

**PHYSIOTHERAPY PROGRAMME AFTER PERONEAL TENDON INSTABILITY SURGERY
IN A HENTBALL PLAYER: A CASE REPORT
PHYSIOTHERAPY AFTER PERONEAL TENDON INSTABILITY**

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ABSTRACT

Objective: The aim of this case report was to demonstrate physiotherapy results of a patient undergone peroneal tendon instability (PTI) surgery **Method:** The 16 years old handball player patient going to hospital for sprained ankle was casted for 10 days. Then, the patient applied to the clinic 10 days after his cast was removed. After it was noticed that the patient has peroneal tendon instability on the first day of the treatment, she was transferred to the orthopedics clinic where she was diagnosed with PTI. The patient's proximal peroneal retinaculum and peroneal tendon were repaired 10 days later. After 2 weeks of a 6-week of immobilization period, the physiotherapy program was initiated. Pain, normal joint motion and edema were evaluated before and after the treatment. The patient underwent a treatment period for 3 days/week during 4 weeks. **Results:** No pain was observed before and after the treatment. Edema and atrophy were determined to decrease, whereas ROM was determined to increase after the treatment. **Discussion:** In the literature, studies on physical therapy after PTI surgery are rare. The physiotherapy applied after PTI surgery has given successful results.

Keywords: Peroneal tendon, Instability, Dislocation, Rehabilitation, Athlete

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INTRODUCTION

The peroneal tendons way around the lateral ankle at the distal aspect of the fibula. These tendons which include the tendons of the peroneus longus and brevis move through a tunnel generated of both fibrous and osseous structures [1]. The borders of this tunnel include the lateral malleolus, posterior talofibular ligament, calcaneal fibular ligament, and superior peroneal retinaculum. Most important to us is the superior peroneal retinaculum (SPR) which is the main restraint to subluxation and dislocation of the peroneal tendons [1-3]. Peroneal tendon instability, which is rarely encountered, was first described in a ballet dancer by Monteggia in 1803 [4]. The peroneal tendons dislocate over the lateral malleolus causing posterolateral ankle pain and a snapping sensation [5]. Most acute injuries are caused by a sudden dorsiflexion and inversion of the ankle while the peroneals are contracting. Acute injuries frequently occur during sporting activities. Should the injury is left untreated, it can lead to chronic pain or ankle pain that will require a operative correction [1, 3, 6]. Patients with an intrasheath subluxation commonly have subjective feelings of popping, snapping, or clicking related to pain. They do not demonstrate objective clinical evidence of subluxation over the lateral malleolus. Static and dynamic ultrasound has been indicated precious in diagnosis of this pathology [7]. Echard and Davis created a four classification-system for peroneal subluxation. Conservative treatment of this condition can be utilized. However, the literature shows there is a high rate of failure for this course of action [1]. Most conservative treatment includes casting for 4-6 weeks. Another treatment includes taping which has a lower success rate than casting. Considering that the majority of the patients are athletes, most of them want a quick return to activity and expect a high rate of success [2, 3, 8].

CASE REPORT

A 16 years old woman (height: 174 cm, weight: 61 kg, dominant side is left) was handball player in the Super League. She applied to the hospital with the complaint of inversion injury. In hospital, she plaster cast was performed to her leg for 10 days. 10 days later, the patient applied to our department. On the first day of the treatment, it is noticed that instability in peroneal tendon during resistant eversion movement. Then she was directed to the orthopedics clinic. 10 days after the examination in the clinic where she was diagnosed PTI, the patient's proximal peroneal retinaculum and peroneal tendon was repaired. The patient was immobilized for 6 weeks. After 3 weeks immobilization with plaster, 3 weeks was taken splint. In the eighth week, physical therapy program was started two weeks late. The delay was due to patient's private excuses. She used aircast when she applied again to our clinic in

the eighth week. On the first day, the patient was taken an informed consent form and the treatment programme was created. Pain (by VAS), ROM (by goniometer), edema and atrophy (by perimeter) were evaluated before and after the treatment. In addition, navicular drop test was performed by reason of the relationship between navicular height and peroneal tendon.

The patient had physical therapy 3 days a week during 3 months. Initial treatment consisted of cold pack, electrical stimulation to the peroneal muscle, stretching the of the triceps surae muscles, weight bearing exercise and active ankle range of motion for first week. Coldpack was applied with a gel pack for 15 minutes to around the ankle. Electrical stimulation to the peroneal muscles was performed with Compex device (Compex® 3 Professional) for 20 minutes. And at the same time, the patient was asked to actively move with electric stimulation. Passive stretching for triceps surae muscles was performed by the patient with Thera-Band for 30 seconds and 10 repeat and the active ankle movement was done as 15x2 set. Proprioceptive trainings were started from the first day and progressed progressively. In the second week in addition to the same exercises, 15x2 set strengthening exercises with a red Thera-Band around the ankle, double leg balance exercises on soft surface and weight transfer exercises were done. In the third week, the patient went on single leg balance exercises on firm surface and running on a treadmill at a low speed and strengthening the muscles around the hips with blue Thera-Band. Walking training on treadmill started at 10 mph and at 4 km / h. In the fourth week, she was progressed single leg balance exercises on soft surface. Thera-Band's resistance, walking speed and duration were increased according to patient tolerance. After one month, swimming and cycling were recommended. The bike was made for 5 minutes without resistance. Eversion with dorsi flexion was not allowed during the first 4 weeks. Proprioceptive exercises were performed on BOSU®. In the fifth week the double toe tip elevation, lunge and in sixth week walking on the toe, heel exercises was added. In the eighth week, walking speed, cycle time and Thera-Band resistance was increased. In addition to the this exercises in the tenth week, jumping exercise on trampoline and sports special activities were started. Throughout the entire treatment period, the patient applied the clinic exercises at home as 1 set. After being assessed in the twelfth week she returned full activity and sport.

Figure 1: Strengthening exercises of hip muscles

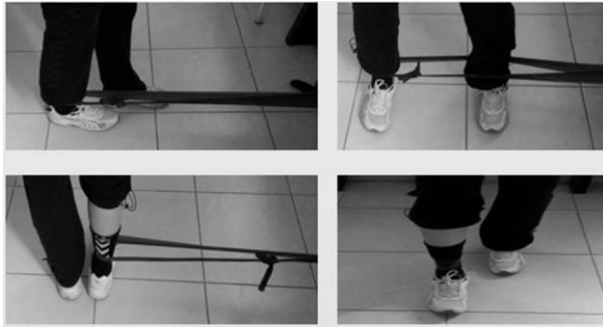


Figure 2: Strengthening exercises of ankle muscles

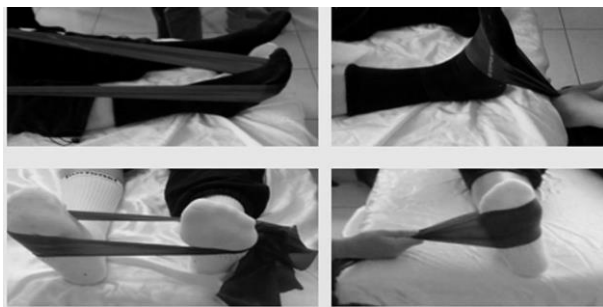


Figure 3: Balance and proprioception exercises



RESULTS

According to VAS values, the patient had no pain at the beginning and at the end of treatment. Ankle dorsiflexion, plantar flexion, inversion and eversion limitations decreased at the end of treatment. It was observed that the amount of edema decreased at the end of treatment according to the environmental measurement results. Navicular drop test results were similar before and after treatment. The results of the evaluations made before and after the treatment are summarized in tables 1 and 2.

Table 1: Limitation of Range of Motion

	Before treatment (°)*	After treatment(°)*
Dorsi flexion	9 °	3°
Plantar flexion	3°	0°
Eversion	3°	0°
Inversion	7°	2°

**the difference of right-left extremite*

Table 2: Assesment of Edema and Atrophy

	Difference before treatment (cm)*	Difference before treatment (cm)*
30 cm	-2.8	-1.3
25 cm	-2.2	-1.4
20 cm	-1.8	-0.2
15 cm	-1	-0.4
10 cm	-0.2	0
5 cm	-0.4	0
Lateral malleol	1.3	0.3
5 cm	3.3	0
10 cm	1.8	0.3
15 cm	0.8	0

**the difference of right-left extremite*

DISCUSSION

Peroneal tendon subluxation is estimated to occur in 0.3% to 0.5% of traumatic events to the ankle [2]. Surgery is usually thought as a prior treatment approach for patients with this problem. Escalas et al reported a study of 38 patients with acute peroneal subluxation; after several weeks of conservative therapy, 28 (74%) patients had no improvement and required surgery [9].

In the literature, studies on physiotherapy after PTI surgery are rare. In these studies, the physiotherapy applied after PTI surgery has given successful results however, there is no standard protocol.

In a systematic review which was made by Roth and his coworkers, it was suggested that after peroneal dislocation surgery the treatment includes immobilization of the ankle joint in a cast, walking boot or taping [10]. Typically, patients are instructed to be non-weight bearing for 2 weeks, followed by 4 weeks in a walking boot. Likewise, our patient was immobilized for six weeks in a cast with orthopaedic doctor proposal.

Additionally, Porter et al aimed to evaluate the results of operative treatment of recurrent peroneal tendon dislocations and they observed 13 patients with an accelerated rehabilitation incorporating early range of motion and treatment. In their protocol, first week after the surgery active, active-assistive range of motion exercises, desensitization exercises and stationary bicycle riding with the boot in place were begun. Range of motion exercises included plantar flexion and dorsi flexion with inversion. Dorsi flexion with eversion was not allowed during the first 4 weeks after the surgery. Three weeks after the surgery, the athlete was allowed to begin biking while wearing a stirrup brace. Four weeks after the surgery, the athlete began to taper out of the boot into a stirrup brace over 10 to 14 days. The athlete began stair-climber workouts while wearing the stirrup brace, initiated toe-raise strengthening and proprioception retraining exercises and was allowed to perform active dorsiflexion with eversion exercises for peroneal strengthening. Six weeks after the surgery, the athletes began running and functional progression exercises while wearing the stirrup brace. After completing the functional progression, the athlete was permitted to resume his or her individual sport [8]. Unlike, we started the physiotherapy programme at 8th week because of patient's private excuses. Nevertheless, the patient showed good progression. She could be able to return to play at her previous level in 3 months. Besides, in the study conducted by Porter et al. [8], operative treatment involved removing a bone flap from the distal posterior fibula, deepening the posterior fibular groove, and reattaching the bone flap within the deepened groove while proximal retinaculum and peroneal tendon reconstruction were used as a operative approach in our study. Therefore our physiotherapy progression was mild whereas their protocol was aggressive.

Peroneal tendon instability is an uncommon ankle problem in clinics. Because of this, the diagnosis may be delayed. Physiotherapy has given successful results when the treatment program is advanced according to the tolerance of the patient by avoiding eversion with dorsi

flexion for the first 4 weeks after detailed evaluation of the patients. Therefore, physiotherapy programme should be started after PTI surgery to gain previous sportive performance.

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