# Advances in Diagnosis and Management of Lateral Ankle Instability: A Review of Current Literature.

## Article Metadata

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**Journal:** J Am Acad Orthop Surg Glob Res Rev

**Year:** 2023

**Volume/Issue:** 7/12

**PMID:** 38149942

**DOI:** 10.5435/JAAOSGlobal-D-23-00251

**PubMed URL:** https://ncbi.nlm.nih.gov/pubmed/38149942

## Full Text (from PubMed Central)



J Am Acad Orthop Surg Glob Res Rev

J Am Acad Orthop Surg Glob Res Rev

JAAOS Global Research & Reviews

Wolters Kluwer Health

10.5435/JAAOSGlobal-D-23-00251

JAAOSGlobal-D-23-00251

Advances in Diagnosis and Management of Lateral Ankle Instability: A Review of Current Literature

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Lateral ankle sprains and instability are an increasingly identified pain point for patients, accounting for 20 to 25% of musculoskeletal injuries. Lateral ankle injuries are especially concerning given the propensity for patients to develop chronic lateral ankle instability and for the high risk of reinjury on an unstable ankle. With the complex articulation of the tibiofibular syndesmosis, subtalar, and talocrural joints, pinpointing ankle dysfunction remains difficult. Multiple reviews have evaluated management and diagnosis of lateral ankle instability, but with newer treatment options available, a more comprehensive assessment of the current literature was conducted. Although multiple surgical options exist, many nonsurgical functional options have also been developed for patients that may help patients prevent the development of chronic lateral ankle instability. In recent times, many new options have come up, including in-office needle arthroscopy and continual advancements in diagnosis and our understanding of this difficult topic. Multiple reviews have evaluated the management and diagnosis of lateral ankle instability, but with newer treatment options available, a more comprehensive assessment of the current literature was conducted. Given this, this review will help to highlight new diagnostic and nonsurgical therapeutic options for the management of lateral ankle instability.

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Acute ankle injuries continue to be a common issue treated by orthopaedic surgeons and sports medicine physicians with many diagnostic and treatment options. Among ankle injuries, those to the lateral ankle are more prevalent and compose the cohort of patients who experience acute lateral ankle instability (ALAI).

The subtalar, talocrural, and tibiofibular joints provide most of the articulation and movement within the ankle. Owing to the complexity of the ankle, most functional motion stems from the unified action of one or more of these joints to create the traditional motions of the ankle. Alterations of the various articulation points lead to significant derangements of the ankle. In particular, the lateral ankle lies at the intersection of the tibia, fibula, talus, and calcaneus, unified with a few key ligaments that provide lateral ankle stability.

When considering the anatomy of the lateral ankle, it is also clinically important to consider the dynamic stability that the myotendinous units traversing the lateral ankle have on the protection of the osseous restraints and ligamentous tissue. The peroneal longus and brevis cross the lateral ankle and function to support pronation and eversion while protecting against inversion injuries of the lateral ankle ligaments.

Presentation and Diagnosis

All workup of lateral ankle instability should include a thorough history of the current condition and a history of prior ankle instability and injuries. Many additional risk factors have also been identified including intrinsic risk factors, such as younger age and body mass index.

Many different physical examination modalities exist for the ankle, but when looking at reported sensitivity and specificity data, the importance of palpation of the ligaments has shown to play an important role in diagnosis with sensitivities ranging from 78 to 92% in some studies.

When evaluating the lateral ankle, three key imaging modalities exist. Classically, stress radiography could help show increased motion along the lateral ankle, but new options, such as ultrasonography stress tests and MRI imaging, particularly T2 series, have also gained traction among clinicians. Looking at the diagnostic efficacy, stress radiography shows sensitivity around 80% for ATFL injuries and around 50% for CFL injuries.

In-Office Arthroscopy

New techniques are now also being introduced in the field of foot and ankle surgery. Among these, in-office needle arthroscopy (IONA) offers a unique option to directly visualize the ankle joint and the supporting structures in real time. Currently, it is used in visualizing syndesmosis injuries and osteochondral lesions of the talus, and expanding to lateral ankle instability is a natural next step. Given the limited research surrounding IONA, no firm consensus exists regarding the sensitivity, specificity, and indications for use. Despite this, preliminary case series do suggest that IONA may play a role in advancing the options available to clinicians in the diagnosis and management of LAI. In a comparative case series, it was demonstrated that the needle arthroscope provided good visualization of the anterior compartment of the ankle and syndesmosis, but difficult views of the medial gutter and lateral gutter when using a standard anterolateral portal.

Many principles in nonsurgical treatment of lateral ankle instability exist, but the primary goal of all therapies is to improve the function of the dynamic stabilizers of the ankle and is always indicated for purely ligamentous injuries before surgery. Aggressive functional rehabilitation with range of motion

and advancing weight-bearing status should be delayed in cases that present with bony abnormalities, such as lateral process fractures or anterior process fractures. In addition, suspected syndesmotic injuries or avulsion fractures may respond better to a more conservative treatment with prolonged use of a LAI walker as opposed to the rapid functional rehab that is used for a lateral ankle sprain.

When conservative therapy is identified as an option, it is important to identify signs of treatment failure based on patient-specific factors and goals of care to identify the need to advance treatment to surgical options. No firm end points have been established to label the failure of conservative management, although traditionally 3 to 6 months without improvement is widely used.

Physical therapy traditionally focuses on strengthening of the peroneal muscles to prevent inversion injuries and closed chain activity to help optimize foot strike and mechanics.

In addition to the gluteus muscles, another area of interest includes core strengthening. One study showed that those who engaged in core stability work helped improve control of the ankle and serves as a potential avenue for managing patients with lateral ankle instability.

Among the nonsurgical options, the role of biologic therapeutics has also been on the rise in the field of orthopaedics, although the evidence to support their use is limited. As the body of literature grows in this area, more clarity may be achieved, but for now, these remain an expensive option with limited support for their use. The use of platelet-rich plasma (PRP) therapy has grown significantly in many areas of orthopaedics, and research in the setting of lateral ankle instability does show that there may be a role for this therapy for management. In one study, PRP injections showed similar outcomes compared with rigid immobilization at the 24-week mark and less pain at the 8-week mark.

Surgical options for lateral ankle instability are a well-investigated and discussed topic, but most repairs consist of ligamentous reconstruction of the ATFL and/or the CFL in an anatomic or nonanatomic fashion to preserve the ankle range of motion. The most classic anatomic surgical option includes the Brostrom technique and its numerous modifications, including newer ligamentous or suture tape augments for stability.

In summary, lateral ankle instability is a complex topic of growing interest within the field of orthopaedic surgery. In the diagnostic process, ultrasonography has been shown to be more sensitive lateral ankle evaluation in comparison with the traditional radiographic stress, although it is limited by the learning curve surrounding its use. Nonsurgical management remains the first-line therapy for ligamentous injury, but newer literature emphasizes the importance of incorporating gluteal and core strengthening in physical therapy regimens. In addition, biological agents are continuing to gain traction and may provide augmentation to nonsurgical management, but the literature on outcomes is still lacking. Once surgery is considered, new techniques, such as IONA, are being investigated for minimally invasive surgical and diagnostic options, but it remains to be seen if the outcomes are equivocal with future research studies. Further interest and research continue to drive the current recommendations and indications for management of CLAI and ALAI, and more preventive options with the knowledge over current physical therapy regimens will likely continue to help address the incidence of CLAI and ALAI.

The study was exempt from approval by the institutional review board.

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Lateral Ankle Instability

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J Am Podiatr Med Assoc

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## Citation

Aiyer A, Murali S, Kadakia AR. Advances in Diagnosis and Management of Lateral Ankle Instability: A Review of Current Literature.. J Am Acad Orthop Surg Glob Res Rev. 2023. DOI: 10.5435/JAAOSGlobal-D-23-00251