INPLASY PROTOCOL

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Review Stage at time of this submission: Preliminary searches.

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None declared.

Efficacy, safety, predictability and stability of LASIK for presbyopia correction: A systematic review and meta-analysis

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Review question / Objective: This meta-analysis was aimed to statistically analyze the efficacy, safety, predictability, and stability of LASIK in presbyopia correction. At the same time, through subgroup analysis, we compared the effects of different corneal ablation models and different corneal flap preparation methods to a certain extent.

Condition being studied: Presbyopia refers to the decline of age-related accommodation ability, which usually leads to impaired near vision and asthenopia. It is estimated that nearly 1.8 billion people will have presbyopia by 2050, most of whom will live in developing countries. Presbyopia develops inevitably and irreversibly, and with the increasing pressure of close or medium distance reading or working on a variety of electronic devices, presbyopia has become one of the major physiological problems that patients want to solve.

INTRODUCTION

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METHODS

Participant or population: Presbyopia patients, the corrected distance visual acuity (CDVA) and corrected near visual acuity (CNVA)≤ 0.1 logMAR (20/25).

Intervention: Intervention measure wsa LASIK, including models of monovision, Q-value-guided, multifocal corneal ablation, and laser blended vision.

Comparator: No control group or compared to preoperative.

Study designs to be included: RCT or self-controlled trial.

Eligibility criteria: Inclusion Criteria(1) Presbyopia patients, the corrected distance visual acuity (CDVA) and corrected near visual acuity (CNVA)≤ 0.1 logMAR (20/25). (2) Intervention measure wsa LASIK, including models of monovision, Q-value-guided, multifocal corneal ablation, and laser blended vision; (3) outcomes: effectiveness, safety, predictability, and stability.Exclusion Criteria(1) Articles published repeatedly or without valuable data; (2) reviews, experience summaries, animal experiments, case reports, conferences, meta-analysis, marginal journals, etc.; (3) anterior segment and fundus diseases, history of strabismus surgery, family history of glaucoma, diabetes, systemic connective tissue diseases and severe autoimmune diseases; (4) follow-up period was less than 3 months.

Information sources: A systematically electronic literature search was conducted using the databases of PubMed, Cochrane Library, Web of Science and EMBASE and ClinicalTrials.gov in English and the CNKI (http://www-cnki-net-s.vpn.uestc.edu.cn:8118/), Wan-Fang (http://www-wanfangdata-com-cn-s.vpn.uestc.edu.cn:8118/index.html), VIP (http://qikan.cqvip.com/), Chinese Biomedical Literature Service System (http://www.sinomed.ac.cn/index.jsp) and Chinese Clinical Registry in Chinese (up to March 2023).

Main outcome(s): Outcomes: effectiveness, safety, predictability, and stability

Quality assessment / Risk of bias analysis: Cochrane Collaboration's risk-of-bias method for RCTs and MINORS for non-RCTs.

Strategy of data synthesis: The forest plots and funnel plots were drawn by STATA15.0 software. The count data were expressed by relative risk (RR) and its 95% confidence interval (CI). The measurement data are expressed by weighted mean difference (WMD) and its 95% CI. Statistically, $P < .05$ showed that there is significant difference, and vice versa. Heterogeneity test criteria: when I2 ≤ 50% and $P > .10$, it indicated that the heterogeneity was not significant, and the fixed effect model was used to combine the effect; when I2 > 50% and $P < .10$, the heterogeneity was considerable, and the random effect model was used to combine the effect.

Subgroup analysis: Subgroup analysis: different subgroups were performed based on corneal ablation model and method of corneal flap preparation.

Sensitivity analysis: Sensitivity analysis: when there is a considerable heterogeneity, it is necessary to explore the source of the heterogeneity through sensitivity analysis, and verify the stability and reliability of the meta-analysis results. When the results are unstable, the research results need to be interpreted carefully.

Country(ies) involved: China.

Keywords: LASIK, presbyopia, efficacy, safety, predictability, stability.

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