

# Unusual, rare and controversial mononeuropathies

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# Disclosure

- Nothing to disclose

# Learning objectives

- To discuss some mononeuropathies beyond carpal tunnel syndrome and ulnar tunnel syndrome

# Assessment of Mononeuropathies...

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- **Cause of nerve lesion**
- **Severity of nerve lesion**
- **Time elapsed since nerve lesion**

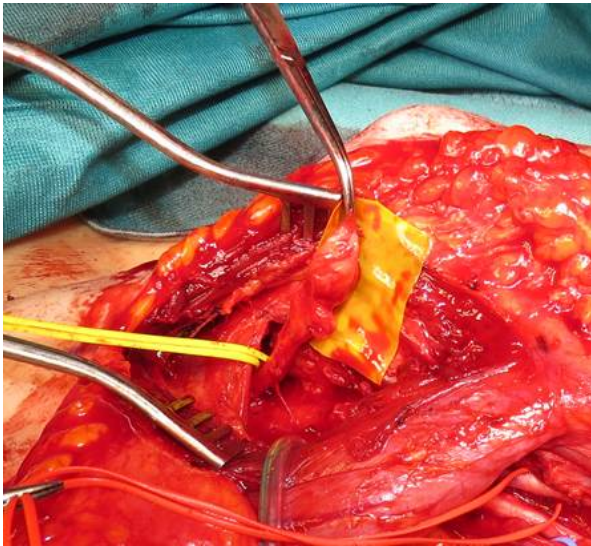
# Median nerve lesion

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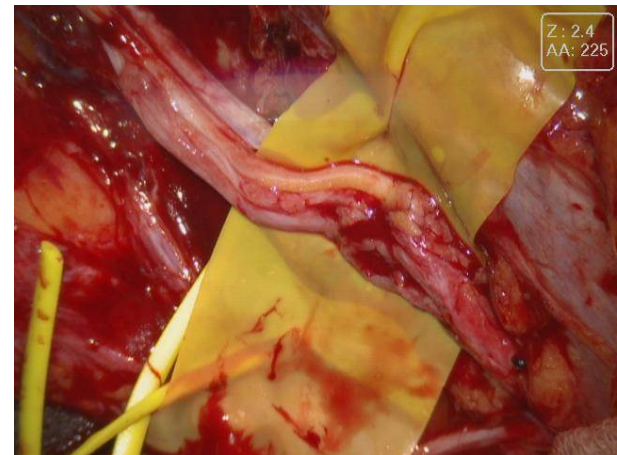
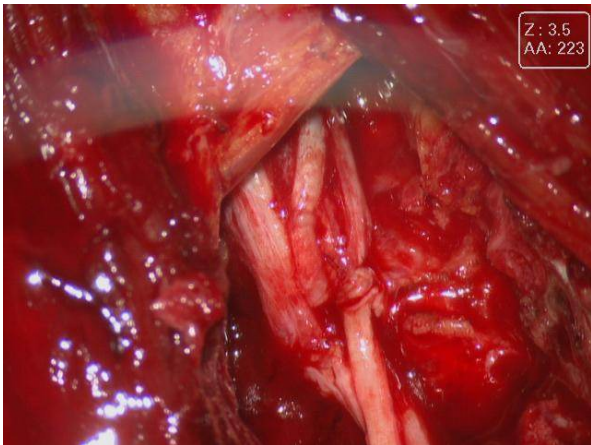
- Luxation fracture of left humerus caused by car accident with partial plexus paresis in 8/14
- Paresis of deltoid and biceps recovered, but lesion of median nerve persisted
- Clinical findings: complete paresis and atrophy of flexor pollicis longus, flexor dig.2, abductor pollicis brevis and opponens pollicis; hypesthesia on thumb and 3rd finger, anesthesia on 2nd finger; slight hypesthesia on medial forearm.



# Median nerve lesion



- Nerve grafting was planned after some months
- High resolution neurography of the nerve showed dissection of median nerve with neuroma and dehiscence of 5 cm!
- Operatively this was confirmed
- Also dehiscence of cutaneous antebrachial nerve was found



## **Median nerve lesion – questions:**

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- **Hypesthesia** on thumb and 3rd finger-  
anesthesia only on 2nd finger ???
- Communication with musculocutaneous nerve?
- Communication with ulnar nerve?
- Communication with radial nerve?

- Clin Anat. 2002 Jan;15(1):11-7. Patterns of connections between the musculocutaneous and median nerves in the axilla and arm. Choi D1
- Clin Anat. 2009 Sep;22(6):671-83. doi: 10.1002/ca.20828. Classifying musculocutaneous nerve variations. Guerri-Guttenberg RA
- Folia Morphol (Warsz). 2004 Aug;63(3):313-8. Anatomical variations of the median nerve distribution and communication in the arm. Beheiry EE1
- Anat Sci Int. 2013 Jun;88(3):163-6. doi: 10.1007/s12565-012-0167-5. Epub 2013 Jan 17. A rare anatomical variation of the Berrettini anastomosis and third common palmar digital branch of the median nerve. Sirasanagandla SR
- Clin Anat. 2010 Mar;23(2):234-41. doi: 10.1002/ca.20906. Communications between the palmar digital branches of the median and ulnar nerves: A study in human fetuses and a review of the literature. Unver Dogan N
- Acta Ortop Bras. 2014;22(1):34-7. doi: 10.1590/S1413-78522014000100006. Anatomical study of sensory anastomoses in the hand. Zolin SD
- Clin Anat. 2007 Oct;20(7):795-8. Superficial palmar communications between the ulnar and median nerves in Turkish cadavers. Tagil SM



# Other Factors – Fascicle Topography

INVITED REVIEW

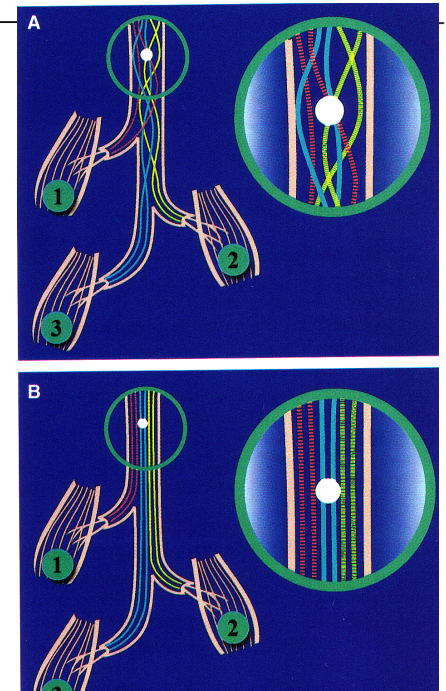
**ABSTRACT:** Within a peripheral nerve, the individual nerve fibers are grouped together in fascicles. Whether there is somatotopic organization within these fascicles has long been of interest, the subject of many investigations, and somewhat controversial. Evidence from diverse sources now points to important somatotopic clustering of nerve fibers within most of the length of the nerve. Information is lacking regarding proximal segments, particularly the plexus and spinal nerve root levels. As a result of this somatotopic arrangement, partial focal nerve lesions can produce restricted clinical deficits that defy the classic rules of localization. Examples of such restricted nerve lesions are provided in this review. Recognition of fascicle somatotopy is also important in the surgical approach to disorders of peripheral nerves.

*Muscle Nerve* 28: 525–541, 2003

## PERIPHERAL NERVE FASCICLES: ANATOMY AND CLINICAL RELEVANCE

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# Anterior interosseus syndrome

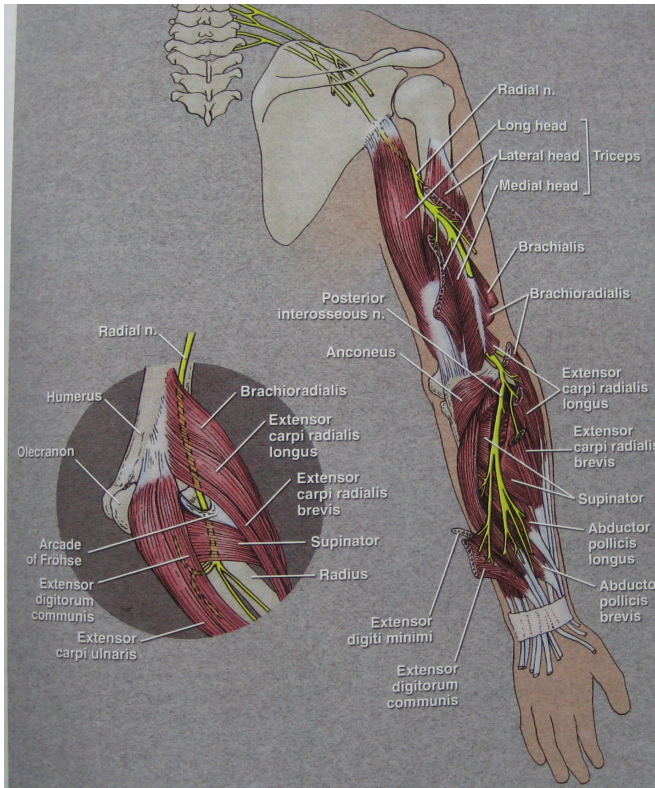
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- Weakness of flexion of distal phalanx of thumb and index finger – pathological pinch grip, **no sensory loss**
- Frequently misdiagnosed as tendon rupture
- First described by Parsonage and Turner 1948, further defined by Kiloh and Nevin in 1952
- Possibly inflammatory etiology ( Kiloh –Nevin Syndrome) brachial plexus neuritis
- Possibly fascicle torsion
- Possibly compression neuropathy after trauma
- Surgery rarely required before 12 to 18 months
- Recovery occurs often, delay 14 months



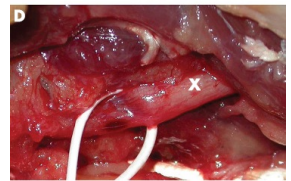
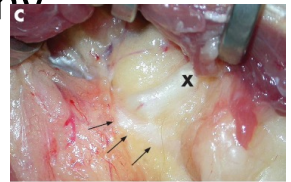


# Radial Nerve – Supinator Muscle – Arcade of Frohse



## Posterior Interosseous Neuropathy

- No sensory loss
- Finger drop
- DD: MMN, MND, C7 radiculopathy
- DD: tendon avulsion
- Trauma (Monteggia fraktur)
- Tumor (Lipoma)
- Entrapment
  - Arcade of Frohse
  - Overload (violinist, tennis, sculptor)





# Radial Nerve - Supinator

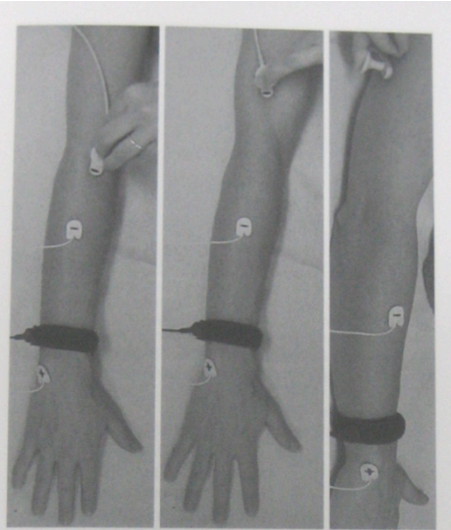
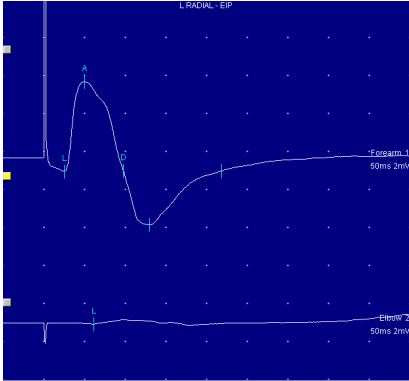
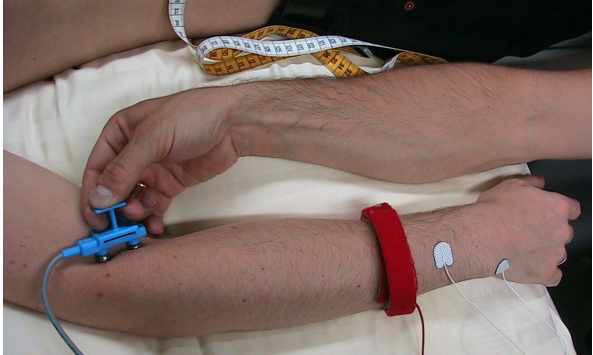
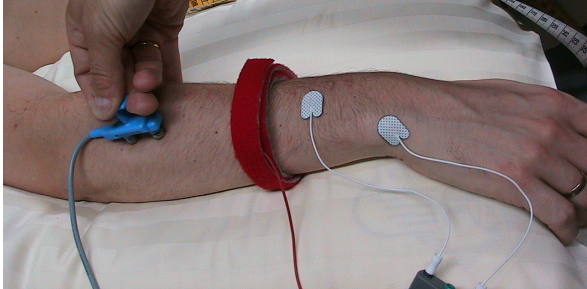
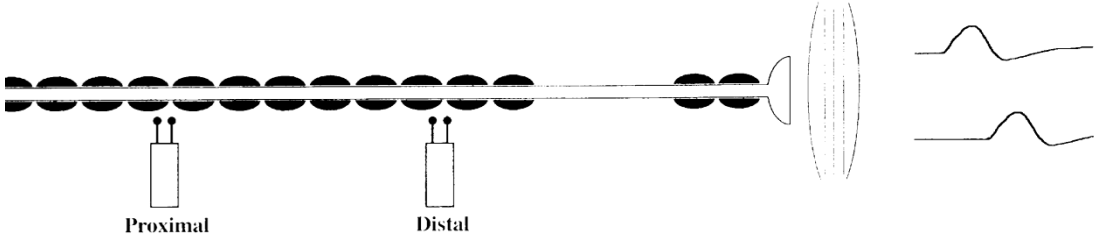


Abb. 1.19 Motorische Neurographie des N. radialis. Links: Stimulation distal am Ellbogen (S1), Mitte: am distalen Oberarm (S2), rechts: am proximalen Oberarm (S3).



**Better: EMG!**



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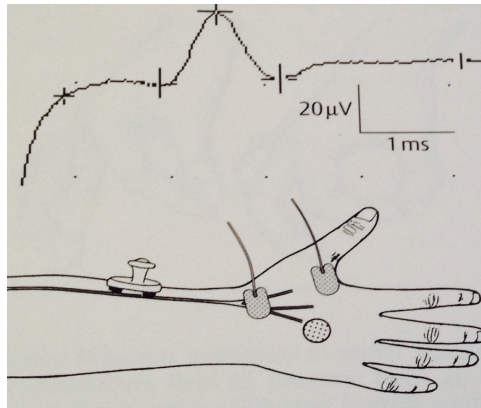
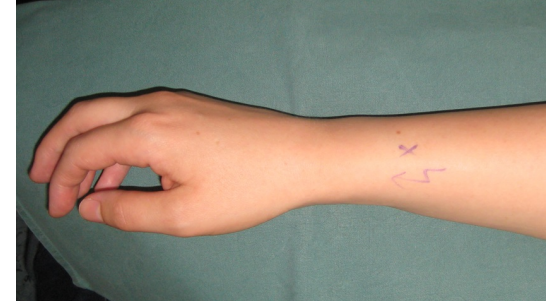
# Wartenberg Syndrome- Cheiralgia parästhetika

Lesion of superficial branch of radial nerve

Tendovaginitis de Quervain  
Cuffs, casts, watch, shunts

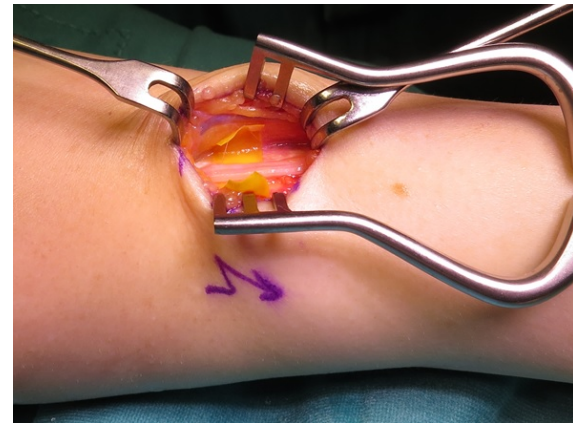
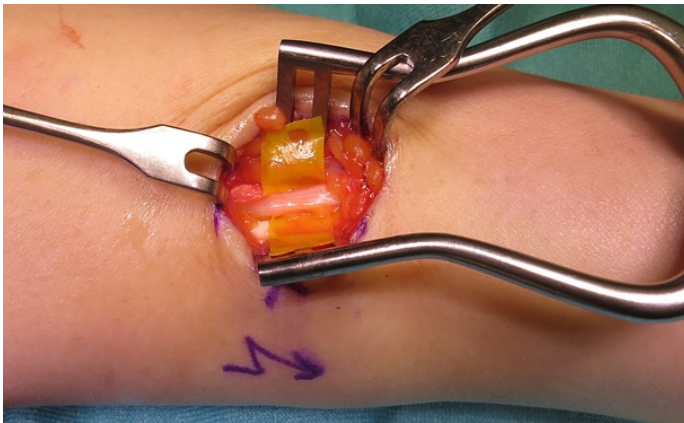
„Finkelstein test“

Sensory NCV in correlation to  
other hand



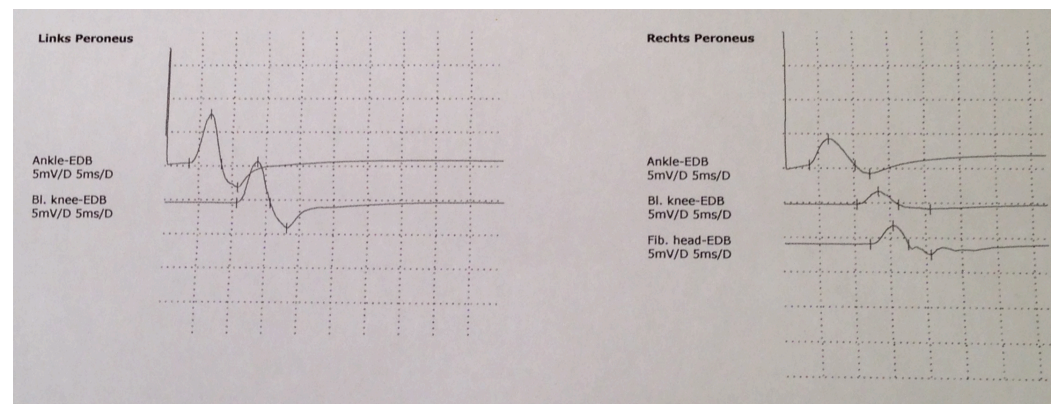
# Wartenberg Syndrome- Cheiralgia parästhetika

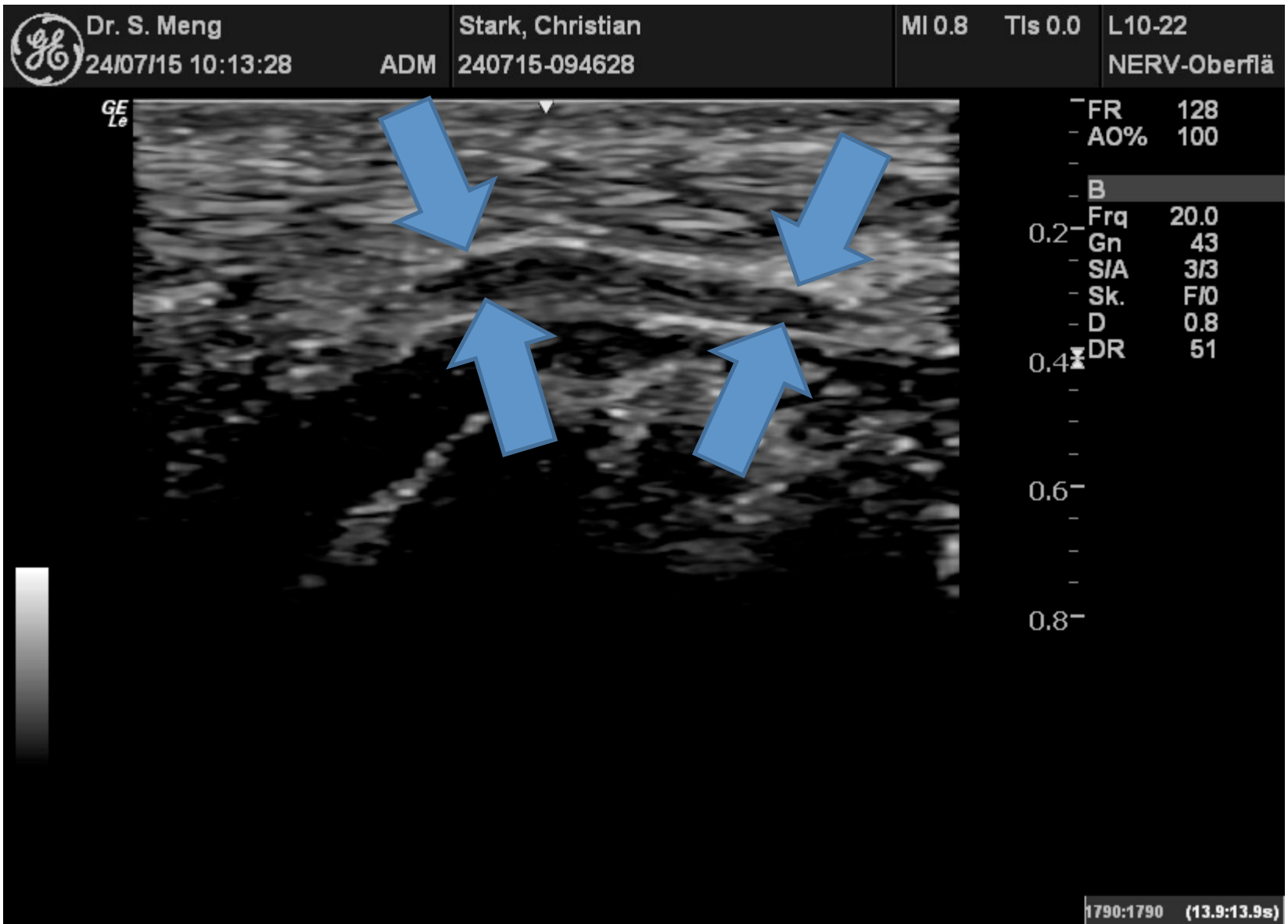
- Surgical decompression



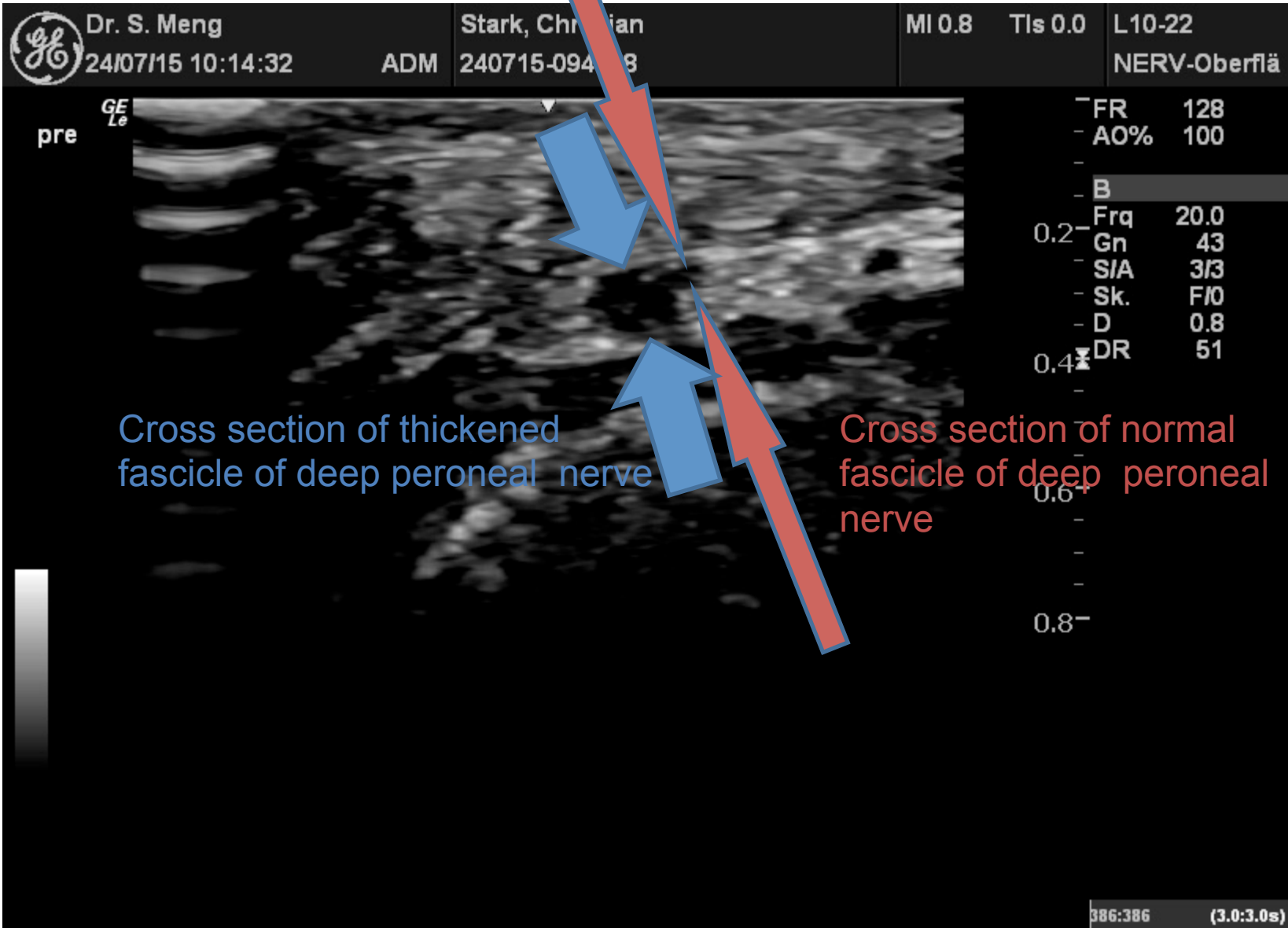


- 30 y old male with pain in the dorsum of foot for years
- Weakness and atrophy of right ext. dig. brev.

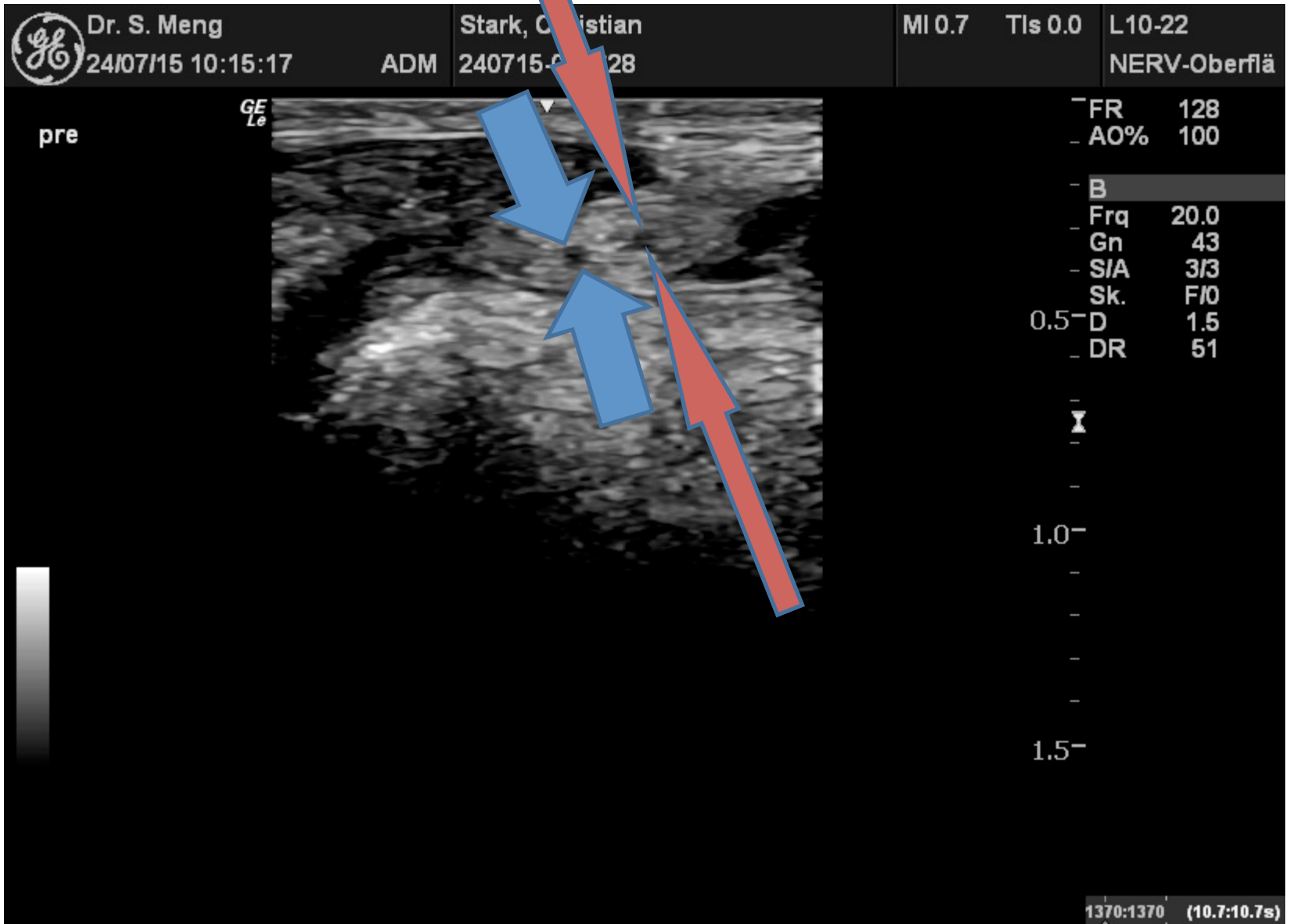




Longitudinal section of thickened fascicle of deep peroneal nerve



Compression site



2cm distal of compression site

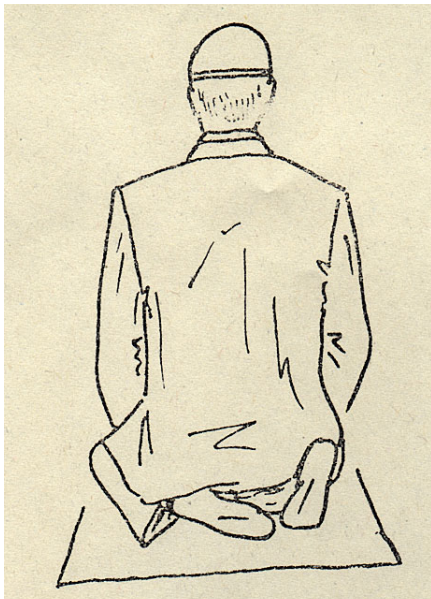
# Anterior Tarsal Tunnel Syndrome

First described by Marinacci 1968

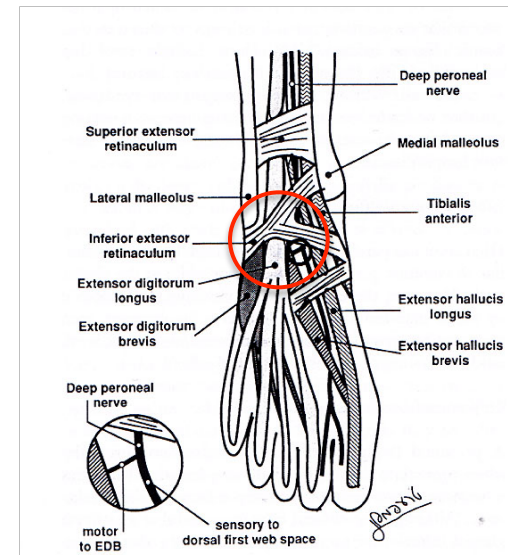
Compression of deep peroneal nerve under the extensor retinaculum

Rare entrapment neuropathy - poorly diagnosed

Might be misleading in ENG for suspected Polyneuropathy or lumbosacral radiculopathy



„Namaz“ ( G.Akyüz 2000)



# Causes

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- Contusion at dorsum of foot
- Talonavicular osteophytes
- Ganglion
- Pes cavus
- Tight shoes
- Namaz ( G.Akyüz 2000)

# Differential Diagnoses

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- Radicular lesion L5
- Compression of peroneal nerve at fibula head
- Compression of superficial peroneal nerve
- Polyneuropathy
- MND