Accepted Manuscript

Comparison of three intraocular lens implantation procedures for aphakic eyes with insufficient capsular support: a network meta -analysis

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PII: S0002-9394(18)30204-6

DOI: 10.1016/j.ajo.2018.04.023

Reference: AJOPHT 10505

To appear in: *American Journal of Ophthalmology*

Received Date: 2 December 2017

Revised Date: 20 April 2018

Accepted Date: 20 April 2018

Please cite this article as: Li X, Ni S, Li S, Zheng Q, Wu J, Liang G, Xu. W, Comparison of three intraocular lens implantation procedures for aphakic eyes with insufficient capsular support: a network meta -analysis, *American Journal of Ophthalmology* (2018), doi: 10.1016/j.ajo.2018.04.023.

Abstract

Purpose

To compare the clinical outcomes and main complications of transscleral-fixated (TSF), intrascleral-fixated (ISF) and iris-fixated (IF) intraocular lenses (IOLs).

Design

Systematic review and network meta-analysis.

Methods

We searched Pubmed, EMBASE and the Cochrane library for relevant articles up to April 2017 with no language restrictions, and related studies meeting the eligibility criteria were included. The Bayesian framework was performed to compare the visual outcomes and complications of these three approaches.

Results

A total of 14 studies with 845 eyes were included in the present report. There was no significant difference between any pair of surgical approaches in best-corrected visual acuity (BCVA) and in final BCVA achieving 20/40 or better (Snellen). ISF presented a lower risk of cystoid macular edema (CME) compared with TSF [RR, 0.45; 95% CI, (0.18, 1.0)]. IF showed superiorities in less intraocular hemorrhage (IHO) than ISF [RR, 0.078; 95% CI (0.0095, 0.38)] as well as TSF [RR, 0.26; 95% CI, (0.09, 0.72)]. IF had a lower risk of glaucoma escalation, the difference was slightly higher than the conventional level of significance [RR, 0.41; 95% CI, (0.16, 1.04)]. Moreover, the surgical time in IF was shorter than TSF [SMD, -2.98; 95% CI, (-4.32, -1.64)] and ISF [SMD, -2.60; 95% CI, (-3.71, -1.49)]. However, IF was associated with a significantly higher risk of endothelial cell density (ECD) impairment [SMD, -0.54; 95% CI, (-1.02, -0.05)] and significantly greater postoperative corneal endothelial cell loss rate (ECLR, %) [SMD, 0.35; 95% CI, (0.08, 0.63)] compared with TSF.

Conclusions

Postoperative visual outcomes were comparable among TSF, ISF and IF for eyes with insufficient capsular support. However, the risk of some complications differed among approaches. IF showed its superiorities in lower risk of IHO and glaucoma escalation as well as shorter surgical time, while IF was at disadvantage in greater endothelial cell impairment. Since some patients might have a clear contraindication to one of the surgical approaches, the decision of surgical approach eventually depends on surgeon’s experience and the presenting pathology.

Key words

aphakic eyes; insufficient capsular support;, transscleral-fixated (TSF), intrascleral-fixated (ISF), iris-fixated (IF), meta-analysis