

# INPLASY PROTOCOL

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## Extrapedicular vs transpedicular percutaneous kyphoplasty for osteoporotic vertebral compression fractures

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**Review question / Objective:** To assess the efficacy and safety of the two approaches as a treatment for patients with OVCF. **Condition being studied:** Osteoporotic Vertebral Compression Fractures(OVCFs) is one of the most common health problems in the elderly population. Percutaneous kyphoplasty is a minimally invasive technique that has gained widespread recognition. Transpedicular and extrapedicular are two approaches for kyphoplasty. But over the last decade, the safety and effect of two approaches remain unclear, and there is still a lack of evaluation of their therapeutic effects. **Information sources:** We searched CENTRAL; MEDLINE; EMBASE; Chinese Biological Medicine Database; VIP Journals Database; Wan-fang database, CNKI; and Chinese Evidence-Based Medicine Database from their inception to December 2020. The search terms used were: the transpedicular approach and extrapedicular approach for treating OVCF in both English and Chinese. We also searched our own files manually for relevant articles. We hand searched Chinese language journals and conference proceedings. We included dissertations and abstracts, provided they contained sufficient detail for critical evaluation.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 14 March 2023 and was last updated on 14 March 2023 (registration number INPLASY202330048).

### INTRODUCTION

**Review question / Objective:** To assess the efficacy and safety of the two approaches as a treatment for patients with OVCF.

**Condition being studied:** Osteoporotic Vertebral Compression Fractures(OVCFs) is one of the most common health problems in the elderly population. Percutaneous kyphoplasty is a minimally invasive

technique that has gained widespread recognition. Transpedicular and extrapedicular are two approaches for kyphoplasty. But over the last decade, the safety and effect of two approaches remain unclear, and there is still a lack of evaluation of their therapeutic effects.

## METHODS

**Participant or population:** Osteoporotic Vertebral Compression Fractures (OVCFs) is one of the most common health problems in the elderly population. Osteoporotic vertebral compression fractures.

**Intervention:** Extrapedicular kyphoplasty.

**Comparator:** Transpedicular kyphoplasty.

**Study designs to be included:** We searched CENTRAL; MEDLINE; EMBASE; Chinese Biological Medicine Database; VIP Journals Database; Wan-fang database; CNKI and Chinese Evidence-Based Medicine Database from their inception to December 2020 in both English and Chinese.

**Eligibility criteria:** The studies that met the following criteria were included: (1) the study evaluated the extrapedicular kyphoplasty for treating OVCF and PKP; (2) the study must be conducted through case control design; and (3) the study provided sufficient raw data for the weighted mean difference (MD) with 95% confidence intervals (CI). Articles were excluded from our meta-analysis if they were duplicate publications or did not contain raw or usable data.

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Chinese language journals and conference proceedings. We included dissertations and abstracts, provided they contained sufficient detail for critical evaluation.

**Main outcome(s):** We identified 231 potentially relevant articles, and 225 articles were excluded for reasons given in Figure 1. Six studies, involving a total of 395 participants, met our inclusion criteria.

**Quality assessment / Risk of bias analysis:** All of the six studies did not mention either subjects or assessor blinding. And three reported follow up, none of the included trials reported dropout. Two of the included trials reported the ethical approval. Three of the six trials showed a high risk of bias, while the other three trials showed a unclear risk of bias. Based on GRADE system, all the evidences were level C and weak recommendation (2C). There was good agreement between the two reviewers.

**Strategy of data synthesis:** For meta-analysis, the total effectiveness rates of dichotomous data were pooled using risk ratios (RRs). The aggregated results and 95% CIs for effect size were calculated using inverse-variance weighted random-effects meta-analysis. I<sup>2</sup> was used to assess heterogeneity across studies, with I<sup>2</sup> values of 0%, 25%, 50% and 75% representing no, low, moderate and high heterogeneity, respectively. Meta-regression was conducted to investigate the potential covariates that might have substantial impacts on between-study heterogeneity.

**Subgroup analysis:** Influence analysis was also conducted to determine whether an individual study affected the aggregate result or not. Subgroup analyses were performed according to the type of study design.

**Sensitivity analysis:** Based on GRADE system, all the evidences were level C and weak recommendation (2C). There was good agreement between the two reviewers.

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**Country(ies) involved:** China.

**Keywords:** Extrapedicular percutaneous, Transpedicular percutaneous, Kyphoplasty, Osteoporotic vertebral compression fracture, Systematic review.

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