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Case Report

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Dorsal Wrist Impingement Syndrome Pain After Ganglion Cyst Removal

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Abstract

A ganglion cyst is a benign fluid-filled sac that typically appears on the dorsal aspect of the wrist, arising idiopathically near the joint capsule or tendon sheath. Diagnosis is primarily clinical, with MRI and ultrasound serving as confirmation tools. Treatment options range from immobilization, aspiration, hydrossection, steroid or hyaluronidase injection, to surgical intervention. Although relatively uncommon, Dorsal Ganglion Cysts (DGC) can lead to Dorsal Wrist Impingement (DWI) syndrome. This syndrome results from the thickening of the wrist capsule due to overuse, injury, or repetitive activities. This thickening can lead to the compression of the extensor carpi radialis brevis (ECRB) tendon during wrist extension and produce tenderness around the lunate. In some refractory cases, MRI findings may show recurrent ganglion cysts, while in others, they may appear "normal." Consequently, the diagnosis remains clinical, and imaging is primarily employed to rule out secondary causes. Management strategies encompass rest, immobilization, occupational therapy, non-steroidal anti-inflammatory drugs (NSAIDs), cortisone injections, and, in certain instances, surgical intervention. Despite the clinical significance of these conditions, limited studies have explored their interrelationship. In this context, we present a rare case involving a 23-year-old female with recurrent DGC accompanied by DWI syndrome. Initially, the patient reported idiopathic left dorsal wrist pain localized around the tendon sheath. Her initial X-ray did not reveal any abnormalities, but MRI identified two ganglion cysts. A series of treatments were initiated, including left tendon sheath hydrossection, corticosteroid injections into the left wrist, and the excision of ganglion cysts from the left wrist. Furthermore, occupational therapy, oral Meloxicam, and Voltaren gel treatments were integrated into the management plan. Subsequent imaging confirmed the resolution of the cysts and an overall enhancement in the range of motion and wrist strength. However, the patient experienced only minimal pain relief, and pain was still elicited during end-range wrist extension and upon dorsal wrist palpation. An electromyography (EMG) test ordered to rule out neuropathic causes did not yield any conclusive results. Nonetheless, a repeat X-ray revealed mild soft tissue swelling on the dorsal side of the wrist, and a follow-up MRI detected ganglion cysts on the dorsal aspect of the lunate and the ECRB tendons. These findings indicated a re-accumulation of dorsal ganglion cysts with a concurrent dorsal impingement syndrome component. Consequently, the patient was referred to an orthopedic surgeon for evaluation and potential revision surgery. This unique case underscores the possibility of developing DWI Syndrome after the removal of a DGC. The diagnosis of this syndrome can be elusive, particularly when X-rays, MRIs, and EMGs yield negative results. Trauma, such as repeated hand surgery or recurrent ganglion cysts, may exacerbate wrist pain despite improvements in range of motion and strength. Special consideration should be given to patients who undergo surgical cyst excisions, as this procedure heightens the risk of recurrence and can irritate the tendon sheath. Collaborative efforts between Physical Medicine and Rehabilitation (PM&R), Occupational Therapy (OT), and surgical teams may play a pivotal role in managing pain associated with these conditions. We propose that future research endeavors should focus on establishing guidelines for the management of this unique condition.

Keywords: Ganglion Cyst, Dorsal Wrist Impingement (DWI) Syndrome, Recurrent Ganglion Cysts, Tendon Sheath, Electromyography (EMG).

1. Case Presentation

A 23-year-old female patient with a history of lateral epicondylitis presented with recurrent left dorsal wrist pain localized at the tendon sheath. The patient had previously undergone surgery to remove a cyst, which had recently reappeared, despite her denial of any recent tripping, falling, or trauma. She experienced the emergence of two cysts following the prior surgery, with no significant relief from her previous treatment. The patient described her pain as a combination of sharp and aching that intensified during wrist bending, particularly in extension. Initial MRI results of her left wrist revealed the presence of a DGC measuring 4 mm, affecting the proximal dorsal aspect of the lunate bone. Due to its size, this cyst was deemed unsuitable for aspiration, leading to the exploration of alternative treatment options. Consequently, the patient underwent a left tendon sheath hydrossection and left wrist corticosteroid injections, both of which failed to alleviate her pain. Subsequently, a surgical excision of the left wrist ganglion cyst was performed, which also proved unsuccessful in addressing her pain symptoms. Despite improvements in range of motion and strength achieved

through OT, the patient reported no significant relief from any of the aforementioned procedures, and her dull pain persisted at a level of 7/10 with associated stiffness. To rule out neuropathic causes contributing to the patient's condition, an EMG was ordered, but no abnormalities were detected. At this stage, her prescribed medications, Lyrica and Voltaren, were replaced with Meloxicam and Voltaren gel, leading to a reduction in her initial pain level from 7/10 to 5/10 in terms of severity. The patient continued her OT, and a subsequent MRI revealed the re-accumulation of ganglion cysts measuring 12 mm and 6 mm in length. Additionally, very mild De Quervian tenosynovitis was observed in the findings. Consequently, the patient was referred to Orthopedic surgery for further evaluation and possible revision surgery to address her persistent symptoms.

2. Discussion

The case presented here highlights a fascinating medical scenario involving a 23-year-old female patient who experienced recurrent DGC alongside DWI syndrome. DWI syndrome is a condition characterized by inflammation or damage to the tendons and ligaments on the dorsal side of the wrist, typically due to overuse, trauma, or repetitive procedures [7]. This impingement often manifests as wrist pain, swelling, and weakness, thereby limiting a patient's ability to perform various tasks. Importantly, DGC and DWI syndrome can be challenging to detect through standard imaging techniques, such as X-rays and MRIs, which may yield inconclusive results. Consequently, clinical diagnosis assumes critical importance, and it necessitates consideration of a broader spectrum of factors, including the patient's medical history, physical examination, functional limitations, potential trauma, and previous surgical interventions.

The location of dorsal root ganglion cysts places them in close proximity to several tendons and ligaments that govern wrist movement, including the ECRB tendon [6]. In this case, the patient experienced the re-accumulation of a wrist ganglion cyst as well as the emergence of a new DGC. These cysts are benign soft tissue growths originating from the joint capsule or tendon sheath in the wrist, with a typical age distribution that peaks in the twenties to forties [8]. The management of dorsal wrist cysts is contingent upon the size and location of the cyst, along with the severity of accompanying symptoms. While some relief may be found through OT and NSAIDs, alternative non-invasive methods, such as corticosteroid injections and activity modifications, can also mitigate inflammation and swelling [3]. More invasive options include electroacupuncture, open surgery, arthroscopic ganglion cyst resection, and the establishment of a midcarpal portal via the "Kiss-in" method [1, 2, 5, 7, 8]. A comprehensive approach encompassing immobilization, aspiration, hydrossection, corticosteroid injections, occupational therapy, and even surgical excision remains the preferred strategy for managing ganglion cysts.

In our patient's case, her recurrence of DGC and the onset of DWI syndrome could be attributed to her previous treatments and surgical history. Surgical cyst removal is a conventional approach, but it is crucial to acknowledge that it may heighten the risk of recurrence and potentially exacerbate impingement syndrome. During cyst excision, there is a disruption of the tissues surrounding the cyst, which may irritate the joint capsule, neighboring ligaments, and the tendon sheath, subsequently causing wrist impingement [7]. Post-surgery, the body initiates a healing process characterized by scar tissue formation in and around the surgical site. This fibrosis can develop near the excised cyst, affecting tendon gliding mechanics [3]. The ECRB tendon, a common site for cyst growth, plays a pivotal role in wrist extension. Consequently, surgical intervention may introduce resistance or friction due to fibrosis, leading to irritation that manifests as pain, discomfort, and reduced range of motion [6].

Patients who undergo surgical excision face a higher risk of recurrence compared to those who opt for non-surgical approaches [9]. The inability to completely remove a DGC during surgery may leave behind remnants, providing an opportunity for the cyst to re-emerge. In many ganglion cases, it is challenging to identify the stalk and capsular attachment of a large cyst adhering to soft tissue and the joint capsule making complete excision difficult [4]. Although traditional ganglion excision through an open approach is considered the gold standard, high postoperative recurrence rates are still reported, as seen in our patient. [10] It's essential to underscore that even with impeccable surgical technique, the risk of ganglion recurrence cannot be entirely eliminated [6].

In conclusion, it is imperative to accumulate more data and experiences to guide healthcare professionals in making informed decisions and providing optimal care for patients. The findings discussed here underscore the need for cautious consideration and informed decision-making when contemplating surgical intervention in such cases. Given the rarity of this specific complication, this case serves as a reminder of the complexities in diagnosing and managing conditions like DGC and DWI syndrome. The interdisciplinary collaboration of healthcare teams, coupled with further research and guideline development, is essential for enhancing the diagnosis, treatment, and overall care of patients facing these rare wrist conditions.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest

The authors declare no conflict of interest

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