# Ganglion Cyst in Guyon's Canal due to Ulnar Impaction Syndrome: A Case Report

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## Introduction:

- Guyon's Canal: approximately 4 cm long anatomical fibro-osseous structure located on volar wrist, beginning at the proximal end of the pisiform projecting to the hook of hamate.
- Posterior wall of the canal includes flexor retinaculum, anterior wall is the volar carpal ligament proximally and the palmaris brevis muscle distally, medial wall of the canal is composed of the pisiform proximally and the pisohamate hiatus and the hook of hamate distally.
- The canal houses the ulnar nerve, artery, and associated veins.
- In regard to Guyon's canal, ganglion cysts represent the most common cause of ulnar tunnel syndrome. Ganglion cysts constitute the majority of soft tissue wrist injuries with roughly 20% of them occurring on the volar side (1).
- Ulnar Impaction Syndrome (UIS) is a common degenerative cause of ulnar sided wrist pain. The most common predisposing factor leading to UIS is positive ulnar variance (2,3,4,5). This can be secondary to distal radius fractures or other circumstances that affect the overall growth of the radius.

## Case:

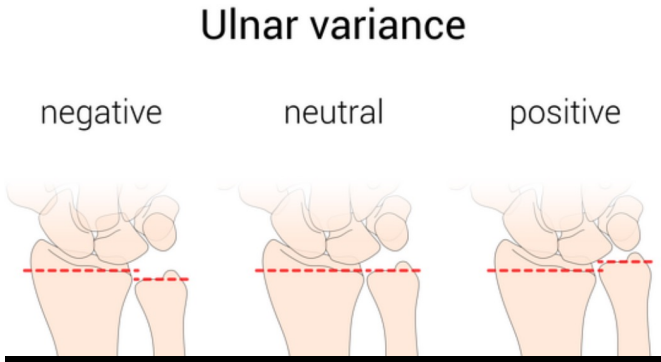
- A 31-year old patient presenting with 3-month duration of weakness in their right hand intrinsics with numbness and tingling in the ulnar nerve distribution, remote history of ipsilateral distal radius fracture in childhood. Positive wrist and elbow Tinel's sign, Durkan direct compression test, Phalen's test, and Wartenberg's sign.
- An ulnar impaction syndrome with 6mm of ulnar positivity was observed on imaging. A tender palpable mass was localized proximal to the wrist crease near Guyon's canal, MRI revealed a 1.6 x 0.8 x 1.2 cm mass arising from the volar aspect of the lunotriquetral joint impinging on the ulnar nerve just proximal to Guyon's canal.
- EMG findings were significant for a conduction block at the level of the wrist with prolonged distal ulnar motor and sensory latencies, temporal dispersion, and diminished amplitude with spontaneous activity of the right first dorsal interosseus muscle.

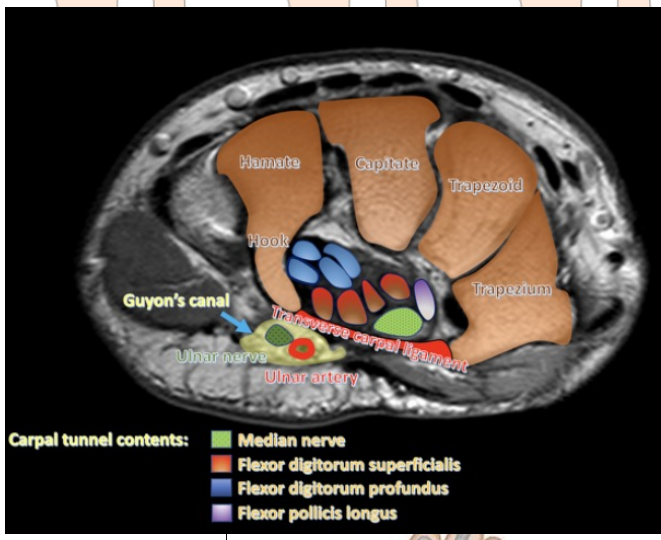
## Outcome:

- The patient opted for surgical intervention in the form of Guyon's canal decompression, cyst excision, and an ulnar shortening osteotomy.
- Postoperatively, the patient was found to have improved interval sensation in the distribution of the ulnar nerve, and decreased weakness of the interosseous muscles.

## Discussion:

- Guyon's canal syndrome can result from repetitive trauma, tumors such as ganglions and lipomas, pisiform instability, ulnar artery aneurysm, and anatomic variation of Guyon's canal (6,7).
- There exists a relationship between negative ulnar variance and scaphoid bone fractures (8), a positive association between ulnar variance and TFCC angle and negative association with TFCC thickness (9), and that positive ulnar variance was commonly seen in patients with symptomatic TFCC tears. Another discovered a nearly six-fold increase in the risk of having a ganglion cyst in patients observed to have negative ulnar variance on MRI as compared to those with neutral variance, and a nearly twelve-fold increase in risk in those with positive ulnar variance (10). This suggests that positive or negative ulnar variance can result in stress and instability of the bone and soft tissues of the wrist.
- If it were to be determined that a causative relationship exists between ulnar variance and ganglion cysts, future clinical practice guidelines regarding the treatment of Guyon's canal could be amended to discourage the sole utilization of cyst removal in the setting of a compressive neuropathy and concurrent positive/negative ulnar variance; instead, a combination of variance correction and cyst removal could be favored in order to minimize the potential contribution of positive/negative ulnar variance to the risk of cyst recurrence.





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