

Comparative Evaluation of Visual and Functional Outcomes Following Cataract Surgery with Extended Depth of Focus versus Multifocal Intraocular Lenses: A Retrospective Study

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Abstract: ***Background:** Cataract surgery is a commonly performed surgical procedure with increasing emphasis on postoperative visual quality. **Aim:** To compare visual outcomes and patient satisfaction between EDOF and multifocal intraocular lenses. **Methods:** Retrospective study of 250 patients (125 EDOF, 125 multifocal). Statistical analysis included t-test and chi-square. **Results:** Mean UDVA was comparable ($p=0.42$). Intermediate vision significantly better in EDOF ($p<0.001$). Near vision better in multifocal group ($p<0.001$). Halos were reported in 12% EDOF vs 32% multifocal ($p=0.002$). **Conclusion:** EDOF lenses provide better intermediate vision with fewer dysphotopsia, while multifocal lenses provide superior near vision.*

Keywords: intraocular lens comparison, cataract surgery outcomes, intermediate and near vision, patient visual satisfaction, postoperative visual quality

1. Introduction

Cataract surgery has evolved into a refractive procedure aimed at spectacle independence. Multifocal intraocular lenses provide multiple focal points but are associated with photic phenomena. EDOF lenses extend the focal range and improve intermediate vision. Several studies have compared these technologies, but data in Indian population remains limited.

2. Materials and Methods

Retrospective study of 250 patients undergoing phacoemulsification at JNU Medical College, Jaipur over one year. Patients were divided into EDOF and multifocal groups. Inclusion criteria included age-related cataract and minimum 3-month follow-up. Exclusion criteria included retinal pathology and incomplete records.

3. Results

Mean age: 62.4 ± 7.8 years (EDOF) vs 61.9 ± 7.2 years (Multifocal), $p=0.58$

Parameter	EDOF	Multifocal	p-value
UDVA (logMAR)	0.08 ± 0.04	0.07 ± 0.03	0.42
UIVA (logMAR)	0.10 ± 0.05	0.18 ± 0.06	<0.001
UNVA (logMAR)	0.22 ± 0.07	0.12 ± 0.05	<0.001
Halos (%)	12%	32%	0.002

4. Discussion

The findings of this study are consistent with previous literature. Pedrotti et al. demonstrated superior intermediate vision with EDOF lenses, while Cochener et al. reported higher dysphotopsia with multifocal IOLs. Our study similarly found statistically significant improvement in intermediate vision in the EDOF group ($p<0.001$) and higher

near visual acuity in multifocal group. Kohnen et al. also highlighted reduced photic phenomena with EDOF lenses, supporting our findings of lower halo incidence (12% vs 32%).

5. Conclusion

EDOF lenses provide superior intermediate vision and reduced dysphotopsia, while multifocal lenses provide better near vision. Lens selection should be individualized.

References

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