separating the compartment and a single APL tendon bundle is observed more frequently. The identified anatomical differences may affect the pathomechanism of the disease as well as the course and effectiveness of surgical treatment (Lee, Stranix, Anzai, & Sharma, 2017). A systematic review and meta-analysis evaluated the effectiveness of surgical treatment in patients with DQD, taking into account the surgical technique, type of incision, and incidence of complications. The results showed that surgical treatment reduces perceived pain, whereas treatment efficacy and the incidence of complications are not influenced by the surgical technique or type of incision (Bosman et al., 2022).

3. Conclusions:

Treatment of De Quervain's disease depends primarily on the severity of symptoms, duration of the disease, and the patient's response to conservative treatment. Among conservative treatment methods, corticosteroid injections remain one of the most effective and best-documented forms of therapy, providing rapid pain reduction and improvement in hand function. Their effectiveness may be increased by the use of ultrasonography, particularly due to the frequent occurrence of anatomical variations within the first extensor compartment. Immobilization with a splint may be beneficial primarily in patients with mild symptoms or as an adjunct to treatment; however, its effectiveness is lower than that of corticosteroid injections. Rehabilitation, including range-of-motion exercises, isometric and strengthening exercises, as well as selected physical therapy techniques, may contribute to pain reduction and improvement in hand function. Platelet-rich plasma (PRP) injections represent a promising alternative to corticosteroids; however, due to the limited number of studies and the lack of standardized protocols, their use requires further research. In cases where improvement is not achieved following appropriately administered conservative treatment, surgical treatment remains an effective option, resulting in pain reduction and improvement in hand function. The choice of surgical technique should take into account possible anatomical variations within the first extensor compartment. Further clinical studies are needed to determine the optimal therapeutic approach and the role of individual treatment methods in patients with De Quervain's disease.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Declaration of the use of generative AI and AI-assisted technologies in the writing process: In preparing this work, the authors used ChatGPT for the purpose of improving language and readability. After using this tool, the authors have reviewed and edited the content as needed and accept full responsibility for the substantive content of the publication.

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