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(CASE REPORT)

Functional outcomes in anterior talofibular ligament repair with anchoring screw: Two case series

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Abstract

Background: The Anterior Talofibular Ligament (ATFL) functions to resist plantarflexion and anterolateral translation of the talus. Lateral ankle sprains account for 85% of all ankle sprains and are most common in athletes. ATFL injury is the most common ankle ligament injury, accounting for 35.6% of the total patients with ligament injuries.

Case Report: The first patient, a 39 year old man with a diagnosis of ATFL injury, had a history of falling with the outside of his right leg supported when he fell. Physical examination of the right ankle revealed tenderness in the posterolateral region, pain during dorsiflexion and plantarflexion, positive anterior drawer examination and positive talar tilt. The second patient, a 19 year old male with the same history and injury location on the right ankle. Physical examination showed a similar condition to the first patient. MRI examination of both patients showed ATFL injury. Both patients underwent open repair of the right ATFL (Brostrom technique) with anchoring screws, post-operative care, and evaluation one year after surgery.

Discussion: Surgery is taken to prevent repeated ruptures, especially in cases of ligament tears. The Brostrom technique is an anatomical repair with end-to-end repair from the final ATFL tear to the distal anterior fibula. Both patients demonstrated normal foot and ankle function, with a score of 100 based on the American Orthopedic Foot Ankle Association (AOFAS). Conclusion : Brostrom open repair with Anchoring Screw is an effective procedure in returning the patient's function to its previous level as assessed based on the AOFAS score after a year after surgery.

Keywords: Ankle injury; Anterior talofibular ligament; Bone screw; Therapy

1. Introduction

One of the branches of the lateral ligament of the ankle is the anterior talofibular ligament (ATFL). The lateral ligament of the ankle is composed of three operative branches that terminate anterolaterally to the talus (ATFL) and the calcaneus [posterior talofibular ligament (PTFL)] and posterolaterally to the calcaneus [calcaneofibular ligament (CFL)[1]. The most common type of ankle sprains is lateral ligament sprain, with approximately 77% of cases occurring[2]. The ATFL is the most vulnerable part of lateral ligament injury[3]. The lateral joint capsule is torn when ankle joint varus or metatarsal flexion occurs, causing the fragile ATFL to sprain or even tear, which is followed by joint hematocele, swelling, or subcutaneous ecchymosis[4]. Acute injury to the ATFL can be treated with external fixation. Conservative treatment options, such as external fixation with braces, are available for acute ATFL injuries. Surgical treatment, such as open anatomical repair or arthroscopic ligament repair, may be an option when the extent of the injury is severe. Nevertheless, there is currently a lack of clarity in the literature regarding the optimal course of treatment for acute ATFL injuries. Inadequate management can lead to long-term migration of the wounded site and major problems, which

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can have a detrimental impact on quality of life and increasing financial burden[5]. As a result, it's critical to comprehend and become proficient in both prevention and therapy of this widespread illness. Thus, the purpose of this study is to provide an overview of the diagnosis and course of treatment for acute ATFL injury.

2. Presentation of Case

This is a rare case presentation. First case is a 39 year old man with a diagnosis of ATFL injury, had a history of falling with the outside of his right leg supported when he fell. Physical examination of the right ankle revealed tenderness in the posterolateral region, pain during dorsiflexion and plantarflexion, positive anterior drawer examination and positive talar tilt.

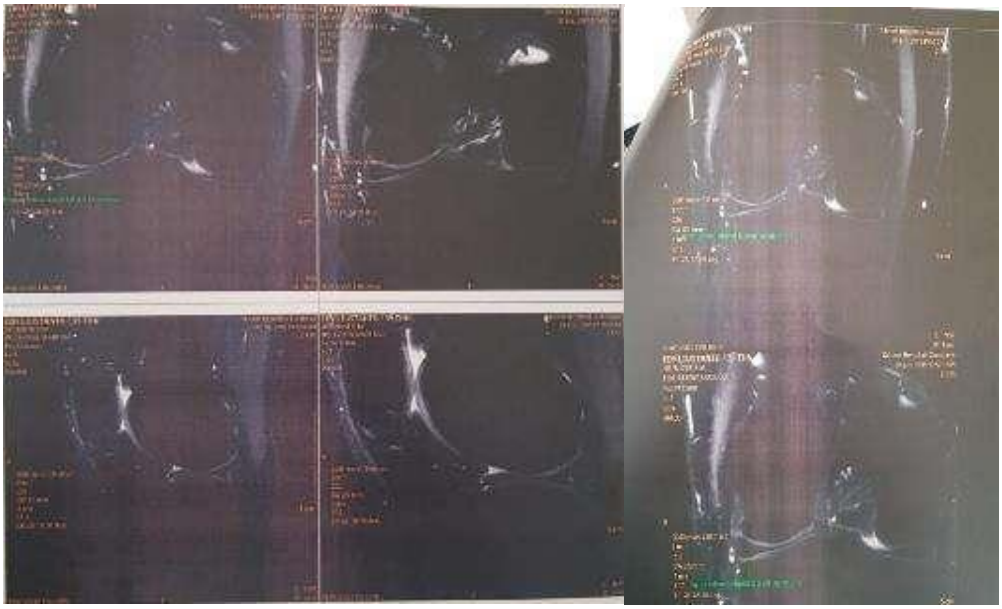

Figure 1 MRI from 1st patients.

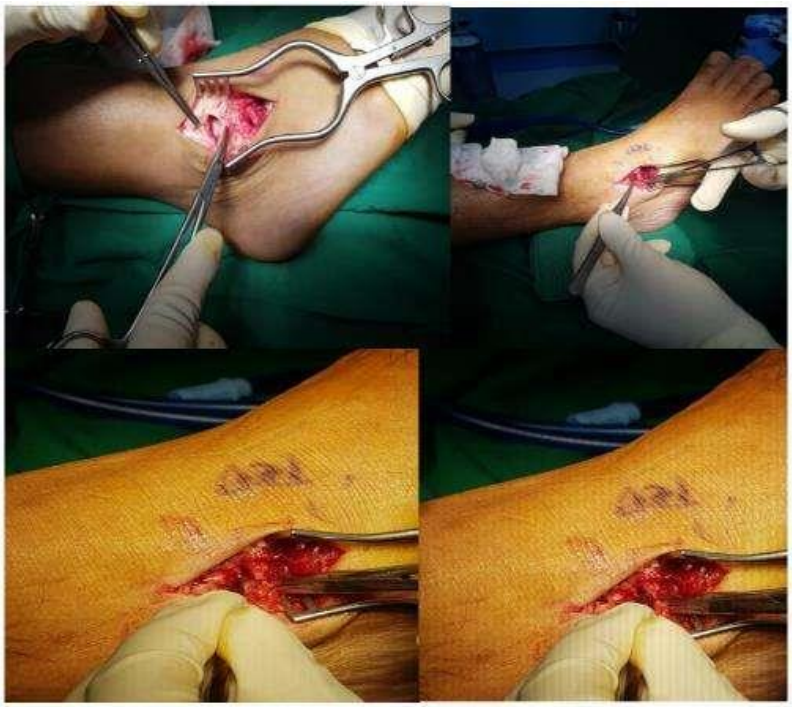

Figure 2 Clinical Photo durante Operation from 1st patient.

Table 1 AOFAS score from 1st patient.

No	Assessment	Description	Points
1	Pain	No pain	40
2	Function	No limitations and no need for assistive devices	10
		Able to walk >6 blocks	5
		No difficulty walking on any surface	5
		No gait abnormalities	8
		Sagittal movement (flexion and extension) normal or mild restriction (30° or more)	8
		Hindfoot movement (inversion plus eversion) normal or mild restriction (75%-100% normal)	6
		Ankle-hindfoot stability	8
3	Alignment	Good	10
Total			100

The second patient, a 19 year old male with the same history and injury location on the right ankle. Physical examination showed a similar condition to the first patient. MRI examination of both patients showed ATFL injury. Both patients underwent open repair of the right ATFL (Brostrom technique) with anchoring screws, post-operative care, and evaluation one year after surgery. Operative measures are taken to prevent repeated ruptures, especially in cases of ligament tears. The Brostrom technique is an anatomical repair with end-to-end repair from the final ATFL tear to the distal anterior fibula

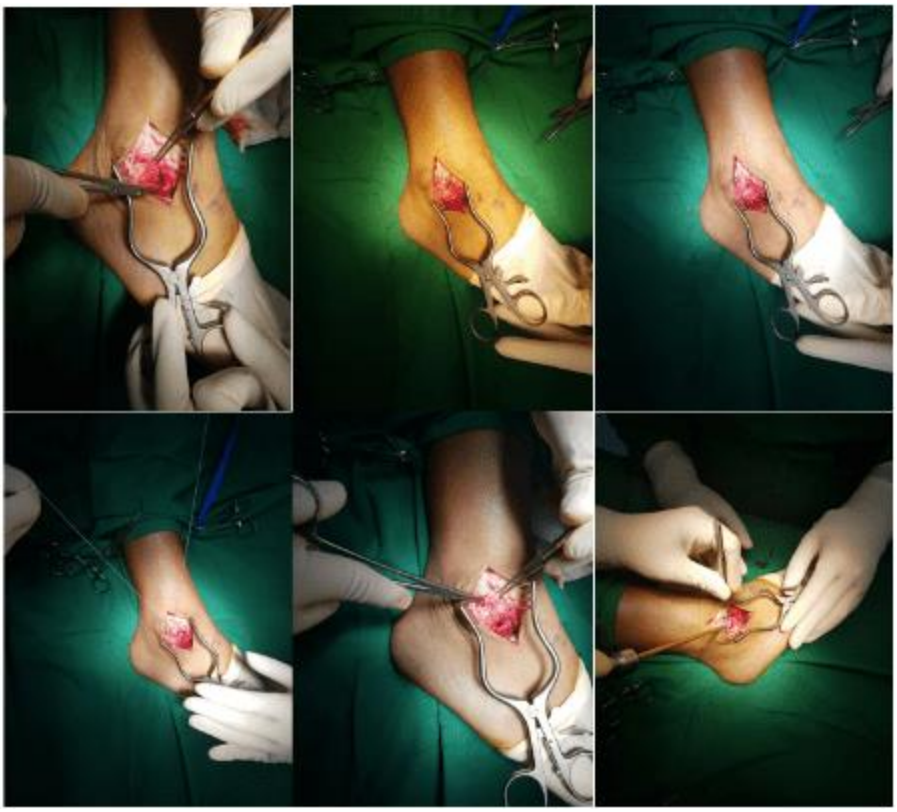

Figure 3 Clinical Photo durante Operation from 2nd patient.

Tabel 2 AOFAS score from 2nd patient.

No	Penilaian	Keterangan	Poin
1	Nyeri	Tidak ada nyeri	40
2	Fungsi	Tidak ada hambatan dan tidak perlu alat bantu	10
		Mampu berjalan >6 blok	5
		Tidak ada kesulitan berjalan di permukaan apapun	5
		Tidak ada kelainan gaya jalan	8
		Gerakan sagittal (fleksi dan ekstensi) normal atau retriksi ringan (30^o atau lebih)	8
		Gerakan hindfoot (inversi ditambah eversi) normal atau retrisksi ringan (75%-100% normal)	6
		Ankle-hindfoot stabil	8
3	Alignment	Baik	10
Total			100

3. Discussion

Acute ankle sprains may lead to chronic ankle instability, which is defined as the ankle's continued giving way. Ankle instability can have several origins, such as structural instability, functional instability, and pseudo-instability. An instability that results from a proprioceptive loss is referred to as functional instability. Restoring proprioception and coordination through an adequate rehabilitation plan led by physiotherapy is the most effective way to manage functional instability. A sense of instability in the ankle is known as pseudo-instability. In pseudo-instability, the ankle normally doesn't give way entirely; instead, people are frequently able to guard the ankle before it loses way, and they may complain of persistent discomfort or catching before the ankle gives way. The most common causes of pseudo-instability include loose bodies or osteochondral lesion of the ankle.

Patients who experience structural instability even after receiving appropriate rehabilitation may benefit from ankle stabilisation surgery, which fixes or reconstructs the ATFL and CFL in order to treat the structural component. The ATFL and CFL are repaired under tension in a surgical approach first reported by Brostrom in 1966 and that yields outstanding outcomes. Gould (1980) reported a modification that included an extra inferior extensor retinaculum (IER) imbrication. The Bröstrom-Gould procedure is the cornerstone of anatomic ankle reconstruction methods due to its high success rates and minimal incidence of complications, including subtalar arthritis, nerve damage, and stiff ankles. Additionally, the treatment returns the joint's normal kinematics. Non-anatomical reconstructions, such as the Chrisman-Snook or Evans method, differ from anatomical repairs in that they typically involve bigger dissections and a higher risk of complications, including nerve injury and subtalar.

4. Conclusion

Open modified Brostrom lateral ligament repair continues to be the preferred method of surgical treatment for chronic lateral ligament instability. In the setting of new modifications and techniques, long-term outcome studies are necessary to identify both their usefulness in long term and to compare them to the open surgery outcomes. It would be useful to standardize rehabilitation protocols as well as return to sport metrics in order to better evaluate outcomes moving forward. Brostrom open repair with Anchoring Screw is an effective procedure in returning the patient's function to its previous level as assessed based on the AOFAS score after a year after surgery.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest in this study.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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