

Operative Management of Chronic Ankle Instability: Plantaris Graft

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Many techniques are available for surgical reconstruction of chronic lateral ankle instability [1]. Nonanatomic procedures (or tenodesis procedures) cause numerous adverse effects [1,2], with restriction of motion of the subtalar and ankle joints and arthritis in up to 60% of patients [3]. The procedures that use the tip of the fibula or the posterior aspect of the fibula for insertion of the calcaneofibular ligament are nonanatomic, and act as tenodesis procedures. Precise reconstruction of anatomy is the key to successful lateral ligament reconstruction. The plantaris tendon offers the opportunity to use local autograft tissue with high tensile strength [4], a long graft when harvested at the proximal calf [5], and without the further damage to the impaired lateral muscular control intrinsic in peroneal tendon harvesting [6].

Ankle ligament injuries are the most common injuries in sports and recreational activities [6,7]. Acute lateral ankle sprains are optimally managed by functional rehabilitation [6,8–10], and surgery does not improve results [6,11]. Twenty percent to 40% of these patients will develop chronic instability and subsequent disability [6,12]. In most patients, late repair of the lateral ligaments is possible. If there are insufficient local tissue remnants, autografts, allografts, or synthetic substitutes can be used for ligament reconstruction, and 90% to 95% of these patients can be operated upon satisfactorily [13].

Controversies persist regarding anatomy and function of the lateral ankle ligaments despite concise anatomic and biomechanical studies. Consequently, nonanatomic ligament reconstructions techniques are still frequently used, and may explain postoperative problems, including persistent objective or subjective instability, pain, stiffness, development of arthritis,

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or decreased range of motion. This article describes the technique and clinical results of the senior author's ligament reconstruction procedure [14].

The choice of graft tissue for ligament reconstruction has less influence on the clinical outcome of lateral ankle ligament reconstruction than has anatomic versus nonanatomic reconstruction. Thus, graft selection often depends on the preference of the surgeon, and less on graft considerations. However, there are advantages and disadvantages of each graft and harvesting procedures. This article describes the advantages using the plantaris tendon autograft, and demonstrates the advantages using the author's harvesting procedure with a single incision at the proximal calf [5].

Chronic lateral instability of the ankle

Clinical symptoms

Diagnosis is based on medical history and clinical findings. Patients complain of insecurity, instability, and giving way on uneven ground with difficulties in sports or daily activities, with recurrent sprains, pain, tenderness, and at times bruising over the lateral aspect of the ankle [15–17]. Approximately 30% of patients may be asymptomatic between the events, and others may present with chronic lateral pain, tenderness, swelling, or giving way [15]. We test ankle laxity with the patient sitting with the legs hanging free. This will prevent reactive muscular stabilization by involuntary peroneal muscle contraction [18]. Talar tilt test or anterior drawer sign are positive in patients with structural ligament insufficiency, whereas these tests may be negative when only functional ankle instability is present [19]. Functional ankle instability is likely caused by damaged mechanoreceptors in the lateral ligaments. It is diagnosed with gait analysis or prolonged peroneal muscle reaction time with electromyographic measurements [20–22]. After intensive physical therapy, surgery may be suggested in chronic functional instability in patients with, and probably also without, combined mechanical instability [1].

Imaging

The finding of laxity may be documented by forced inversion or anterior drawer films. A talar tilt of more than 5° difference to the contralateral uninjured ankle is usually considered pathologic [23], although others claim a minimum of 10° [24,25]. Anterior subluxation of over 6 mm is usually considered pathologic [23]. However, wide variations of up to 25° of talar tilt and differences from side to side of up to 19° have been found to be present in about 5% of the population [24]. Hence, radiographic assessment of lateral laxity is highly unreliable. This becomes even more evident, as only 40% of the patients demonstrating radiographic instability will have symptoms of an unstable ankle [26]. Approximately the same percentage of patients with

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