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Radiological outcome from Tight-RopeTM fixation for acute syndesmotic injury: compared with conventional screw fixation

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Introduction/Purpose: The reduction and maintenance of tibiofibular joint is essential in the treatment of syndesmotic ankle injury. Tight-RopeTM (Arthrex,Naples, FL, USA) has been used recently but suspected in terms of tightening and sustaining power in spite of biomechanical results. We aimed to assess fixation-tightness and delayed syndesmotic widening after rehabilitation in syndesmotic injuries treated with Tight-RopeTM comparing with conventional screws.

Methods: 62 consecutive patients with acute syndesmotic injury were retrospectively reviewed. They were divided into 28 cases of Tight-RopeTM(TR) group and 34 cases of conventional screw fixation(Screw) group. We divided them into subgroups along the fixation methods such as 2 screws, 1 screw, TR only, and TR combined with screw. We analyzed syndesmotic widening by percentage. We measured tibiofibular clear space(TFCS) and tibiofibular overlap(TFOL). Tibiofibular clear space ratio and tibiofibular overlap ratio is measured as a ratio of tibiofibular clear space and tibiofibular overlap to the width of talar dome at preoperative, immediate postoperative, 3 months, and last (one year) visit time points and measured as a percentage of each measured value on the injured side to that on the contralateral side at the respective time points. The independent t-test and paired t-test were used for statistical analysis.

Results: Mean TFCS ratio at each time point was 145.7±43.8%, 80.6±29.3%, 95.2±32.5%, and 96.3±31.1% in TR group and 126.2±42.6%, 73.9±22.6%, 104.8±59.2%, 106.4±35.0% in screw group. There were no statistical differences between groups in all 4 time points, no meaningful difference between subgroups. TFCS widening at 3 months in TR was less than screw group but no statistical significance. The TFCS was significantly tightened postoperatively then widened at 3 months and no meaningful change until last visit on both group. Mean TFOL ratio at each point was 51.84±43.6%, 119.2±36.7%, 110.7±44.5%, 96.8±27.7% in TR and 65.7±34.5%, 110.8±36.6%, 114.2±45.6%, 102.4±37.8% in screw group. There was no statistical difference between groups and subgroups. The overlap was increased postoperatively and no change between every sequential time points until last visit.

Conclusion: The Tight-RopeTM fixation has a similar tightening and sustaining power compared to conventional screws and it was determined that the sustaining capacity did not decreased with time. Tight-RopeTM fixation can be effective treatment because it enables effective fixation, early weight-bearing and rehabilitation after surgery, and maintaining device for longer time in severe injury.

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