Original Research

ACUTE ULNAR NERVE PALSY SECONDARY TO GANGLION CYST AT GUYON'S CANAL: A CASE REPORT

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ABSTRACT
Ulnar nerve compression at the wrist is an uncommon neuropathy, often caused by space occupying lesions within Guyon's canal. Ganglion cyst is a recognized but relatively rare aetiology, particularly in elderly patients presenting with acute symptoms. A 70-year-old woman presented with acute onset ulnar nerve palsy of 10 days' duration, two months after undergoing aortic valve replacement. She was on anticoagulant therapy with T.Rivaroxaban 10mg twice daily. Clinical examination revealed motor weakness in the ulnar nerve distribution with relative sensory sparing. Musculoskeletal Ultrasound examination demonstrated a cystic lesion consistent with a ganglion within Guyon's canal, compressing the ulnar nerve. Nerve conduction studies supported localization to the wrist. Surgical excision resulted in complete recovery within two weeks. Structural causes such as ganglion cysts should be considered in acute ulnar neuropathy. Early diagnosis and surgical management can yield excellent outcome particularly in patients presenting with neurological deficit.

INTRODUCTION
Ulnar nerve entrapment at the wrist, commonly referred to as Guyon's canal syndrome, is relatively uncommon compared to entrapment at the elbow [1]. Guyon's canal is a fibro-osseous tunnel bounded by the pisiform and hamate, transmitting the ulnar nerve and artery into the hand [2,3]. Compression within this canal may result from trauma, repetitive strain, vascular abnormalities, or space-occupying lesions [3,4].

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Ganglion cysts are among the most common soft tissue masses of the wrist but infrequently result in neuropathy. Their clinical relevance increases when located within confined anatomical spaces such as Guyon's canal.

Case Presentation
A 70-year-old woman presented with acute onset weakness of the right hand, predominantly affecting the ulnar distribution, of 10 days' duration. This episode occurred two months after aortic valve replacement and she was on anticoagulant therapy. Given the acute presentation in a postoperative setting, a central neurological cause such as stroke was initially suspected. However, MRI of the brain was normal, prompting further evaluation (Figure 1)

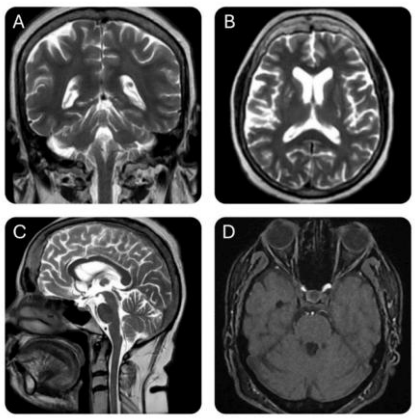

Figure 1: MRI of the Brain. A, B, C, D - MRI with Magnetic Resonance Angiography of the Brain

On clinical examination, there was weakness of intrinsic hand muscles, reduced grip strength and no sensory loss over the ulnar distribution (Figure 2). No prior history of wrist trauma or chronic neuropathy was noted as per the available history and clinical findings. Since aortic valve replacement done recently, acute onset weakness of hand without a sensory involvement would bring a picture of stroke in mind. MRI brain being normal, re-examination revealed weak right palmar and dorsal interossei, right 3rd and 4th lumbricals, right abductor digiti minimi. Sensory examination was normal. The key point in localisation of ulnar neuropathy at wrist (Guyon's canal) was a normal right Flexor carpi ulnaris and sensory sparing. Our clinical diagnosis of ulnar neuropathy at wrist was confirmed by NCS because of normal sensory potential [5].

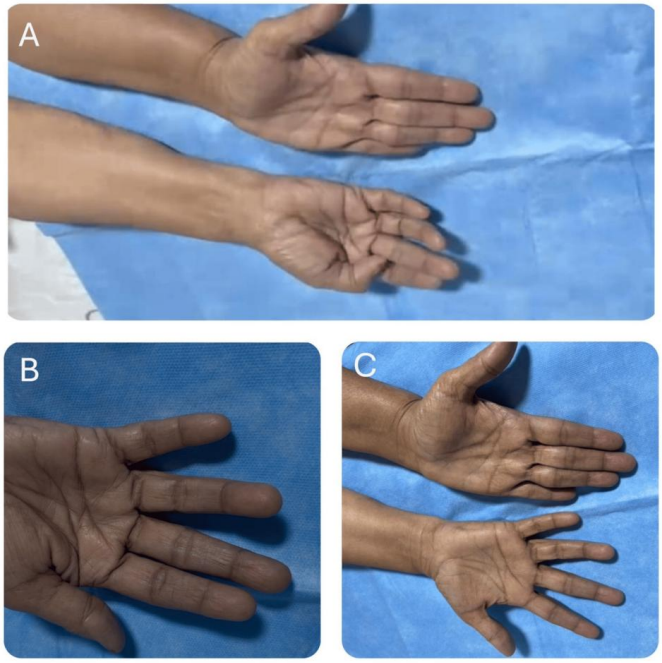

Figure 2: Clinical Presentation of the Patient. A, B, C. The Preop Photographs Demonstrate Ulnar Clawing, Characterized By Hyperextension at the Metacarpophalangeal Joints, Flexion at the Interphalangeal Joints Of The Fourth And Fifth Digits, Suggestive Of Intrinsic Muscle Paralysis Due To Ulnar Nerve Palsy.

High-resolution ultrasound of the wrist revealed a well-defined hypoechoic cystic lesion at the volar aspect of the wrist within Guyon's canal. The lesion was seen compressing the ulnar nerve against the pisiform bone, with the nerve appearing flattened at the site of compression (6,7) (Figure 3). The ulnar artery was visualized adjacent to the lesion (Figure 4) Based on clinical and imaging findings, a diagnosis of ulnar nerve compression secondary to ganglion cyst was made.

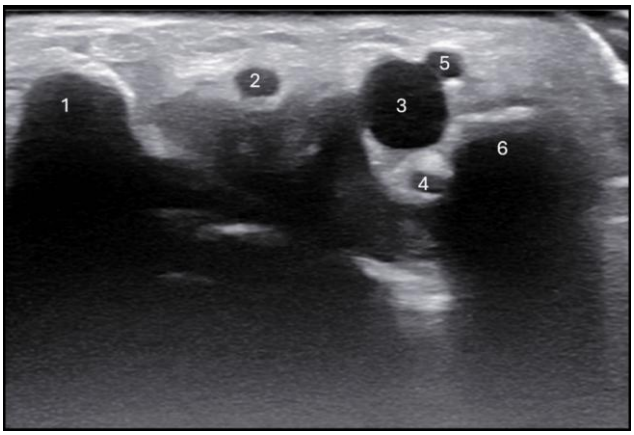

Figure 3: High-Resolution Ultrasound of the Wrist at the Level of Proximal Carpal Tunnel Depicting the Ganglion Compressing the Ulnar Nerve against the Pisiform Bone. Original Scan Picture of the Patient. 1. Scaphoid Tubercle 2.Median Nerve 3.Ganglion Cyst 8x7x7 Mm 4. Ulnar Nerve 5.Ulnar Artery 6.Pisiform

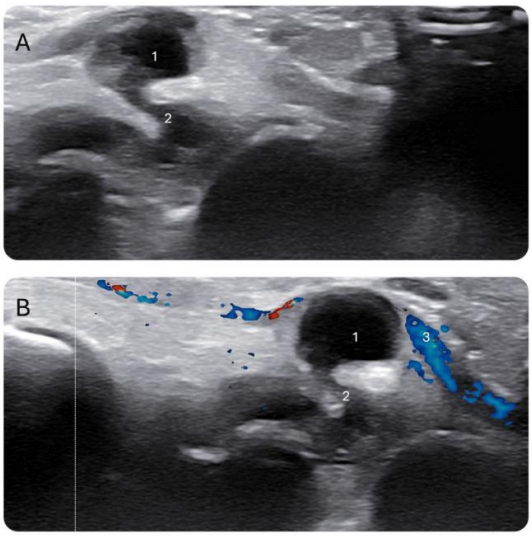

Figure 4: A, B. Patho Anatomical Origin of the Ganglion Cyst with the Pedicle Connecting To the Wrist Joint. Also, Note The Ulnar Artery Above The Cyst. Original Scan Picture of the Patient.1.Ganglion Cyst 2.Pedicle3.Ulnar Artery

The patient underwent surgical exploration and excision of the ganglion with decompression of the ulnar nerve by the plastic surgery team (Figure 5). The postoperative course was uneventful and the patient demonstrated complete recovery of motor and sensory function on follow-up.

Figure 5: Intraoperative picture of ganglion excision

DISCUSSION

Ulnar nerve compression at Guyon's canal is an uncommon but clinically significant cause of hand dysfunction [1,3]. Reported aetiologies include trauma, repetitive occupational stress, vascular abnormalities, and space-occupying lesions such as ganglion cysts [3,4]. Among these, ganglion cysts are well-recognized causes of compressive neuropathy at the wrist, although their occurrence within Guyon's canal remains relatively rare compared to involvement in the carpal tunnel or dorsal wrist [6].

The findings of the present case align with prior literature demonstrating that ganglion cysts can produce focal compressive neuropathy when located in confined anatomical spaces. Previous studies, including those by Nakamichi and Tachibana [7], have highlighted the role of ganglia in nerve

compression syndromes of the wrist, particularly involving the median nerve. Similarly, Earp BE et al. [1] and Bianchi and Martinoli [8] have emphasized that space-occupying lesions within Guyon's canal can lead to ulnar neuropathy, although such cases are infrequently reported.

However, the acute onset of symptoms observed in this case expands upon existing literature, where most ganglion-related neuropathies are described as having an insidious progression. While earlier reports acknowledge that sudden neurological deterioration may occur due to rapid cyst expansion, possibly from intracystic haemorrhage or fluid accumulation, such presentations remain sparsely documented. The current case adds to this limited body of evidence by demonstrating a rapid-onset ulnar nerve palsy, with anticoagulant therapy representing a plausible contributing factor. This observation is consistent with isolated reports suggesting that haemorrhagic transformation within cysts can precipitate acute compression but provides further clinical correlation in an elderly patient population.

Ultrasound evaluation in this case is in strong agreement with existing evidence supporting its diagnostic utility in peripheral nerve entrapment. Prior studies [5-7] have shown that ultrasound reliably identifies nerve swelling, fascicular alterations, and compressive masses, while also enabling dynamic and vascular assessment. The present findings reinforce these advantages, demonstrating clear visualization of the ganglion cyst, its relationship to the ulnar nerve, and associated morphological changes. Thus, this case further supports the growing consensus that ultrasound is a first-line imaging modality for superficial nerve pathologies.

With regard to management, the current case aligns with established recommendations that advocate surgical excision for symptomatic ganglion cysts causing neurological deficits [9,10]. Literature consistently reports favourable outcomes following decompression, particularly when performed early. The good clinical recovery observed in this case corroborates these findings and underscores the importance of timely diagnosis and intervention.

In summary, this case both supports and expands existing literature: it confirms known mechanisms of ganglion-induced ulnar nerve compression while contributing additional evidence for acute presentations, particularly in the context of possible haemorrhagic expansion. It also reinforces the critical role of ultrasound in diagnosis and the effectiveness of surgical management in achieving optimal outcomes.

CONCLUSIONS

Acute ulnar nerve palsy at the wrist should prompt evaluation for structural causes, including ganglion cysts within Guyon's canal. Careful clinical localization supported by electrodiagnostic studies and ultrasound is essential. Musculoskeletal ultrasonographic examination should become a standard evaluation method in assessment of lesions in Guyon's canal. Smaller cysts without any neurological deficit may be addressed with needle aspiration and steroid injection under ultrasound guidance. Timely surgical decompression can result in complete functional recovery in patients with neurological deficit.

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