

## Short-term Efficacy Study of Lower Tibial Combination Separation in the Treatment of TightRopeight

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### ABSTRACT

**Objective:** To explore the recent efficacy of Lower Tibial Combination Separation in the treatment of TightRopeight. **Methods:** 60 patients were selected as object with lower tibial combination separation treated in our hospital from May 2013 to May 2016. All patients were treated with TightRopeight, and the short-term efficacy has been analyzed. **Results:** Apart from the 5 cases of inflammatory response, other patients were healed well with lower intraoperative blood loss and no postoperative re-fracture. The excellent rate of AOFAS score was 96.67%. **Conclusion:** Applying TightRopeight in the treatment of patients with lower tibial combination separation can not only achieve good short-term efficacy, but also have lower recurrence and higher safety rate a, which is worthy of further promotion and application in clinical practice.

### Introduction

Lower Tibial Combination Separation is a common clinical ankle injury, most patients suffering from which require operative methods, like inferior tibiofibular screw fixation. However, such operation focuses on fixation, affecting easily the recovery of the ankle joint<sup>[1]</sup>. This paper analyzes the short-term efficacy of lower tibial combination separation in the treatment of TightRopeight. Find below the results:

### 1 Object and Methods

#### 1.1 Research Subjects

The 60 patients included in our study were treated with Lower Tibial Combination Separation in our hospital from May 2013 to May 2016. All patients met the clinical

diagnostic criteria and had signed informed consent. Patients were excluded with inflammation and infection around the operation area, bone defects at the tibial metaphysis and basic disease intolerance. Among, male patients accounted for 45 cases, female patients 25 cases ranged from 19 to 68 years old with a mean age of (36.8 + 2.25) years. According to Weber parting, type accounted A for 13 cases, type B accounted for 26 cases and type C accounted for 21 cases.

#### 1.2 Methods

The patients with supine position are treated the fracture end of ankle joint under anesthesia and performed the lateral and medial incisions simultaneously. Among them, the lateral incision mainly starts from the tip of the outer ankle bone and a 8-10cm incision was cut around the proximal end. While, medical incision is to made the

medial malleolus tip as the center, cut a line of about 3cm curved incision on it and fixed the lateral malleolus fracture with plate. For the fixed type of medial malleolus fracture, it has to be selected according to the actual status of the patients which can be plate fixation and also hollow nail fixation. For patients with ankle instability caused by posterior malleolar fracture, the cannulated screws with gasket should be used for fixation after fracture reduction. When the operation is finished, the ankle joint should be fixed with plaster. At the same time, a large pelvic point reduction forceps is used to clamp the internal and external malleolus, and to replace the lower tibial separation. After ensuring the reset, at a position away from the syndesmosis about 1-2cm and the middle part of the lateral cortex of the fibula, use 3.5mm drill bit which perpendicular to the long axis of the calf and forward cross sections to drill through cortex in the angle of 30 degree, then followed by a needle into the bone tunnel, and pull the guide buckle out to the inner side of tibia, and stop the circular pinch buckle outside the lateral fibula. Then adjust the fiber line on the guide buckle and let the two button of TightRope to tight cling to the bone surface in a horizontal position, and tighten the fiber line, make 4-5 knots. Leave about 0.5-1.0cm thread at the end of the line and buried it in the posterior fibula which aims to avoid more stimulation to the skin, at the same time to take the medial suture and close incision layer by layer.

### 1.3 Effect Evaluation

In the follow-up of 6-18 months after operation, combined with the joint X-ray results to evaluated the fracture healing of patients, and use the American Orthopaedic Foot and Ankle Society (AOFAS) standard for evaluation to assess the ankle joint function: 100 points is the full score; 90 or more is excellent; 75-89 scores is good; the scores in the 50-74 is general; the score less than 50 is bad. Excellent rate = excellent rate + good rate.

## 2 Result

In this operation, the average operation time was (62.4 + 8.75) min, the intraoperative blood loss was (63.2 + 7.24) ml, and the average length of stay was (6.8 + 2.21) d. Postoperative inflammatory reaction occurred in 3 cases, and inflammatory reaction in the medial incision occurred in 2 cases. The inflammatory response disappeared after the fixed treatment of plaster and reinforced dressing change. The rest of the 55 cases healed well. After the follow-up, it was found that after the x-ray examination, no reduction or fracture of the distal tibiofibular joint occurred. 10-12 months after the operation, the patients' plates and TightRope were removed by surgery, and the

AOFAS score was excellent in 48 cases, good in 10 cases, fair in 2 cases and poor in 0 cases. The excellent and effective rate was 96.67%.

## 3 Discussion

In the past surgical treatment, it is usually necessary to perform the lower tibiofibular screw fixation after the reduction of the distal tibiofibular joint, but this kind of fixation can easily limit the patient's joint mobility, leading to foot stiffness and discomfort during walking. Compared with the screw fixation method, TightRope micro fixation is more suitable for ankle biomechanical characteristics, and is beneficial to the recovery of ankle joint function, and can reduce the discomfort of patients to a certain extent with higher safety<sup>[2]</sup>. At the same time, TightRope fixation for the treatment of patients with lower tibiofibular joint injury does not affect the patient's lower tibiofibular joint fretting activity, and it does not need to be taken out before weight-bearing, it can be removed with the steel plate after the fracture healing.

But it should be noticed that there is no pressure reset function in TightRope, so in the actual operation, it's necessary to use patella and pelvic reset forceps pressure reduction to separate the lower tibiofibular, and fix the TightRope after the implementation<sup>[3]</sup>. In this study, there were 5 patients with inflammatory response at the incision, mainly due to the TightRope stimulation of surrounding soft tissue. Therefore, in order to prevent this complication, the Tight-Rope lateral plate should be placed on the distal fibula plate as far as possible, and the line should also be buried in the posterior margin of the fibula as far as possible. In this study, 60 patients were treated with TightRope, all the fracture healed well, and no more fractures occurred. The excellent and good rate of AOFAS score was as high as 96.67%.

In conclusion, the implementation of TightRope in the treatment of patients with distal tibiofibular joint separation can achieve good short-term efficacy. It is beneficial to the rehabilitation of patients' joint function, and is worthy of popularization and application.

## References

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