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A Periodical insight into the Neuromuscular Ultrasound field & the Egyptian Neuromuscular Ultrasound Society

ENMUS Bulletin

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Practical tip >>>

When you examine patients with traumatic peripheral nerve injuries:

TAKE CARE before you interpret non-visualization of the nerve in the transverse view as nerve gap because the nerve may be just masked by scar tissue and the probe is not orthogonal to the nerve.

To be sure:

- Incline the probe at different angles while in place: if the nerve is truly cut, you will not see it at any angle
- Rotate the probe in the longitudinal view because the long axis better delineates nerve continuity.

Meticulous scanning is the key to correct diagnosis

So always take your time!

Motivational quote >>>



'Always believe that something wonderful is about to happen'

Topic of the issue

Importance of the anatomic variants in NMUS

By Prof. Eman Tawfik, Professor of PMR, Faculty of Medicine, ASU & the President of the Egyptian Neuromuscular Ultrasound Society

The neuromuscular ultrasound protocol varies according to the provisional diagnosis but there are basic elements to assess. NMUS protocol typically includes assessment of nerve and muscle size, echotexture, vascularity, nerve mobility and dynamic muscle assessment, but looking for anatomic variants should also be an integral part of the NMUS protocols. Recognizing anatomic variants is important as it may impact diagnosis and treatment. Various anatomic variants may be encountered during neuromuscular ultrasound. Examples of some of these variants are:

- 1. Bifid median nerve and persistent median artery (Figure 1 & 2):** reporting these variants to the surgeon before carpal tunnel release surgery is important to ensure releases of the two nerve bundles and to avoid injury of the artery.
- 2. Accessory FDS inside the carpal tunnel (Figure 3):** Can partially or completely intrude on the median

nerve inside the carpal tunnel during ADLs and predispose the patient to CTS.

3. Accessory anconeus at the ulnar groove (Figure 4): can compress on the ulnar nerve and cause ulnar neuropathy at the elbow.

4. Accessory ADM at the Guyon's canal level (Figure 5): may cause irritation and distal entrapment of the ulnar nerve.

5. Ulnar nerve subluxation or dislocation (Figure 6): may predispose the patient to ulnar neuropathy at the elbow and may cause pitfalls in nerve conduction studies.

Final notes!

* Do not forget that excellent knowledge of the nerve and muscle anatomy/sonoanatomy is crucial to master NMUS & part of acquiring the anatomy knowledge is to be aware of the anatomic variants, both common and uncommon
* keep in mind that anatomic variants can be unilateral or bilateral, and multiple variants can be seen in the same patient.

For more info, check these relevant articles

1. *Anomalous Muscles Encountered in the Carpal Tunnel: A Report of Two Cases. Journal of Clinical and Diagnostic Research 2017;11: PD03-PD04.*
2. *Persistent median artery of the forearm and palm: a cadaver study into its origin, course, fate and clinical significance. Ital J Anat Embryol. 2016;121:88-95 .*
3. *Cubital Tunnel Syndrome Caused by Anconeus Epitrochlearis Muscle. J Korean Neurosurg Soc. 2018;61:618-624.*
4. *Ultrasonography for nerve compression syndromes of the upper extremity. Ultrasonography. 2015;34:275-291.*
5. *Bifid median nerve in patients with carpal tunnel syndrome. J Ultrasound Med. 2008;27:1129–1136.*

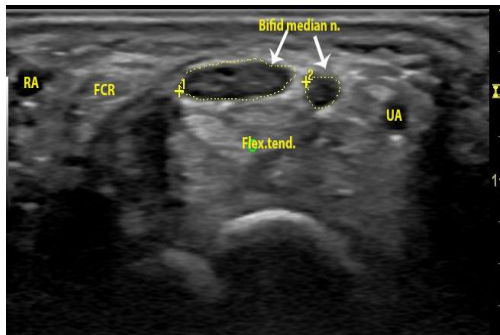


Figure 1 'Bifid MN'

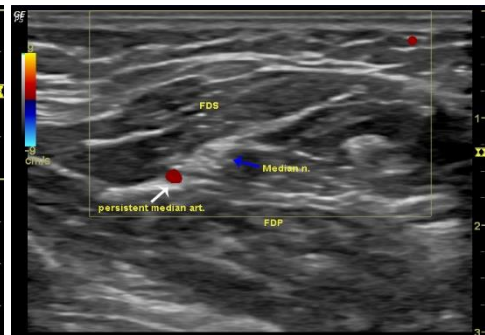


Figure 2 'Persistent MA'



Figure 3 'Accessory FDS'

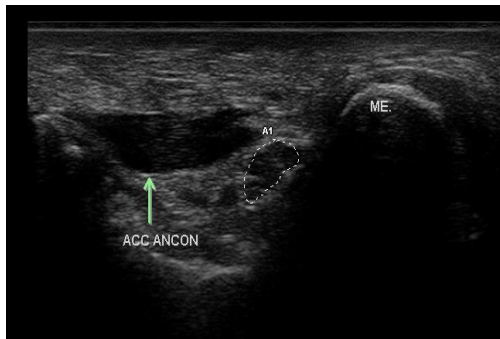


Figure 4 'Accessory anconeus'



Figure 5 'Accessory ADM'



Figure 6 'UN dislocation'

Cases of the Issue

By: Prof. Marwa Hany Hammad, Professor of Rheumatology & Rehabilitation, Zagazig University

A 31-year-old male was subjected to right wrist trauma during explosion of an explosive device. The trauma resulted in serious hand injury and cut wrist flexor tendons. Immediately post-trauma, he underwent surgical tendon repair. Post-surgery, the patient was able to move his fingers and motor function was resumed. However, few months later he started to complain of severe paresthesia and shooting electric pain along the index and middle fingers especially with finger flexion, and pinpricking sensation at the wrist. Examination revealed local tenderness at the site of injury at the wrist and a positive Tinel's sign. Based on the complaint and its distribution, right median nerve injury was suspected, and thus the patient was referred for neuromuscular ultrasound.

The nerve was traced from the forearm to the wrist. Ultrasound revealed nerve continuity with no evidence of neuroma in-continuity. The nerve cross-sectional area (CSA) at the trauma site just proximal to the wrist crease was borderline (CSA: 11mm²), but the wrist-forearm CSA ratio was mildly increased (=1.6, N up to 1.4) denoting mild focal swelling of the nerve at the wrist indicative of distal entrapment.


Scanning of the repaired flexor tendons revealed good tendon continuity, normal tendon echotexture, and mildly limited mobility on dynamic evaluation. However, a hyperechoic small linear structure (red arrow in the below image) was observed lying obliquely in the space between the tendon and the nerve and indenting the overlying median nerve (MN). Based on the sonographic appearance and the history, this structure mostly represents suture material that became displaced causing median nerve compression. A hypoechoic area surrounded the hyperechoic suture material denoting a suture granuloma. Suture granuloma is a granulomatous inflammation that can develop as a foreign body reaction to non-absorbable suture material. It typically appears as a hypoechoic area/collection and hyperechoic double-lines 'rail-like'/or a single line as in this case (representing the suture) within the hypoechoic area.

Concluding tip: NMUS scanning in the evaluation and follow up of traumatic injuries is of great value. Postoperative complications can be addressed by visualizing repaired structures. Ultrasound is an excellent bedside tool for better management of traumatic injuries.



ENMUS news >>>>

Previous hands-on neuromuscular ultrasound training: “Two-days course on lower limb nerves & muscles” Held From June 18-19, 2022, TEEC, Cairo
Two long days full of hands-on training on detailed scanning of lower limb nerves & muscles. Here is the feedback from some of the colleagues who joined us!



BASIC-LEVEL NEUROMUSCULAR ULTRASOUND COURSE ON LOWER LIMB NERVES & MUSCLES
'Hands-on Training'
June 18-19, 2022

Organized By The Egyptian Neuromuscular Ultrasound Society (ENMUS) in collaboration with Ain Shams Physical Medicine, Rheumatology & Rehabilitation Department

President of The ENMUS Course Director/Instructor
Prof. Eman Tawfik

Head of the Ain Shams PMR Department
Prof. Mona El Sebaie

COURSE STRUCTURE

Conducted according to the published international guidelines for neuromuscular ultrasound training
Reference: Tawfik et al. Guidelines for neuromuscular ultrasound training. Muscle Nerve 2019; 60:361-366.

- Day 1 'Saturday, June 18': Lower limb nerves, 09 am – 05:00 pm
- Day 2 'Sunday, June 19': Lower limb muscles and neuromuscular cross-sectional sonoanatomy, 09:00 am – 05:00 pm.

VENUE & FEES

Venue: Ain Shams Training & Education Enhancement Center (TEEC), inside Ain Shams university hospitals, Cairo, Egypt.

Fees:

- Full course: 4000 LE
- Single day attendance: 2000 LE

شكرا د ايمان على الكورس الرائع 8:57 PM

شكرا جزيلا د ايمان .. كورسات احترق بصمة فارقة بإذن الله 8:47 PM

شكرا لحضرتك د. إيمان على اليومين الجمال جدا والمجهود الجبار اللي حضرتك بتعمله عشان دايم كل حاجة تطلع أحسن حاجة وسعة صدرك دايم لكل أسئلتنا الكثيرة والمزعجة أحيانا 😊
هنفضل طول عمرنا ممتنين لحضرتك والعيانين البى هنشوفهن ونساعدهم كل ده في ميزان حسنات حضرتك .. واحنا زعلانين إن اليومين خلصوا بسرعة يا ريت كل يوم نحضر مع حضرتك
حضرتك أخت لبنا قبل ما تكوني our mentor and role model 7:57 PM

بجد والله د إيمان أسوأ حاجة في اليومين انهم خلصوا 8:18 PM

الف شكر د ايمان مفيش كلمات توافيك حقك الصراحة ربنا يوفقك ويزيدك من

Follow the educational activities on Fb through >>>>

- Neuromuscular ultrasound group: www.facebook.com/groups/1612728358760236
- The ENMUS page www.facebook.com/EGYPTIANNMUS