

Hypermobility of ulnar nerve does not affect throwing performance

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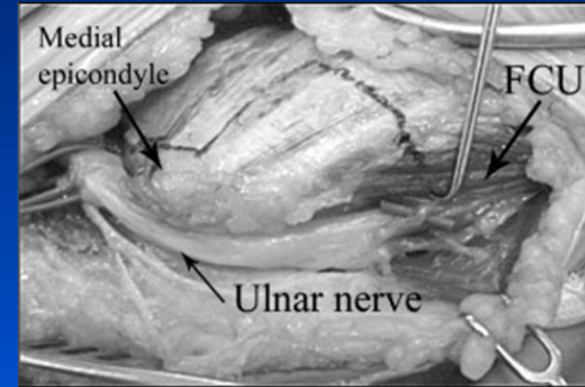
COI Disclosure Information.

Masahito Yoshida, MD

I have no financial conflicts to disclose with this presentation

Background

- **Ulnar nerve neuropathy in throwing athletes**
 - ✓ Ulnar nerve neuropathy is associated with ulnar nerve instability result in medial elbow pain, and decrease of throwing performance.
- **Hypermobile ulnar nerve**
 - ✓ Ulnar nerve hypermobility has been reported to be present in 2% to 47% of asymptomatic individuals.



Charles, et al. J. Hand Surg. 2009

The rate of ulnar nerve hypermobility in throwing athletes has not been assessed.

Purpose

- ✓ To classify the sonographic assessment for the mobility of the ulnar nerve compared to physical evaluation
- ✓ To determine whether ulnar nerve hypermobility is associated with clinical symptoms, and throwing performance in baseball players.

Materials and Methods

➤ **Participants**

- ✓ 69 college baseball players for medical check-up
- ✓ Mean age: 20.4 years (range, 19-21 years)

➤ **Questionnaire**

- ✓ Medial elbow pain
- ✓ Numbness, irritation, and snapping of fingers
- ✓ Throwing performance

➤ **Physical examinations**

- ✓ Tinel sign against the ulnar nerve
- ✓ Elbow flexion compression test



➤ Sonographic visualization of ulnar nerve

✓ Ultrasound (US)

- 3-11 MHz linear matrix array transducer (SNiBLE yb™, Konica Minolta, Tokyo, Japan)

✓ Position of US transducer (Fig 1)

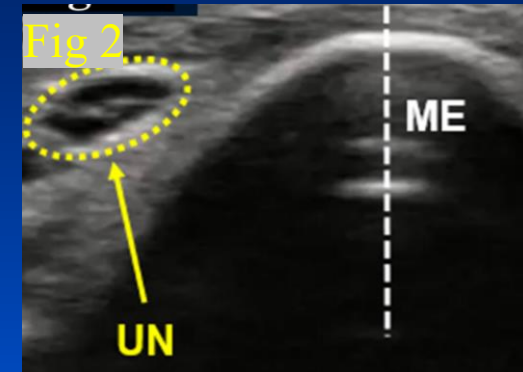
- Superior to the medial condyle and vertical to the humeral axis

✓ Visualization of ulnar nerve (Fig 2)

- Visualize the ulnar nerve in the short axis view

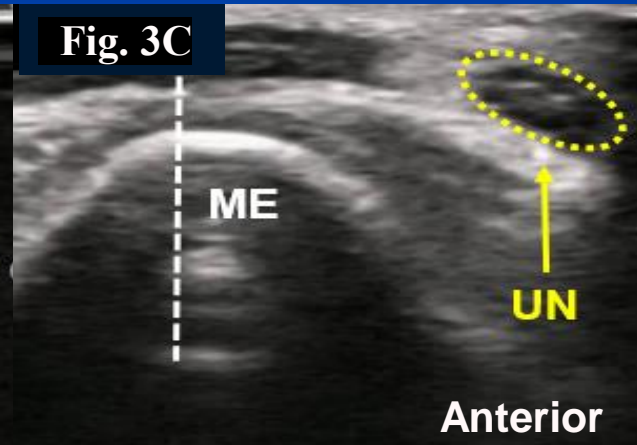
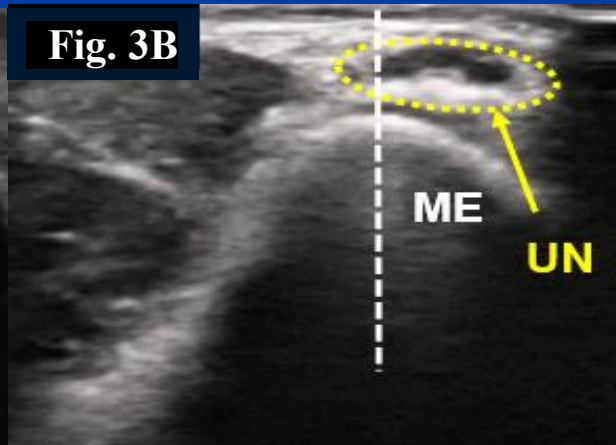
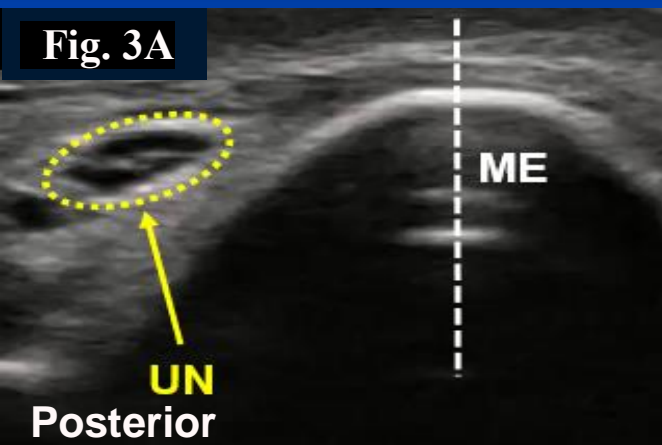
✓ Sonographic assessment of Ulnar nerve

- During extension to flexion, the mobility of the ulnar nerve was assessed.



➤ Classification of the mobility in the ulnar nerve with US

- ✓ Mobility of the ulnar nerve was classified based on the medial condyle
 - Stable (Fig 3A)
 - Hypermobile (Fig 3B, and 3C)
- ✓ Subclassification of hyper mobility in the ulnar nerve
 - Subluxation (Fig 3B)
 - Dislocation (Fig 3C)



➤ Statistics

✓ Pared t-test

- To compare the mobility of the ulnar nerve between throwing and non-throwing sides

✓ Fisher's exact test

- To assess the relationship between physical exams and the mobility of the ulnar nerve.
- ✓ Values of $p < 0.05$ were considered statistically significant.

Results1

- ✓ Ulnar nerve hypermobility was identified in 41 (59%) of the 69 elbows in throwing side.
- ✓ Hypermobility was 39 (51%) in non-throwing side without significant difference, compared to non-throwing side.

	Stabe	Hypermobility (Subluxation + Dislocation)
Throwing side	28 (41%)	41 (59%)
Non-throwing side	30 (43%)	39 (57%)

n. s

Results 2

- ✓ Elbows with nerve hypermobility did not experience a higher prevalence of subjective symptoms (snapping, pain, and tingling) than did elbows with stable nerves.
- ✓ Demographic data and anatomic measurements were similar between the subjects with stable nerves and those with hypermobile nerves.

All participants did not show decrease of throwing performance.

Discussions

➤ **Hypermobility of ulnar nerve in throwing side**

- ✓ **Hypermobility of ulnar nerve in healthy volunteer**

11.4 – 46 %

Kim. Arch Phys Med Rehabil 2006
Ozturk. J Clin Ultrasound 2008
Van Den Berg. Muscle Nerve 2013
Okamoto. J Hand Surg 2000

- ✓ **Throwing side in youth baseball player (10-12 y.o)**

- **Subluxation 11.4%**
- **Dislocation 20.2%**

Kawabata. PM R 2021

Our study

College baseball player (19-21y.o)

- **Subluxation 34%**
- **Dislocation 25%**

➤ Relationship between symptoms and hypermobility of ulnar nerve

- ✓ Tenderness of Struthers's arcade was associated with ulnar nerve displacement.

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Our study

- ✓ Ulnar nerve hypermobility does not appear to be associated with an increased symptomatology attributable to the ulnar nerve and throwing performance.

Conclusion

- ✓ Repetitive throwing motion may not affect the mobility of the ulnar nerve.
- ✓ In baseball players, ulnar nerve hypermobility does not appear to be associated with an increased symptomatology attributable to the ulnar nerve and throwing.