Management of Chronic Lateral Ankle Instability in Military Service Members

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KEYWORDS

• Ankle instability • Lateral instability • Ankle sprain • Chronic • Military • Treatment

KEY POINTS

- Chronic lateral ankle instability is a condition frequently encountered by orthopedic surgeons treating highly active patient populations, particularly military service members.
- Providers treating military service members must have a high index of suspicion for this condition when signs and symptoms of functional or mechanical instability exist.
- Stress testing and ankle magnetic resonance imaging, although not definitive in sensitivity for detecting instability or other concomitant injuries, should be considered during the treatment decision-making process.
- Appropriate nonoperative treatment should be attempted initially; however, when nonoperative treatment fails, surgical management is warranted to prevent untoward long-term sequelae.
- Proper surgical treatment and subsequent postoperative management are at the discretion of the individual surgeon but must account for the concomitant diseases frequently associated with chronic lateral ankle instability.
- Low recurrence of lateral instability can be achieved even in high-demand military patient populations with a focused treatment plan.

INTRODUCTION AND EPIDEMIOLOGY

Acute lateral, or inversion, ankle sprains are among the most common musculoskeletal injuries encountered in military patients. Within the civilian population, daily estimates of acute and subacute ankle sprains range from 5000 per day in the United Kingdom to as high as 23,000 to 30,000 in other societies such as the United States.[1–6] Overall, ankle sprains account for an estimated 10% to 40% of civilian athletic injuries annually and can result in significant time lost to injury.[5,7–10] The mainstay of

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management for acute inversion ankle sprains remains nonoperative treatment, typically with early immobilization and functional rehabilitation, focusing on achievement of full range of motion, peroneal tendon strengthening and proprioception, and gradual progression of weight bearing as tolerated.[4,10,11] A rich body of evidence exists showing no significant improvement in long-term functional outcomes when high-grade acute lateral ankle sprains are initially managed operatively compared with nonoperatively with early functional rehabilitation.[12–15] Despite appropriate nonoperative management after acute inversion ankle sprains, 10% to 30% of individuals have recurrences of instability and progress to chronic symptomatic lateral ankle instability.[2,5,6,16–18] Repeated inversion ankle sprains can propagate osteochondral lesions of the talus (OCLT),[18,19] chronic peroneal tendinopathy,[4,20–22] peroneal neuropathy,[23] varus malalignment, and risk for early tibiotalar osteoarthritis.[4,21,22] Given the increased rate of ankle sprains in athletic populations, coupled with high recurrence rates and the potential for disabling long-term sequelae, management of chronic lateral ankle instability in high-demand military and populations poses significant challenges for orthopedic surgeons.

The US military armed forces represent a diverse, physically active population, with generally high occupational demands. Service members participate in organized physical fitness training programs and must meet the standards of the physical fitness tests of their individual services as well as height and weight requirements semiannually.[24] The active duty service population is not unlike athletic populations in civilian cohorts. Military personnel consistently train on and are deployed to regions with a multitude of uneven surfaces, carrying combat loads often exceeding 45 kg (100 lb). They are at increased risk for inversion ankle sprains and subsequent chronic lateral ankle instability. Waterman and colleagues[25] reported on the incidence of ankle sprains in cadets at the US Military Academy (USMA) in West Point, New York, and noted an overall incidence rate of 58.4 sprains per 1000 person-years, regardless of participation in intercollegiate versus mandatory intramural athletics. These results suggest that inversion ankle sprains, the precipitant of chronic lateral ankle instability, may be more common in military than civilian populations. Orr and colleagues[24] reported on the increased incidence of OCLTs among US military personnel, with significant progressive increases in incidence noted throughout the years of overseas conflict from 2002 to 2008. The investigators cited the likely relationship between increasing ankle instability and its role in causing more OCLTs. The lead author of this review performed approximately 75 primary and revision lateral ligamentous reconstructions annually between 2009 and 2013 at a large tertiary care military medical treatment facility servicing a high volume of active duty military personnel.

In this review, the anatomy, risk factors, and clinical presentation associated with chronic lateral ankle instability are discussed, as well as preferred nonoperative and operative treatment strategies in military populations. The nuances of early diagnosis and management of acute ankle sprains are beyond the scope of this review. We have focused specifically on management of chronic instability within the military population. These same principles are valid when considering treatment of this condition in other physically active patient populations, whose activity demands are through sports or high-demand occupational activities.

ANATOMY AND CAUSE

The lateral ligamentous complex can best be thought of as a capsuloligamentous complex, because the anterolateral joint capsule contributes to the ligamentous stability of the lateral ankle. The ligamentous complex consists of 3 ligaments: anterior