Point of Care Ultrasound Guided Management of Lateral Ankle Sprains: A Case Series

Bush ML[1,3], Umlauf JA[2,3], Pickens BB[2,3-]

[1]U.S. Navy Medicine Readiness and Training Command, Yokosuka, Japan
[2]U.S. Army-Baylor Doctoral Program in Physical Therapy, Fort Sam Houston, TX
[3]Army-Baylor University Doctoral Fellowship in Orthopaedic Manual Physical Therapy, Brooke Army Medical Center, Fort Sam Houston, TX

BACKGROUND/PURPOSE

Lateral ankle sprains (LASs) are a common injury among active individuals.[1] The prevalence of LASs are reported from 12.6-34.5 per 1000 person-years in the US military.[2] Re-injury rates of up to 75% exist following an inversion sprain.[3] Current rehabilitation strategies result in poor long-term outcomes, suggesting the current standard of care is ineffective.[4] In order to improve long-term outcomes and decrease re-injury rates, the ability to accurately diagnose and monitor tissue healing along with its response to activity and rehabilitation is vital. The purpose of this study was to describe and observe the outcomes associated with Point of Care Ultrasound (POCUS) guided early management of acute and sub-acute lateral ankle sprains.

PARTICIPANTS

14 individuals who sustained a LAS in the last 28 days between the age of 18 and 45 participated (7 males; age= 27.5± 6.9 yrs; BMI= 26.1± 4.5; Time from injury to initial evaluation = 8.7 ± 6.7 days)

METHODS

Participants underwent a clinical evaluation to include a POCUS exam to assess ligamentous integrity. Objective and POCUS findings were integrated to classify each LAS into one of four categories. Each grade of ankle sprain corresponded to levels of bracing for the protection of injured structures with each patient receiving physical therapy care based on rehabilitation guidelines. Participants completed the Foot and Ankle Ability Measure (FAAM) activities of daily living and Sports subscale, the Foot and Ankle Outcome Score (FAOS), Patient Reported Outcomes Measurement Information Systems Global Health, Tampa Scale of Kinesiophobia (TSK-11), Cumberland Ankle Instability Tool (CAIT), and the Numeric Pain Rating Scale as well as the Ankle Lunge Test and Figure 8 measurements at baseline, 4 weeks, 8 weeks and 12 weeks post enrollment. The FAAM Sport subscale, all FAOS subscales, and the TSK-11 were also collected at 24 weeks while the CAIT was collected at baseline and 24 weeks.

FINDINGS

14 participants were enrolled with 11 participants completing all data collection. FAAM scores significantly improved at 4, 8, 12 and 24 weeks. All components of the FAOS significantly increased except for Sport scores at 4 weeks and Quality of Life scores at 4 and 8 weeks.

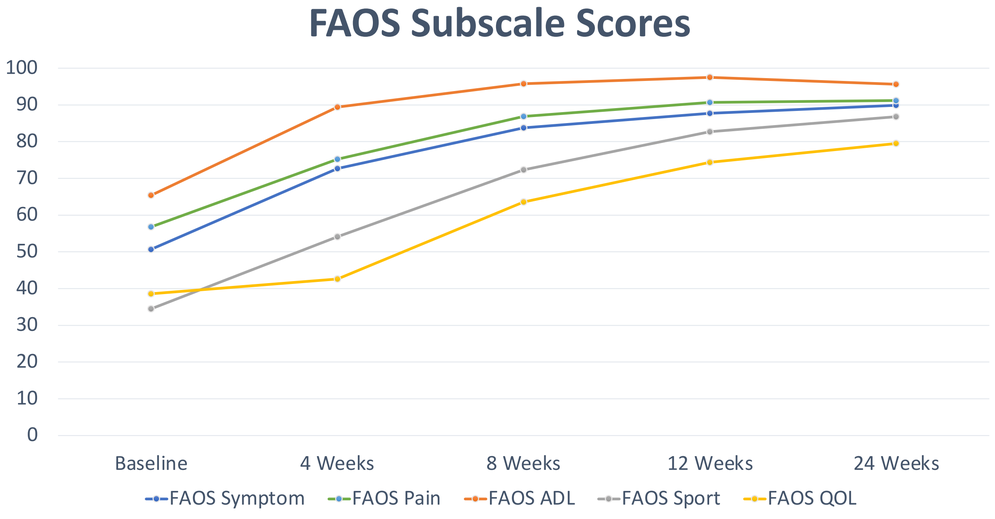
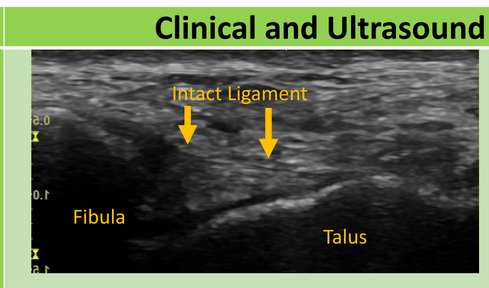
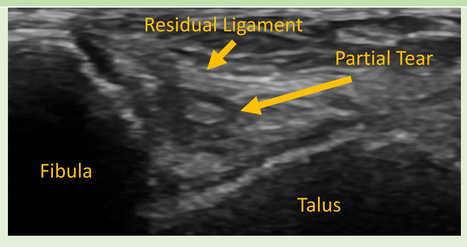
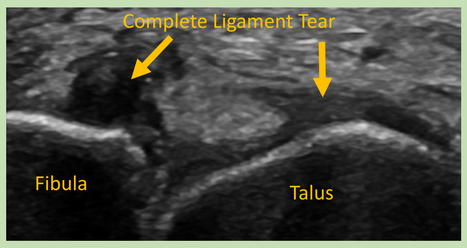


Figure 1. Foot and Ankle Outcome Score (FAOS) subscale scores. Activities of Daily Living (ADL) and Quality of Life (QOL).

	Clinical and Ultrasound Findings		Acute Management
Grade I		Ultrasound Exam -Ligament intact	- Weightbearing: No restrictions - ROM: No restrictions - Bracing: - 0-6 weeks: Ankle Stabilizing Orthosis (ASO)
Grade II		Ultrasound Exam -Partial tear of one or more ligaments (ATFL, CFL)	- Weightbearing: No restrictions - ROM: 0-6 weeks: Pain free dorsiflexion and plantarflexion, no inversion - Bracing: - 0-2 weeks: Semi rigid brace - 2-6 weeks: ASO
Grade III		Ultrasound Exam - Complete tear of one ankle ligament (ATFL, CFL)	- Weightbearing: No restrictions - ROM: 0-6 weeks: Pain free dorsiflexion and plantarflexion, no inversion - Bracing: - 0-2 weeks: CAM Boot - 2-4 weeks: Semi rigid brace - 4-8 weeks: ASO

DISCUSSION

This case series of POCUS guided management and ligamentous protection of lateral ankle sprains observed significant improvement in primary functional outcomes across all data points from baseline to 24 weeks. While conducting this case series, the authors observed that detailed evaluation of lateral ankle ligaments and grading with ultrasound can provide valuable information to guide clinical decisions such as bracing strategies and functional rehabilitation while improving management.

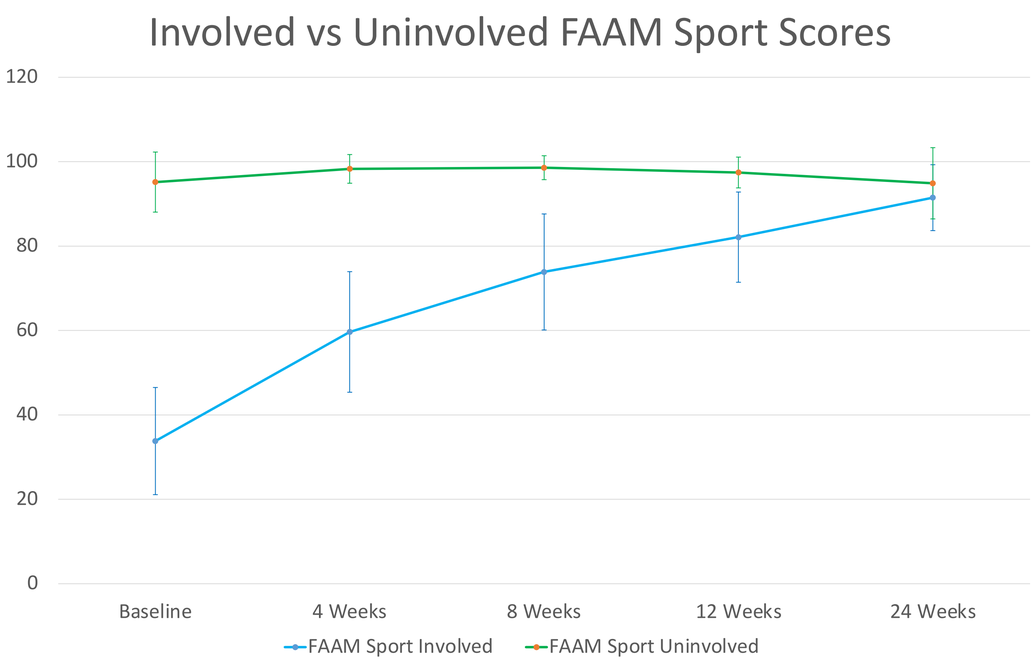


Figure 2. Foot and Ankle Measure Sport subscale scores (Involved and Uninvolved ankles). Error bars indicate 95% CI.

IJSPT INTERNATIONAL JOURNAL OF SPORTS PHYSICAL THERAPY

Bush M, Umlauf J, Pickens B. Point of Care Ultrasound Guided Management of Lateral Ankle Sprains: A Case Series. *IJSPT*. Published online August 2, 2024:1020-1033. doi:10.26603/001c.121601

Case Series

Point of Care Ultrasound Guided Management of Lateral Ankle Sprains: A Case Series

Matthew Bush[1a], Jon Umlauf[2], Bryan Pickens[2]

[1] Navy Medicine Readiness and Training Command Yokosuka, Japan, [2] Army-Baylor University Doctoral Program in Physical Therapy

Keywords: Ankle sprain, Point of Care Ultrasound

https://doi.org/10.26603/001c.121601

REFERENCES

1. Waterman BR, et al. *J Bone Joint Surg Am*. Oct 6 2010;92(13):2279-84.
2. Fraser JJ, et al. *J Sci Med Sport*. Mar 4 2021;24 (7):677-682.
3. Hubbard T. *Open Access Journal of Sports Medicine*. 2010-07-01:115.
4. Brison RJ, et al. *BMJ*. 2016-11-16 2016
5. Hall EA, et al. *J Athl Train*. Jan 2015;50(1):36-44.