The Association Between Plantar Fasciitis and An Isolated Gastrocnemius Contracture

Presenting:

Amar Patel, MD
Rochester, New York

Additional Authors:
Andrew Bogle, MD
Benedict F. DiGiovanni, MD

Summary
Evidence exists suggesting that limited ankle dorsiflexion may be a contributing factor in plantar fasciitis. This investigation was a prospective evaluation of patients with either acute or chronic plantar fasciitis and the existence of concurrent limited ankle dorsiflexion. The etiology of the limited dorsiflexion was characterized by noting the presence of an isolated gastrocnemius contracture or a contracture of the gastrocnemius-soleus complex. Limited ankle dorsiflexion was common in patients with acute and chronic plantar fasciitis. Over half of those with limited ankle dorsiflexion had evidence of an isolated gastrocnemius contracture, with a slightly higher proportion in those with acute symptom duration. Although these results do not provide a causative role of an isolated gastrocnemius contracture with plantar fasciitis, it provides valuable information which can be applied to non-operative and operative treatment strategies.

Abstract:

Background
Plantar fasciitis is a common disorder with symptoms that are often prolonged. Although debate continues regarding the etiology of this condition, evidence exists suggesting that limited ankle dorsiflexion may be a contributing factor. Limited ankle dorsiflexion can arise from either an isolated contracture of the gastrocnemius or from a contracture of the gastrocnemius-soleus complex. Isolated gastrocnemius contractures have been associated with generalized foot pathology. The association between plantar fasciitis and isolated gastrocnemius contracture is unclear. This study’s aim was to prospectively evaluate patients with plantar fasciitis and specifically evaluate for limited ankle dorsiflexion and determine the proportion of patients with an isolated gastrocnemius contracture.

Methods:
This investigation was a prospective evaluation of patients with either acute or chronic plantar fasciitis who presented to the senior author’s office between July 2007 and March of 2009. After the diagnosis of proximal plantar fasciitis was confirmed, each patient was assessed for the existence of limited ankle dorsiflexion with the knee fully extended. The etiology of the limited dorsiflexion, termed an equinus contracture, was characterized by noting the presence of an isolated gastrocnemius contracture defined as ankle dorsiflexion of less than 5 degrees during knee extension that corrected with knee flexion to 90 degrees, or a contracture of the gastrocnemius-soleus complex which was defined as less than 10 degrees of ankle dorsiflexion regardless of knee position. These findings as well as the patient’s duration of symptoms, type of occupation, and body mass index were documented in physical evaluation forms which were scanned into an electronic medical record (EMR) system. Data was gathered by reviewing the EMR charts by a practitioner other than the examining physician.

Results
Two hundred fifty four patients with plantar fasciitis presented to the senior author’s clinic between the eligible time frame, and all were included in this study. Of this group, 83% (211 of 254 patients) had an equinus contracture or limited ankle dorsiflexion with the knee in full extension. Fifty seven percent (145/254) of those presenting with plantar fasciitis had an isolated contracture of the gastrocnemius, 26% (66 patients of 254) had a contracture of the gastrocnemius-soleus complex, and 17% (43 of 254) did not have limited ankle dorsiflexion.
Patients were further stratified into acute versus chronic symptom duration at the time of presentation. For those patients with acute plantar fasciitis (155), 83% (129 of 155) had an equinus contracture. Sixty percent of patients with acute plantar fasciitis (93 of 155) had an isolated gastrocnemius contracture, while 23% (36 of 155) had a contracture of the gastrocnemius-soleus complex. Eighty two percent of those with chronic plantar fasciitis (82 of 99 patients) had an equinus contracture. Of those with the diagnosis of chronic plantar fasciitis, 52% (52 of 99) had an isolated contracture of the gastrocnemius, while 30% (30 of 99) had a contracture of the gastrocnemius-soleus complex.

Conclusions
To our knowledge, this is the first study to prospectively evaluate the association between plantar fasciitis and isolated gastrocnemius contracture. Limited ankle dorsiflexion is a common associated condition in patients with acute and chronic plantar fasciitis who present for treatment and more than half of these patients have evidence of an isolated gastrocnemius contracture. These results do not provide a causative role of an isolated gastrocnemius contracture with plantar fasciitis but rather contribute valuable information which can be applied to potential non-operative and operative treatment strategies.