APOA Foot & Ankle Council Presents..

Case of the Fortnight

15th December 2022

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Presented by:

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Title:

Ultrasound-guided treatment in anterior talofibular ligament injury

Learning Points:

- Dynamic ultrasound lateral ankle ligament assessment is a reliable and repeatable technique for evaluating lateral ankle ligament instability.
- Examination of the lateral ankle ligaments using ultrasound has the potential to quantify lateral ankle instability at the point of care in a radiation-free, non-invasive, and low-cost manner.

*Upcoming Case of the Fortnight on **1st January 2023***

Presented by:

Andi Praja Wira Yudha Luthfi, MD

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Bhayangkara Tk.I R.Said Sukanto Hospital, Jakarta, Indonesia

Title:

Diagnosis and Treatment of Tuberculous (TB) Osteomyelitis of the Midfoot

Want to present a case? Write to...

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Ultrasound-guided treatment in anterior talofibular ligament injury

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Ultrasonography for evaluating lateral ankle instability

Diagnosing lateral ankle ligament incompetence is often unreliable by physical exam alone. (1-3) Lahde et al. evaluated 192 patients with confirmed surgical or arthrographic findings of lateral ankle ligament injury and found that 28% of ATFL tears and 38% of combined ATFL and CFL were not detected with clinical examination alone. (4) Similarly, Fujii et al. found that stress maneuvers performed by examiners on cadaveric specimens with progressive lateral ligament injuries were unreliable in diagnosing injury severity or instability. For this reasons, physical examination of ankle instability is often complemented by some sort of stress imaging, with stress maneuvers including anterior drawer and talar tilt. (5-8)

In recent years, ultrasonography is increasingly being applied to musculoskeletal conditions. The advantages of this modality include its low cost, lack of radiation, a ready availability at the point of care, especially with portable mode, and an ability to easily visualize and compare anatomic structures under applied stress. (9-14) By incorporating the physical examination for assessing the lateral ankle instability, including anterior drawer test and talar tilt test to the ultrasound evaluation, the information regarding lateral ankle instability can be quantitatively achieved through the dynamic ultrasound assessment.

The dynamic ultrasonography offers the opportunity to perform stress imaging at the point of care without the need for a dedicated radiographic stress device or radiation exposure to patient or practitioner. (8-12) Importantly, in contrast to radiographs, ultrasound also allows direct visualization of the ankle ligaments themselves, affording the clinician a direct understanding of the anatomic structures involved in a given injury pattern. Saengsin et al demonstrate that lateral ankle stability measurements taken with ultrasound strongly correlated with fluoroscopic measurements. (15)

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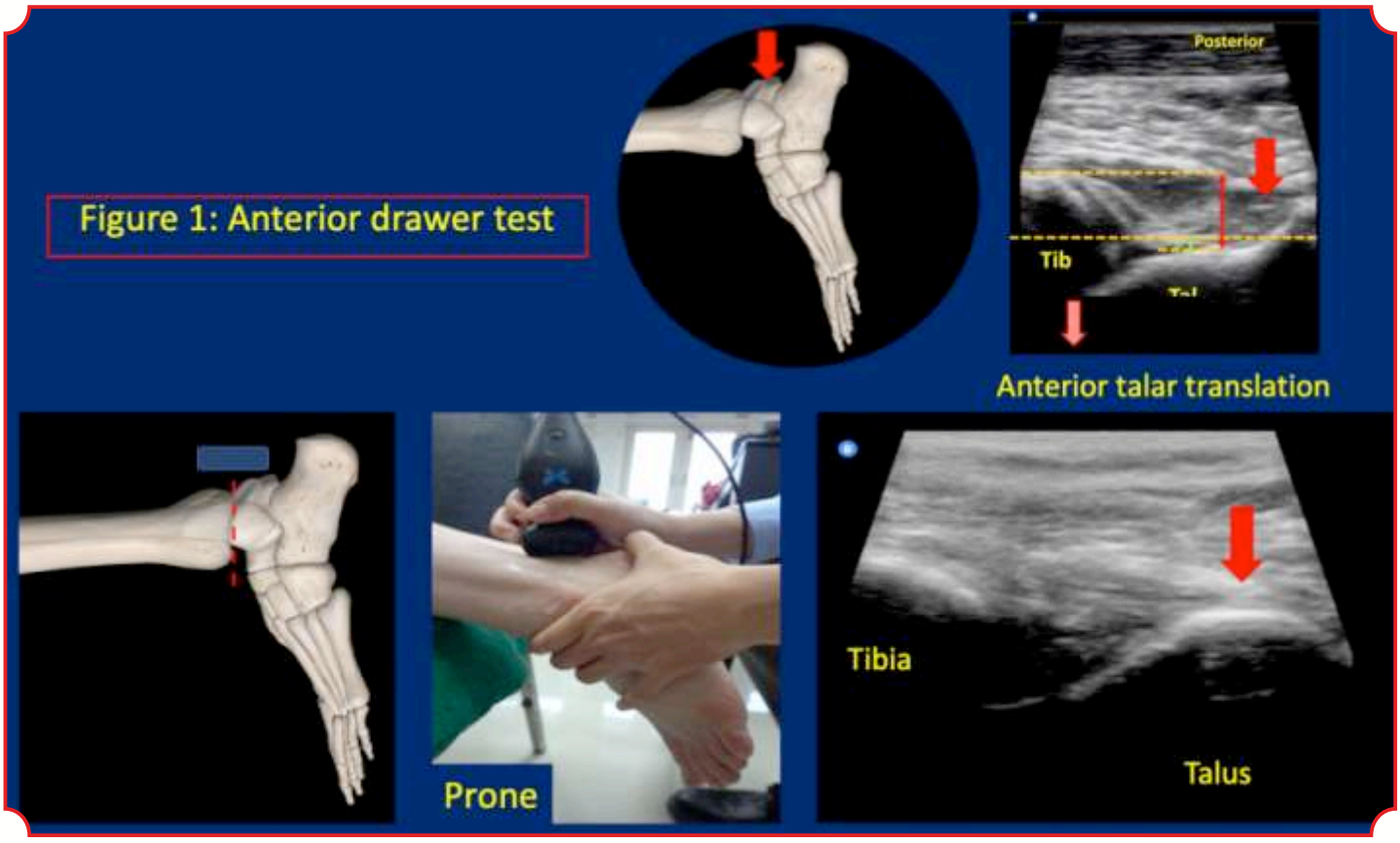
Based on the many added advantage of ultrasound, we therefore encourage that the ultrasound should be strongly considered as an evolving imaging modality of choice to evaluate lateral ankle instability.

To perform the dynamic ultrasound assessment, the anterior drawer test is performed. Anterior talar translation is quantified by placing the ultrasound transducer perpendicular to the posterior aspect of tibia and talus. ***(Fig. 1)*** The ultrasound measurement for the talar translation is calculated in millimeter (mm) by measuring the distance between the hyperechoic bone contours of the posterior aspect of the talus and the posterior aspect of the tibia, and the delta with and without stress application is calculated. This measurement represents the sagittal plane stability.



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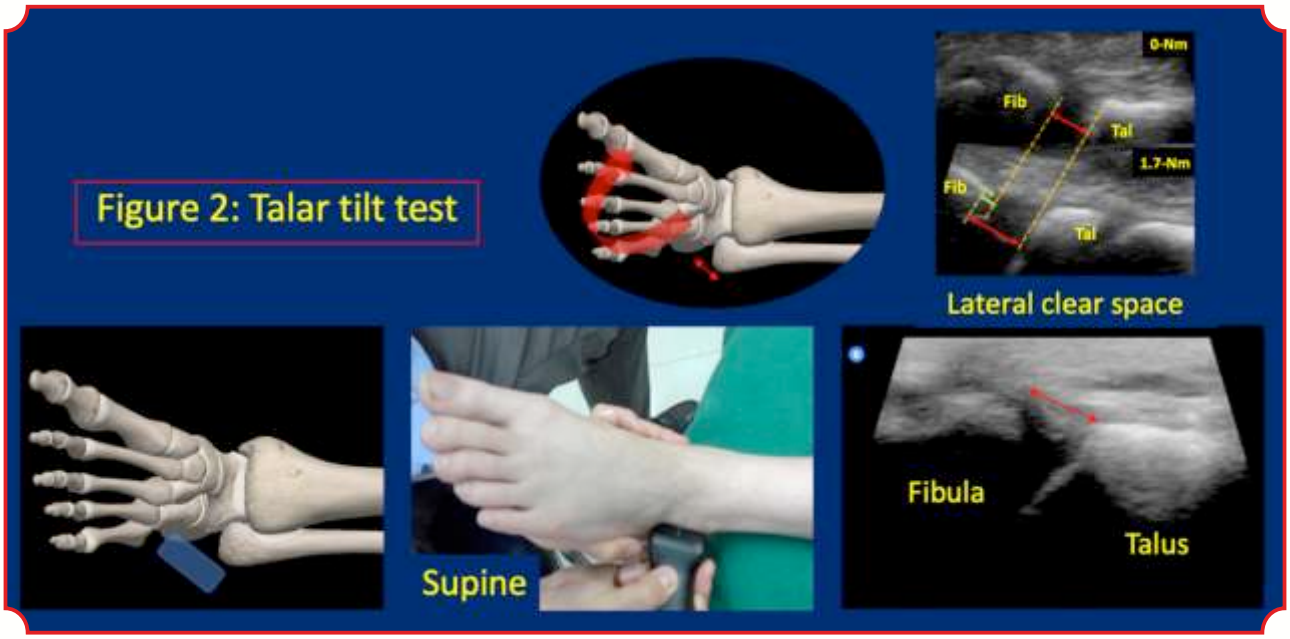
Subsequently, the talar tilt test is performed. The lateral clear space (in mm) between the fibular tip and lateral process of the talus is measured, and the delta with and without an applied torque is calculated. ***(Fig. 2)*** Notably, it has not been feasible to measure talar tilt angle using ultrasound, which is why we chose to assess the validity of coronal plane stability measurement by comparing measurements generated at the lateral clear space.



References:

1. Hur ES, Bohl DD, Lee S. 2020. Lateral Ligament Instability: Review of Pathology and Diagnosis. Curr Rev Musculoskelet Med.
2. Chan KW, Ding BC, Mroczek KJ. 2011. Acute and chronic lateral ankle instability in the athlete. Bull NYU Hosp Jt Dis 69:17-26.
3. DiGiovanni BF, Partal G, Baumhauer JF. 2004. Acute ankle injury and chronic lateral instability in the athlete. Clin Sports Med 23:1-19, v.
4. Lahde S, Putkonen M, Puranen J, et al. 1988. Examination of the sprained ankle: anterior drawer test or arthrography? Eur J Radiol 8:255-257.
5. Guillodo Y, Varache S, Saraux A. 2010. Value of ultrasonography for detecting ligament damage

in athletes with chronic ankle instability compared to computed arthrotomography. Foot Ankle Spec 3:331-334.

6. Kannus P, Renstrom P. 1991. Treatment for acute tears of the lateral ligaments of the ankle. Operation, cast, or early controlled mobilization. J Bone Joint Surg Am 73:305-312.
7. Lee KT, Park YU, Jegal H, et al. 2014. New method of diagnosis for chronic ankle instability: comparison of manual anterior drawer test, stress radiography and stress ultrasound. Knee Surg Sports Traumatol Arthrosc 22:1701-1707.
8. Oae K, Takao M, Uchio Y, et al. 2010. Evaluation of anterior talofibular ligament injury with stress radiography, ultrasonography and MR imaging. Skeletal Radiol 39:41-47.
9. Atilla OD, Yesilaras M, Kilic TY, et al. 2014. The accuracy of bedside ultrasonography as a diagnostic
tool for fractures in the ankle and foot. Acad Emerg Med 21:1058-1061.
10. Chen PY, Wang TG, Wang CL. 2008. Ultrasonographic examination of the deltoid ligament in bimalleolar equivalent fractures. Foot Ankle Int 29:883-886.
11. Hedelin H, Goksör L, Karlsson J, et al. 2013. Ultrasound-assisted triage of ankle trauma can decrease the need for radiographic imaging. Am J Emerg Med 31:1686-1689.
12. Saengsin J, Vaseenon T, Pattamapaspong N, et al. 2017. Effectiveness of sonography assisted minimal invasive plate osteosynthesis (MIPO) compare with fluoroscope assisted in femoral shaft fracture: A cadaveric study. Injury 48:1758-1763.
13. Hagemeijer NC, Saengsin J, Chang SH, et al. 2020. Diagnosing syndesmotic instability with dynamic ultrasound - establishing the natural variations in normal motion. Injury.
14. Saengsin J, Hagemeijer NC, Ho Chang S, et al. 9900. Medial Ankle Stability Evaluation With Dynamic Ultrasound: Establishing Natural Variations in the Healthy Cohort. JAAOS - Journal of the American Academy of Orthopaedic Surgeons Publish Ahead of Print:10.5435/JAAOS-D-5420-00597.
15. Saengsin J, Bhimani R, Sato G, C Hagemeijer N, Mirochnik K, Lubberts B, R Waryasz G, W DiGiovanni C, Guss D. Use of portable ultrasonography for the diagnosis of lateral ankle instability. J Orthop Res. 2022 Oct;40(10):2421-2429. doi: 10.1002/jor.25256. Epub 2022 Jan 5. PMID: 34985144.

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