



Epidemiological Study of De Quervain's Tenosynovitis in Postpartum Women

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Abstract

De Quervain's tenosynovitis is an inflammatory condition that affects the sheath surrounding tendons, most commonly observed in the hands and wrists. This study investigates the prevalence, risk factors, and treatment outcomes of de Quervain's tenosynovitis among postpartum women, a population particularly vulnerable due to the unique physiological and biomechanical stresses associated with pregnancy and caregiving. A cross-sectional design was employed, surveying mothers who gave birth between January 2023 and April 2023 at a government hospital. The study found that 10 new mothers were diagnosed with de Quervain's tenosynovitis, typically around two months postpartum, with a higher prevalence observed among women aged 31-40. Notably, 80% of diagnosed patients had a history of thyroid disorders, and repetitive wrist movements were a common risk factor. Treatment outcomes varied, with steroid injections and surgery proving most effective. These findings underscore the importance of early intervention and preventive measures, particularly ergonomic education, to reduce the incidence and impact of this condition in postpartum women.

Introduction

Tenosynovitis is an inflammatory condition affecting the sheath surrounding tendons, most commonly observed in the hands and wrists. It manifests through pain, swelling, and functional impairment, often leading to significant discomfort and disability. While tenosynovitis can occur in various populations, new mothers represent a particularly vulnerable group due to the unique physiological and biomechanical stresses associated with pregnancy and postpartum caregiving. The repetitive motions required for infant care, coupled with the hormonal and anatomical changes of pregnancy, create an environment encouraging to the development of this condition [1]. Recent studies have begun to shed light on the risk factors associated with musculoskeletal disorders in postpartum women, emphasizing the physical challenges that come with tasks such as lifting and carrying a child [2]. However, the specific incidence and

distribution of tenosynovitis within this group have not been thoroughly explored. This study aims to fill this critical gap by investigating the epidemiological aspects of tenosynovitis among new mothers, identifying prevalence rates, risk factors, and potential preventive measures. By focusing on new mothers within the first year after childbirth, this research hopes to delineate how childbirth related changes and caregiving demands contribute to the development of tenosynovitis. Furthermore, understanding these associations can guide the development of preventive measures and inform healthcare providers about the needs of this demographic.

Material and Method

Study Population

The study population comprised all mothers who gave birth at the government hospital within the specified period from



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January 2023- April 2023. The hospital's database was accessed to obtain the contact information of these women. A total of 1065 mothers were identified as eligible for participation in the study. The study employed a cross-sectional design, utilising a structured questionnaire to collect data on demographic characteristics, obstetric history, postpartum experiences, and the presence of tenosynovitis symptoms.

Data Collection

Data collection was carried out through a self-administered online questionnaire. Each eligible mother received a unique QR code via post, which linked them to the questionnaire hosted on Google Drive. The questionnaire was designed to capture relevant epidemiological data, including age, parity, and any symptoms indicative of tenosynovitis, such as pain, swelling, or stiffness in the hands and wrists. The questionnaire also included questions on potential risk factors, such as repetitive hand movements associated with infant care and any previous history of musculoskeletal disorders.

Results

In this study, out of the 1065 eligible mothers who were sent an invitation to participate in the questionnaire, 100 replied back to the questionnaire via the QR code. Ten new mothers were diagnosed with de Quervain's tenosynovitis, with the diagnosis typically occurring around two months postpartum. The incidence rate of tenosynovitis in women is approximately 10%, highlighting the prevalence of this condition in the postpartum female population. Of these diagnosed mothers, 2 were within the 20-30 age range, while the remaining 8 were in the 31-40 age group. Among these patients, 8 had a history of thyroid disorders, one had a previous wrist injury, and another was diagnosed with Conn's syndrome, all of which may have contributed to their susceptibility to the condition. The most commonly reported symptoms were swelling and difficulty moving the affected joints. Additionally, 17 other participants reported similar symptoms but were not formally diagnosed with the condition. Treatment strategies varied, with 5 patients receiving steroid injections, which were fully effective, while 2 patients received splints and 2 underwent hand therapy, both of which were partially effective. One patient required surgery, which was fully effective. Most of the diagnosed patients engaged in moderate physical activities and frequently performed repetitive wrist movements, such as lifting or carrying their baby, which are known risk factors for tenosynovitis.

Discussion

De Quervain's Tenosynovitis (DQT) affects the tendons on the thumb side of the wrist, particularly the Abductor Pollicis Longus (APL) and the Extensor Pollicis Brevis (EPB). These tendons run through a fibrous tunnel known as the first dorsal compartment, which is located at the wrist near the base of the thumb. This compartment has a sheath that facilitates smooth movement of the tendons but can become a site for inflammation [3]. The anatomy of this area contributes to its susceptibility to inflammation. The first dorsal compartment is narrow and rigid, which confines the APL and EPB tendons. Any swelling or thickening of these tendons or their sheath can lead to increased friction. Moreover, the repetitive movements of the thumb and wrist, such as those required in lifting or grasping common in activities ranging from childcare to certain types of work can create mechanical stress and irritation. This repetitive stress is compounded by the fact that these tendons are used

frequently, making them more prone to overuse injuries. Additionally, certain anatomical variations, such as the presence of an extra septum within the compartment or variations in the tendon or sheath size, can further predispose individuals to DQT. These variations can cause even more friction within the confined space of the first dorsal compartment [4]. Hormonal factors and fluid retention, particularly during pregnancy or postpartum, also increase susceptibility to inflammation in this region. These conditions can lead to swelling of the soft tissues, which exacerbates the tightness around the tendons and leads to further irritation and inflammation. This combination of anatomical, mechanical, and physiological factors makes the first dorsal compartment a common site for the development of DQT [5]. Thyroid disorders, particularly hypothyroidism, may contribute to the development and exacerbation of de Quervain's tenosynovitis, although the relationship is complex and not entirely straightforward. Hypothyroidism is characterised by a reduction in metabolic activity, which can lead to the accumulation of glycosaminoglycans in connective tissues. This accumulation may result in the swelling, thickening, and stiffness of tendons and their sheaths, thereby increasing the likelihood of developing tenosynovitis. Furthermore, autoimmune thyroid diseases, such as Hashimoto's thyroiditis, are associated with systemic inflammation, which can adversely affect tendons and predispose individuals to conditions like tenosynovitis. Patients with thyroid disorders frequently report generalised musculoskeletal pain and stiffness, which may heighten their vulnerability to tendon injuries. Although thyroid disorders are not the primary etiological factor in de Quervain's tenosynovitis, they may play a significant role in its onset or progression, particularly in individuals who are already at increased risk, such as postpartum women engaged in repetitive wrist movements [6]. The Finkelstein test is used as part of the diagnostic process for de Quervain's tenosynovitis. This test involves the patient making a fist with the thumb tucked inside the fingers, followed by ulnar deviation of the wrist. A positive result, indicated by pain along the radial side of the wrist, is a strong indicator of inflammation in the tendons associated with de Quervain's tenosynovitis [7]. Histological examinations of tissues affected by De Quervain's Tenosynovitis reveal specific pathological changes that underpin the clinical symptoms of the disease. The hallmark of DQT is the thickening and fibrosis of the synovial sheath that encases the abductor pollicis longus and extensor pollicis brevis tendons. This thickening is primarily due to the accumulation of fibrous tissue, which is a response to chronic friction and inflammation. In more detailed studies, histological analysis shows chronic inflammation characterised by the infiltration of mononuclear cells, such as lymphocytes and plasma cells, within the synovial sheath. Additionally, there may be increased deposition of collagen and ground substance, contributing to the stenosing tenosynovitis seen in DQT. Some studies have reported neovascularisation, which is the formation of new blood vessels, typically a response to chronic inflammation. This can lead to further swelling and pain in the affected area [8].

Magnetic Resonance Imaging plays a crucial role in the diagnosis and management of De Quervain's Tenosynovitis particularly when other diagnostic methods are inconclusive. MRI is highly sensitive and specific for identifying subtle changes in the tissues around the tendons involved in DQT. This imaging technique can reveal increased fluid within the tendon sheath, which is indicative of tenosynovitis. It can also detect debris within the sheath, changes in the signal intensity of the tendons and any inflammatory changes surrounding the tendons.

Moreover, MRI is particularly useful in assessing the presence or absence of an intertendinous septum, which can influence treatment decisions, such as the need for surgery or targeted injections [9,10]. Treatment of De Quervain's Tenosynovitis typically begins with non-invasive measures such as activity modification to avoid aggravating movements, and the use of a thumb spica splint to immobilise the wrist and reduce tendon irritation. Using non-steroidal anti-inflammatory drugs like ibuprofen which are commonly prescribed to manage pain and inflammation have limited use in breastfeeding mothers. Physical therapy is also a cornerstone of conservative treatment, focusing on exercises to stretch and strengthen the wrist and hand muscles and improve tendon gliding [11]. If these measures prove ineffective, corticosteroid injections into the tendon sheath may be administered, offering rapid relief and acting as a diagnostic tool. For persistent cases that do not respond to other treatments, surgical intervention may be necessary, typically involving the release of the roof of the first dorsal compartment to alleviate pressure on the tendons. Alternative therapies such as acupuncture and ergonomic adjustments through occupational therapy may also benefit some patients [12]. Additionally, emerging treatments like regenerative medicine techniques, including platelet-rich plasma injections, are being explored for their potential to promote natural healing of the affected tissues. Each treatment is selected based on individual patient needs, aiming to reduce symptoms, preserve hand function, and prevent recurrence [13]. The pain and functional limitations associated with this condition can significantly interfere with a mother's ability to care for her newborn, potentially leading to increased stress and decreased quality of life. Discusses the relationship between musculoskeletal disorders like tenosynovitis and the challenges of breastfeeding, which can further exacerbate the physical and emotional strain experienced by new mothers. Addressing the musculoskeletal health of postpartum women is therefore not only critical for their physical well-being but also for their overall maternal experience and mental health [14]. The high prevalence of tenosynovitis in our study population also highlights the need for preventative strategies aimed at reducing the incidence and severity of this condition among new mothers. Emphasise the importance of early intervention, including ergonomic education and physical therapy, as effective methods for preventing the onset of tenosynovitis in postpartum women. Our findings reinforce the value of these preventative measures, particularly the importance of educating new mothers on proper hand positioning, the use of supportive devices, and the avoidance of repetitive strain during infant care. Implementing these strategies in postpartum care programs could potentially reduce the burden of tenosynovitis in this vulnerable population [15].

Limitations

The reliance on self-reported data through questionnaires introduces the potential for recall bias, where participants may not accurately remember or report their symptoms and health histories. Additionally, there is a possibility of response bias, as individuals who were experiencing symptoms or had an interest in the condition may have been more likely to respond to the questionnaire, potentially skewing the results.

Conclusion

This study highlights the significant prevalence of de Quervain's tenosynovitis among postpartum women, particularly within the first few months after childbirth. The findings emphasise the role of underlying health conditions, such as thyroid

disorders, and repetitive wrist movements as key risk factors for developing this condition. The variation in treatment outcomes underscores the need for personalised treatment approaches, with steroid injections and surgery offering the most effective relief for those severely affected. The study also underscores the critical need for preventative strategies, including ergonomic education and early intervention, to reduce the incidence and severity of tenosynovitis in this vulnerable population. Given the potential impact of de Quervain's tenosynovitis on a mother's ability to care for her newborn, addressing this condition is essential for improving the overall health and well-being of postpartum women. Future research should focus on longitudinal studies to further explore the long-term outcomes of different treatment modalities and the effectiveness of preventive measures in this population.

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