Efficacy and Safety of implantable phakic contact lens versus implantable collamer lens in myopia correction: A Systematic Review and Meta-analysis

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Background

- IPCL and ICL are widely used posterior chamber phakic intraocular lenses for moderate–high myopia.
- Both provide favorable refractive outcomes, but comparative performance in visual acuity, optical quality, and safety remains uncertain.
- Long-term endothelial health and refractive predictability are key concerns.

Methods

- **Databases:** PubMed, Embase, Cochrane Library, Scopus
- **Timeframe:** Inception to November 2025
- **Analysis:** Random-effects models reporting mean differences (MD) with 95% confidence intervals (CI)
- **Heterogeneity:** Assessed using I^2 and χ^2 statistics
- **Software:** RevMan 5.4.

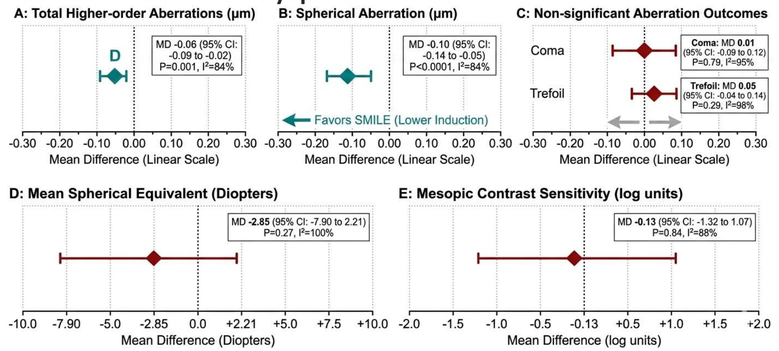
Results

Table: Outcomes of IPCL vs ICL

Outcome	MD	95% CI	P Value
UDVA	↑ 3.23	1.52 – 7.89	0.18
CDVA	↓ 2.64	3.24 – 2.05	<0.00001
MC	↓ 3.06	4.89 – 1.24	0.002
ECDL	↓ 1.11	3.06 – 0.73	0.38
SE	↓ 0.87	0.51 – 1.49	0.613
HOA	↑ 1.48	1.32 – 2.28	0.17
OSI	↑ 0.04	0.03 – 1.12	0.26

UDVA: Uncorrected Distance Visual Acuity; **CDVA:** Corrected Distance Visual Acuity; **TMH:** Tear Meniscus Height **SVC:** Superficial Vascular Complex; **DVC**: Deep Vascular Complex; **FAZ:** Foveal Avascular Zone; **CMT:** Central Macular Thickness; **MD**: Mean Difference, **CI**: Confidence Interval

Forest Plot: IPCL vs ICL in Myopia Correction



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Conclusion

- IPCL and ICL yield comparable outcomes in UDVA, astigmatic correction, and endothelial safety.
- ICL shows slightly better refractive predictability and CDVA, though heterogeneity is substantial.
- No clear differences in optical quality parameters.
- Further high-quality, long-term studies are needed to clarify optical quality and endothelial preservation.

References