

INPLASY PROTOCOL

To cite: Lin et al. Effect of graft types for outcomes in revision anterior cruciate ligament reconstruction. Inplasy protocol 202330024. doi: 10.37766/inplasy2023.3.0024

Received: 07 March 2023

Published: 07 March 2023

Corresponding author:
Chang-Hao Lin

cych12763@gmail.com

Author Affiliation:
Department of Orthopaedics,
Ditmanson Medical
Foundation Chia-Yi Christian
Hospital.

Support: This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Review Stage at time of this submission: Completed but not published.

Conflicts of interest:
None declared.

Effect of graft types for outcomes in revision anterior cruciate ligament reconstruction

Lin, CH¹; Chih, WH²; Chiang, CH³.

Review question / Objective: This meta-analysis was conducted to compare outcomes among different types of graft for revision anterior cruciate ligament reconstruction. **Condition being studied:** Results on the outcomes of different types of grafts used in revision anterior cruciate ligament (ACL) reconstruction are valuable to surgeons because primary ACL reconstruction limits the types of grafts available for revision. Both autograft and allograft have been shown to improve clinical outcomes in previous studies of revision ACL reconstruction. The use of allografts reduces operation time and eliminates the risk of donor site morbidity, but allografts are more expensive than autografts. To date, two meta-analyses of revision ACL reconstruction have compared outcomes between autograft and allograft in younger patients. One meta-analysis reported that autograft produced superior outcomes, such as lower postoperative laxity, lower complication rate, and lower reoperation rate. However, if only non-irradiated allografts were considered, the lower reoperation rate was reported in allograft. The other meta-analysis reported that failure rates were not different between autograft and allograft.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 March 2023 and was last updated on 07 March 2023 (registration number INPLASY202330024).

INTRODUCTION

Review question / Objective: Effect of graft types for outcomes in revision anterior cruciate ligament reconstruction.

Condition being studied: Results on the outcomes of different types of grafts used in revision anterior cruciate ligament (ACL) reconstruction are valuable to surgeons because primary ACL reconstruction limits

the types of grafts available for revision. Both autograft and allograft have been shown to improve clinical outcomes in previous studies of revision ACL reconstruction. The use of allografts reduces operation time and eliminates the risk of donor site morbidity, but allografts are more expensive than autografts. To date, two meta-analyses of revision ACL reconstruction have compared outcomes between autograft and allograft in younger patients. One meta-analysis reported that autograft produced superior outcomes, such as lower postoperative laxity, lower complication rate, and lower reoperation rate. However, if only non-irradiated allografts were considered, the lower reoperation rate was reported in allograft. The other meta-analysis reported that failure rates were not different between autograft and allograft.

METHODS

Participant or population: Patients underwent revision anterior cruciate ligament reconstruction.

Intervention: Revision anterior cruciate ligament reconstruction with different types of grafts.

Comparator: Different types of grafts.

Study designs to be included: Comparative designed or studies that perform subgroup analysis among different grafts.

Eligibility criteria: Studies were included if they compared outcomes among different types of grafts. Studies were excluded under the following criteria: (1) published as conference articles, protocols, letters, comments, case reports, and reviews; (2) did not compare outcomes of different types of graft; (3) were non-English literature; and (4) did not included data that matched outcomes of interest.

Information sources: The relevant articles were obtained by systematically searching PubMed, EMBASE, and Cochrane Library.

Main outcome(s): The outcomes of interest were (1) measures of knee function, including International Knee Documentation Committee subjective knee (IKDC) score, Knee Injury and Osteoarthritis Outcome Score, Knee Injury and Osteoarthritis Outcome Score Physical Function Short Form score, Knee Outcome Survey Activities of Daily Living Scale score, Lysholm Knee Scoring Scale score, Oxford Knee Score, Activity Rating Scale score, and Tegner Activity Score; (2) side-to-side anterior laxity in millimeters; (3) occurrence of failure after revision ACL reconstruction, which is defined as the recording of any of the following events: graft re-rupture, graft failure, and a second revision ACL reconstruction; and (4) return to pre-injury type of sport and return to same and higher level of pre-injury sport.

Quality assessment / Risk of bias analysis: Non-Randomized Studies-of Interventions (ROBINS-I).

Strategy of data synthesis: Continuous outcomes are extracted in terms of the mean and standard deviation, and the mean difference was calculated in group comparisons. Dichotomous outcomes were extracted in terms of frequency and percentage, and odds ratios were calculated in group comparisons. Review Manager 5.4 software was used to perform the meta-analysis. The heterogeneity among included studies was examined using the heterogeneity statistics (I-square); a fixed-effects model was applied in cases with no significant heterogeneity (I-square < 50%). Forest plots were used to present the results of each study and the pooled effects of the included studies; analysis of the pooled effects was performed using the z test.

Subgroup analysis: If results exhibit a high heterogeneity, the subgroup analysis will perform.

Sensitivity analysis: If results exhibit a high heterogeneity, the sensitivity analysis will perform.

Language restriction: English.

Country(ies) involved: Taiwan.

Keywords: revision anterior cruciate ligament reconstruction; autograft; allograft; failure; return to sport; clinical outcomes.

Contributions of each author:

Author 1 - Chang-Hao Lin - Literature screening, data extraction, data analysis, interpretation of the data, draft the manuscript.

Email: cych12763@gmail.com

Author 2 - Wei-Hsing Chih - Interpretation of the data.

Email: chihws@gmail.com

Author 3 - Chen-Hao Chiang - Literature screening, data extraction, interpretation of the data, revise the manuscript.

Email: Chiangabaca@gmail.com