Chronic Ankle Instability

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KEYWORDS

• Ankle instability • Ankle kinematics • Sprain

KEY POINTS

- Among the techniques used to treat chronic ankle instability, the Broström-Gould technique is the most commonly reported, with good to excellent results in the vast majority of cases.
- It is estimated that 10% or more of the consultations in the emergency department are inversion traumas of the ankle, which occur in 1 of every 10,000 people per day.
- A conservative approach is always the first treatment, including anti-inflammatory medications, rehabilitation and proprioception, infiltration with steroids in impingement cases, and use of orthotics, whose true effectiveness is the subject of multiple studies and questions.

INTRODUCTION

Chronic ankle instability is one of the most common problems in foot and ankle surgery, usually presenting after an inversion trauma despite a reliable physical therapy program. The surgeon must rule out several abnormalities that can precipitate this condition such as cavo varus feet, peroneal tendon dislocation, and neuromuscular diseases. Once the diagnosis is made, the most appropriate surgical technique is selected to suit the patient's need according to the level of instability, age, physical activities, and prior surgical procedures. Among the techniques used, the Broström-Gould technique is the most commonly reported, with good to excellent results in the vast majority of cases. Other anatomic techniques, so called when they try to mimic the original location of the ankle ligaments, use different augmentation tissues, such as periosteum, local grafts, or free tendons. Nonanatomic techniques have been used in the past, but currently are not the procedure of choice, as such procedures can lead to permanent changes in ankle kinematics. Anatomic reconstructions also present some complications, such as soft-tissue infections in up to 1.6% and nerve problems in 3.8% of patients. In an effort to minimize surgical exposure while obtaining results comparable with those of open procedures, and in hopes of decreasing complications, an arthroscopic approach has been developed by the author. The results

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confirm a simple, effective, and efficient technique for reconstruction of the ankle ligament, with a low complication rate, which does not close the door on anatomic or nonanatomic reconstructions in the future.

Ankle sprain is one of the most common lesions associated to sports trauma and in activities of daily life. It is estimated that 10% or more of the consultations in the emergency room (ER) are inversion traumas of the ankle, which occur in 1 of every 10,000 people per day.[1–3] Despite an adequate diagnosis and a protocol of strict management, a group of patients evolve toward chronic instability and residual symptoms of anterolateral impingement and synovitis, and in controlled studies it is estimated that 50% of the cases can evolve with the consequences described.[4,5] The severity of the lesion does not always correspond to the presence of residual symptoms, but does associate with the presence of initial damage of the syndesmosis.[6–8] The lateral region of the ankle contains static and dynamic restrictors of movement. Static restrictors consist of the bony configuration of the ankle including the configuration of the talus, wide in its anterior portion and straight in its subsequent portion; the talofibular mortise and its movement in unison with the talus in dorsal and plantar flexion; and the topography of the distal tibia, which contributes 30% of the restriction to the rotational forces. The dynamic restrictors contribute to the remaining 70% of the constraint of the rotational forces and are chiefly soft tissues, which in their anatomic disposition permit harmonious movements of articulation but also limit the arch of motion of the joint so as not to exceed its functional capacity. These restrictors are the collateral ligaments, the syndesmosis ligaments, and the peroneal tendons. Three clearly defined bands inside the lateral ligaments of the ankle exist: the anterior talofibular ligament (ATF), compromising 68% of the system, and constitutes the main restrictor of the ankle in dorsal to plantar flexion movement. It originates in the anterior ridge of the lateral malleoli, courses in an anteromedial direction, and is inserted in the body of the talus, anterior to the joint facet of the lateral malleoli. Its damage is evaluated by the anterior drawer test, and its severity depends on factors subjectively evaluated by the examiner, but in general it can be classified as of mild, moderate, and severe degree. The fibulocalcaneal ligament (FCL) works synchronically with the ATF, and therefore is rarely injured in isolation. The FCL is involved in 20% of ankle inversion trauma; it originates on the lowest ridge edge of the lateral malleoli and inserts in the lateral surface of the heel bone. Its damage is evaluated by the talar tilt test and is corroborated with a stressed anteroposterior radiograph. The peroneal tendons travel in the retromaleolar lateral zone and are directed through a fibro-osseous tunnel, in an oblique direction, before being inserted in the base of the fifth metatarsal (peroneus brevis), and in the base of the first metatarsal and medial cuneiform (peroneus longus). These tendons work as plantar flexors and evertors, producing 63% of the eversion capacity work and stabilizing the ankle and subtalar joints.

The ligaments of the syndesmosis stabilize the ankle mortise in the movements of dorsal and plantar flexion, while the anteriormost portion (wider) of the talus enters and leaves the mortise. The most inferior portion of the anterior tibiofibular ligament (ligament of Basset) can be compromised in ankle sprains and chronic instability, and can produce hypertrophic scar tissue formation, developing symptoms of impingement in the anterolateral gutter, responsible to a large extent for the residual pain occurring in ankle sprain. The initial damage of the ligaments can be looked for with the compression test, and the external rotation test in the acute setting. After the anterolateral impingement syndrome is established, the examiner finds pain in the anterolateral gutter, and limitation in dorsiflexion caused by pain in the same zone.[9–12]

The classic operative methods for ankle ligament reconstruction have been divided into 2 major groups: anatomic and nonanatomic repairs. Anatomic repairs include reconstruction of the original ligaments by either shortening and reattaching them to