Ankle Instability: What Does the Literature Tell Us?

Johnny T. C. Lau, MD

Incidence: 7 per 1000 people/year
- Most common sports-related injury (40% of all athletic injuries)
- 40% incidence of residual symptoms
- 20% will develop symptoms of functional instability

2 Recent Cochrane Reviews:

1) Surgical versus conservative treatment for acute injuries of the lateral ligament complex of the ankle in adults


Objectives compare surgical versus conservative treatment for acute injuries of the lateral ligament complex of the ankle in adults.

Search strategy Searched the Cochrane Bone, Joint and Muscle Trauma Group Specialized Register (January 2006), the Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2005, Issue 4), MEDLINE (1966 to December 2005), EMBASE, CINAHL and reference lists of articles, and contacted researchers in the field.

Selection criteria Randomized or quasi-randomized controlled trials comparing surgical with conservative interventions for treating ankle sprains in adults.

Data collection and analysis At least two authors independently assessed methodological quality and extracted data. Where appropriate, results of comparable studies were pooled. We performed sensitivity analyses to explore the robustness of the findings.

Main results Twenty trials were included. These involved a total of 2562 mostly young active adult males. All trials had methodological weaknesses. Specifically, concealment of allocation was confirmed in only one trial. Data for pooling individual outcomes were only available for a maximum of 12 trials and under 60% of participants. The findings of statistically significant differences in favour of the surgical treatment group for the four primary outcomes (non-return to pre-injury level of sports; ankle sprain recurrence; long-term pain; subjective or functional instability) when using the fixed-effect model were not robust when using the random-effects model, nor on the removal of one low quality (quasi-randomized) trial that had more extreme results. A corresponding drop in the I² statistics showed the remaining trials to be more homogeneous.

The functional implications of the statistically significantly higher incidence of objective instability in conservatively treated trial participants are uncertain. There was some limited evidence for longer recovery times, and higher incidences of ankle stiffness, impaired ankle mobility and complications in the surgical treatment group.

Authors’ conclusions There is insufficient evidence available from randomized controlled trials to determine the relative effectiveness of surgical and conservative treatment for acute injuries of the lateral ligament complex of the ankle. High quality randomized controlled trials of primary surgical repair versus the best available conservative treatment for well-defined injuries are required.

2) Interventions for treating chronic ankle instability

de Vries JS, et al

Objectives compare different treatments, both conservative and surgical, for chronic lateral ankle instability.

Search strategy Searched the Cochrane Bone, Joint and Muscle Trauma Group Specialized Register (to July 2005), the Cochrane Central Register

Selection criteria All randomized and quasi-randomized controlled trials of interventions for chronic lateral ankle instability were included.

Data collection and analysis Two review authors independently assessed methodological quality and extracted data. Where appropriate, results of comparable studies were pooled.

Main results
Seven randomized trials were included and divided into three groups: surgical interventions; rehabilitation programs after surgical interventions; and conservative interventions. None of the studies were methodologically flawless. Only one study described an adequate randomization procedure. Only two studies, both about rehabilitation programs after surgery, had a moderate risk of bias; all other studies had a high risk of bias. Due to clinical and methodological diversity, extensive pooling of the data was not possible.

**Authors’ conclusions**

In view of the low quality methodology of almost all the studies, this review does not provide sufficient evidence to support any specific surgical or conservative intervention for chronic ankle instability. However, after surgical reconstruction, early functional rehabilitation was shown to be superior to six weeks immobilization regarding time to return to work and sports.

**Randomized trials:**


   prospectively and randomly compared the outcomes of the Chrisman-Snook and modified-Broström procedures for chronic lateral ankle instability in 40 patients. Both operations provided good or excellent stability in more than 80% of the patients. However, the modified-Broström procedure resulted in higher Sefton scores than the Chrisman-Snook procedure. In addition, a statistically significant greater proportion of complications occurred in patients treated with the Chrisman-Snook procedure.


   Investigated the effects of two different surgical procedures for the treatment of chronic ankle instability. Ten patients treated with an anatomic reconstruction using a periosteal flap were compared with a second group that received an Evans tenodesis. All patients were evaluated before and after surgery with clinical and radiographic examinations as well as dynamic pedobarography. Patient satisfaction and radiographic and functional results were comparable in both groups and revealed a good restoration of joint stability and gait symmetry. Our results indicate that both methods of ankle ligament reconstruction achieve a comparable clinical and functional outcome within 1 year after surgery.


   Two anatomic reconstructions for correction of chronic lateral ankle joint instability were compared. In a prospective, randomized study, 60 patients were allocated to one of two treatment groups: reconstruction of the ligaments as described by Karlsson et al. (Group I) or with the modification of the Broström procedure as described by Gould et al. (Group II). The functional results were evaluated with a scoring scale, and the mechanical stability with standardized stress radiographs. The minimum follow-up period was 2 years. The functional results were satisfactory in 27 of 30 (90%) patients in Group I and 25 of 30 (83%) in Group II. There was no significant difference between the groups regarding mechanical stability. The mean anterior talar translation in Group I was 7.1 mm (range, 4 to 10) at follow-up, compared with 6.7 mm (range, 3 to 9) in Group II. The corresponding values for talar tilt were 4.9 degrees (range, 0 degree to 8 degrees) in Group I and 4.4 degrees (range, 0 degree to 8 degrees) in Group II. The duration of operation time was significantly longer in Group II and surgical complications were more frequent, probably due to the more
extensive surgical exposure. This study showed that the majority of patients with chronic ankle instability can be successfully treated with anatomic reconstruction of the lateral ankle ligaments. Mechanical stability was restored with both methods.


Functional outcome, stability at radiographic investigation and ankle joint torque after anatomical reconstruction of the lateral ankle ligaments were evaluated in patients with early postoperative mobilization versus those with cast immobilization. Thirty patients with chronic lateral ligament instability of the ankle underwent anatomical reconstruction of the ligaments. Postoperatively the patients were randomly allocated to two groups: Group A (n=15) were immobilized in a below-knee plaster for 6 weeks and Group B (n=15) underwent early controlled range of motion training using an Air-Cast ankle brace. The functional results were evaluated using a scoring scale and objective results using standardized stress radiographs. Also eccentric and concentric muscle torque at 60 degrees/s was measured in plantar flexion and dorsiflexion, respectively. The functional results were satisfactory in 12/15 ankles in Group A and 14/15 in Group B (n.s.). All the patients with satisfactory results regained normal range of motion. Patients with unsatisfactory results had either residual pain or recurrent instability. In Group B, the strength measurements revealed significantly higher peak torque values after three months in plantar flexion at 60 degrees/s. Six months postoperatively, the torque values did not differ significantly between the groups. Also, there was no group difference in the laxity of the ankle joint, including both anterior talar translation test and talar tilt test, at the two-year follow-up. One patient had a superficial wound infection. We conclude that after the reconstruction of chronic lateral ligament instability of the ankle the functional and stability results were equally good with early postoperative mobilization and 6-week immobilization. However, using early mobilization plantar flexion strength was regained earlier than with cast immobilization, without any risk of short- or medium-term complications, such as increased ankle laxity. We recommend early mobilization after anatomical reconstruction of the lateral ankle ligaments.

References:
1) de Vries JS, Krips R, Sierevelt IN, Blankevoort L, van Dijk CN Interventions for treating chronic ankle instability Cochrane Database of Systematic Reviews 2006, Issue 4. Art. No.: CD004124. DOI: 10.1002/14651858.CD004124.pub2


