Ankle inversion taping using kinesiology tape for treating medial ankle sprain in an amateur soccer player

Sun-Min Lee, PhD, PT1, Jung-Hoon Lee, PhD, PT2)*

1) Department of Occupational Therapy, College of Rehabilitation Science, Daegu University, Republic of Korea
2) Department of Physical Therapy, College of Nursing and Healthcare Sciences, Dong-Eui University: 176 Eomgwangno, Busanjin-gu, Busan 614-714, Republic of Korea

Abstract. [Purpose] The purpose of this study was to report the effects of ankle inversion taping using kinesiology tape in a patient with a medial ankle sprain. [Subject] A 28-year-old amateur soccer player suffered a Grade 2 medial ankle sprain during a match. [Methods] Ankle inversion taping was applied to the sprained ankle every day for 2 months. [Results] His symptoms were reduced after ankle inversion taping application for 2 months. The self-reported function score, the reach distances in the Star Excursion Balance Test, and the weight-bearing ankle dorsiflexion were increased. [Conclusion] This study showed that ankle inversion taping using kinesiology tape may be an effective therapy for a patient with a medial ankle sprain.

Key words: Cumberland Ankle Instability Tool, Eversion ankle sprain, Star Excursion Balance Test

INTRODUCTION

Ankle sprain is a common sport-related injury1). This type of injury involves stretching and tearing of the ankle ligaments. Approximately 85% of all ankle sprains are related to the lateral ligament complex2). Medial ankle sprains are somewhat rare, accounting for approximately 10–15% of all ankle sprains in athletes, and can result in long-term disability3). Most of the pain and tenderness caused by a medial ankle sprain is localized to the medial aspect of the ankle, especially around the deltoid ligament and the medial malleolus.

Majority of the existing studies are on lateral ankle sprains4). Here, we report the effects of ankle inversion taping (AIT) using kinesiology tape in a patient with a medial ankle sprain.

SUBJECT AND METHODS

A 28-year-old amateur soccer player complained of severe pain on the medial aspect of his left ankle after sustaining a Grade 2 medial ankle sprain during a soccer match one month prior to his visit. He presented with a history of left ankle injury 3 years ago, following which, his ankle was in a cast for 3 weeks. He experienced painful eversion and dorsiflexion of the left ankle and severe pain during sport-related activities such as jumping and turning. In particular, full weight bearing on the left leg was difficult because of severe pain. Prior to participation in this study, the patient demonstrated an understanding of the study purpose and provided written informed consent. This protocol was in accordance with the ethical standards of the Declaration of Helsinki.

In the initial assessment, the tenderness on the medial aspect of the ankle, at a pressure of 3 kg, was measured using an algometer (Pain Test-Model FPK; Wagner Instruments, Greenwich, CT, USA) on a 0–10 scale, with 0 indicating no pain and 10 indicating the worst pain5). The tenderness at 3 kg was 8.

The patient’s self-reported functional ankle deficits using the Cumberland Ankle Instability Tool (CAIT) questionnaire, which is comprised of 9 items scored on a 30-point scale6), were investigated. The CAIT score of his left ankle was 11/30.

Dynamic balance was assessed using the Star Excursion Balance Test (SEBT)7). The SEBT is a valid and reliable tool for dynamic postural control assessment of subjects with ankle instability8). The maximal reach distances of the opposite leg in the anterior, postero medial, and posterolateral directions when standing on the sprained leg were 57 cm, 60.5 cm, and 65.5 cm, respectively.

Ankle flexibility was assessed using weight-bearing ankle dorsiflexion (the distance from big toe to wall in maximal ankle dorsiflexion with knee flexion without lifting the heel) was assessed9). The initial distance was 2.6 cm.

At the initial ankle active range of motion assessment, the...
and end points of approximately 4–5 cm when the I-shaped tape immediately if itching was experienced. In addition, removal of the previously applied AIT even if the patient did not report any itching and instructed the patient to remove the tape immediately if itching was experienced. In addition, to prevent skin problems, no stretch was applied to the start and end points of approximately 4–5 cm when the I-shaped tape was applied. The patient did not undergo any other interventions for treatment of the medial ankle sprain.

RESULTS

At the final assessment, the tenderness at 3 kg of pressure decreased from 8 to 1, and the CAIT score increased from 11/30 to 27/30. The maximal reach distances in the anterior, posteromedial, and posterolateral directions increased from 57 cm to 72 cm, from 60.5 cm to 86 cm, and from 65.5 cm to 87 cm, respectively. The maximal distance of weight-bearing ankle dorsiflexion increased from 2.6 cm to 7.0 cm. The eversion, inversion, dorsiflexion, and plantarflexion range of motion increased from 6°/20° to 20°/20°, from 25°/45° to 42°/45°, from 14°/30° to 28°/30°, and from 46°/60° to 57°/60°, respectively. Following this treatment, the patient did not experience any medial ankle pain during sport-related activities such as jumping, turning, and was able to perform full weight-bearing on the left leg.

DISCUSSION

This study showed that the AIT application for 2 months decreased medial ankle pain and the self-reported functional ankle deficits, and it improved the ankle range of motion and dynamic balance. The first treatment strategy with AIT application is protection of the sprained ankle from further injury and avoidance of evasion that can cause pain due to the mechanical effects of inversion. Painful evasion and dorsiflexion of the sprained ankle were avoided through a more inverted ankle with the application of the kinesiology tape. Although no research on the ankle joint has been reported, previous studies have reported on the application of kinesiology tape to support joint structure and modified joint structure such as mechanical effect. We assume that the recurrence of ankle sprain and motions that cause medial ankle pain were avoided. Therefore, the natural healing process of the ankle sprain was assisted.

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