INPLASY PROTOCOL

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Network meta-analysis of the effects of different anatomical repair strategies on chronic lateral ankle instability

Zhong, J[1]; Wang, W[2].

Review question / Objective: **At present, there are various surgical repair strategies for the lateral stability of chronic ankle instability (CAI) after the injury of lateral collateral ligament of the ankle, but the specific repair strategy to maximize the recovery of lateral stability of the ankle is still lack of evidence based medical evidence. Based on this, for the first time, this paper systematically evaluated the effects of four popular repair strategies to restore the lateral stability of chronic ankle instability using network meta analysis method.**

Information sources: **(PubMed.EMBASE.WOS.Cochrane Library.Wanfang Database.VIP Database.China National Knowledge Infrastructure) (Chinese and English) (From database creation time till January 2023).**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 January 2023 and was last updated on 08 January 2023 (registration number INPLASY202310016).

INTRODUCTION

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instability using network meta analysis method.

Condition being studied: If the treatment is not timely or improper after the injury of the lateral collateral ligament of the ankle, there is a possibility of chronic lateral instability of the ankle. Among them, functional ankle instability caused by proprioception abnormalities caused by ligament injury can be completely recovered or at least significantly improved through various conservative treatments and functional exercises. However, there are structural abnormalities in the edge of mechanical ankle instability, such as ligament relaxation, tension drop, etc., which are often ineffective in conservative treatment. Persistent ankle instability leads to repeated joint subluxation (feeling of softening the leg) and sprain, further aggravating ligament damage and articular cartilage wear. In the long run, the vicious circle, ankle function is significantly reduced, which seriously affects the life and work of patients, It may even cause sports injury of adjacent joints.Subjects were definitely diagnosed as CAI and had a history of injury of lateral collateral ligament of ankle.

METHODS

Participant or population: Subjects were definitely diagnosed as CAI and had a history of injury of lateral collateral ligament of ankle.

Intervention: Five popular types of anatomical repair surgery.

Comparator: The control group adopted different repair strategies from the observation group, and all of them were anatomical repair.

Study designs to be included: RCT and cohort studies.

Eligibility criteria: ① The study type is randomized controlled trial (RCT) or cohort study; ② The subjects were definitely diagnosed as CAI and had a history of injury of lateral collateral ligament of ankle; ③ The intervention measures of the observation group were surgical repair, while the control group adopted different repair strategies from the observation group, and all of them were anatomical repair; ④ The outcome indicators were ankle joint stress position ATT、TTA and aofas scale in the last follow-up; ⑤ Follow up time ≥ 6 months.

Information sources: (PubMed. EMBASE. WOS. Cochrane Library. Wanfang Database. VIP Database. China National Knowledge Infrastructure) (Chinese and English) (From database creation time till January 2023).

Main outcome(s): ATT, TTA and AOFAS scores of ankle joint stress position in the last follow-up.

Quality assessment / Risk of bias analysis: Two researchers independently evaluated the bias risk of the included study and cross checked the results. The cohort study used the Newcastle Ottawa scale (NOS) to evaluate the bias risk of the included study; RCT uses the bias risk assessment tool of Cochrane system evaluation, and uses RevMan 5.4 software to evaluate the quality of the included literature. The results are represented by the bias risk map using RevMan 5.4 software.

Strategy of data synthesis: The network meta-analysis was conducted based on the Bayesian framework, the comparison correction funnel chart of publication bias was drawn by using Stata14.2 software, the network relationship chart was drawn by using R4.2 software and its gemtc package, and statistical analysis was conducted. This paper is a continuous variable. The mean difference (MD) was used to combine the statistics and calculate the 95% confidence interval (95% CI). If the 95% CI does not include 0, the difference is statistically significant; I2 value was used to test the heterogeneity. When P>0.05 and I2 ≤ 50%, it indicated that

the heterogeneity of the study was small. Fixed effect model was used for mesh meta-analysis; On the contrary, when P50%, a random effect model is used, and the source of heterogeneity is found through subgroup analysis and sensitivity analysis. When the source of heterogeneity cannot be determined, only descriptive analysis is performed. The surface under the cumulative ranking curve (SUCRA) ranking results of each intervention were calculated, and the ranking chart was drawn to determine the relatively optimal anatomical repair strategy.

Subgroup analysis: This is a qualitative synthesis and while subgroup analyses is not possible to specify the groups in advance.

Sensitivity analysis: Sensitivity analysis by replacing the effect model.

Country(ies) involved: China.

Keywords: chronic lateral ankle instability; Network Meta analysis; Surgical treatment; Randomized controlled trial; cohort studies.

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