Ankle Sprains and Instability

Cory M. Czajka, MD[a,*], Elaine Tran, BS[b], Andrew N. Cai, MSc[b], John A. DiPreta, MD[c]

KEYWORDS

• Sprain • Syndesmosis • Inversion • Eversion • Ottawa ankle rules • PRICEMMMS

KEY POINTS

- Ankle injuries generally are among the most common injuries presenting to primary care providers and emergency departments and may cause considerable time lost to injury and long-term disability.
- Inversion injuries about the ankle involve about 25% of all injuries of the musculoskeletal system and 50% of all sports-related injuries.
- Medial-sided ankle sprains occur much less frequently than those on the lateral side. This is partly because of inversion injuries occurring more frequently but also because of the strength of the medial-sided ligaments.
- High ankle sprains, also known as syndesmotic injuries, involve the distal tibiofibular syndesmosis. They occur less frequently in the general population, but do occur commonly in collision sports.
- Providers should apply the Ottawa ankle rules when radiography is indicated and refer fractures and more severe injuries to orthopedic surgery as needed.

INTRODUCTION

Ankle injuries generally are among the most common injuries presenting to primary care providers and emergency departments.[1] Of these, patients with ankle sprains (stretching of, partial rupture of, or complete rupture of at least one ligament about the ankle) comprise a large percentage of these injuries. Worldwide, approximately 1 ankle sprain occurs per 10,000 person-days, and approximately 2 million acute ankle sprains occur each year in the United States alone.[2] It has been estimated that the annual aggregate health care cost of acute ankle sprains and their treatment approaches $2 billion.[3] Ankle sprains can result in considerable time lost to injury, as well as long-term disability in up to 60% of patients.[4,5] Among younger, more athletic populations ankle sprains account for up to 30% of injuries overall.[2]

[a] Division of Orthopaedic Surgery, Albany Medical College, 43 New Scotland Avenue, Albany, NY 12208, USA; [b] Albany Medical College, 43 New Scotland Avenue, Albany, NY 12208, USA; [c] Division of Orthopaedic Surgery, Capital Region Orthopaedic Group, Albany Medical College, 1367 Washington Avenue, Suite 200, Albany, NY 12206, USA
* Corresponding author. 98 Middlesex Court, Slingerlands, NY 12159.
E-mail address: coryczajka@gmail.com

Med Clin N Am 98 (2014) 313–329
http://dx.doi.org/10.1016/j.mcna.2013.11.003 **medical.theclinics.com**
0025-7125/14/$ – see front matter

By definition, ankle sprains constitute an injury to 1 or more ligaments about the ankle joint. These, like all ligaments in the human body, serve to provide mechanical stability, proprioceptive information, and directed motion for the joint. Recurrent ankle sprains potentially lead to functional instability of the joint, loss of normal ankle kinematics, and proprioception. Repeated ligamentous injuries may result in chronic instability, degenerative bony changes, and chronic pain.[6]

EPIDEMIOLOGY OF ANKLE SPRAINS

As stated, acute ankle sprain is one of the most common reasons for primary care office and emergency department visits in the United States.

- An overall incidence of 2.15 per 1000 person-years.[2]
- Teenagers and young adults have the highest rates, with a peak incidence of 7.2 per 1000 person-years for those 15 to 19 years of age.[2]
- Nearly one-half of all ankle sprains occur during athletic activity, basketball being the most common sporting activity.[7]
- The greatest risk factor for ankle sprain is a previous ankle sprain.[8]

REVIEW OF RELEVANT ANATOMY ABOUT THE ANKLE JOINT

The ankle joint, or talocrural region, is the region where the leg and foot articulate. The ankle joint is a complex of 3 articulations:

- The talocrural joint is the articulation between the tibia and fibula (proximally) and the talus (distally).
- The distal tibiofibular joint (tibiofibular syndesmosis) is the articulation between the medial side of the distal end of the fibula and the lateral side of the distal end of the tibia.
- The subtalar (talocalcaneal) joint is the articulation between the inferior aspect of the talus and the superior aspect of the calcaneus.

The boney arch formed by the tibial plafond, along with the medial malleolus (the distal-most aspect of the tibia) and lateral malleolus (the distal-most aspect of the fibula), is referred to as the ankle "mortise" (**Figs. 1** and **2**).

SIGNS AND SYMPTOMS OF ACUTE ANKLE SPRAINS

Common signs and symptoms of acute ankle sprains include the following:

- Pain
- Difficulty with weight bearing
- Tenderness
- Significant swelling
- Ecchymosis[8]

Assessment of an acute ankle sprain begins with a complete history and physical. A focused history should begin with the mechanism of injury, as this will direct the rest of the examination toward the ligaments at greatest risk for injury and the extent of injury.

Patients who suffer complete ligament rupture often describe immediate swelling, inability to continue physical activity, and inability to bear weight. Those suffering ligament sprains often describe delayed onset of swelling and the ability to bear weight while continuing physical activity.[9]