IOL Implantation in the Absence of Zonular Support: A Single-Centre Audit

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Background and Aims

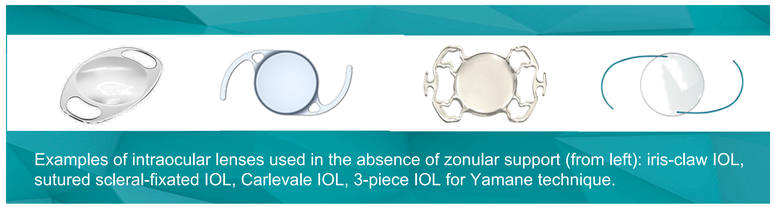
Various strategies are used in our centre for secondary intraocular lens (IOL) placement in cases with insufficient capsular support for a sulcus IOL, including:

- Sutured scleral-fixated IOL
- Iris claw IOL (Artisan, Opthtec BV)
- Sutureless scleral-fixated IOL (Carlevale, Kestrel Ophthalmics Ltd)
- Intrascleral haptic-fixated 3-piece IOL using the Yamane technique[1]

A single-centre service evaluation was conducted to audit outcomes for eyes undergoing IOL implantation with no zonular support.

Objectives

- Evaluate local practice between 2019-2023.
- Compare local outcomes to those presented in the American Academy of Ophthalmology (AAO) Ophthalmic Technology Assessment of IOL. implantation in the absence of zonular support[2].
- Implement changes to practice if necessary.



Examples of intraocular lenses used in the absence of zonular support (from left): iris-claw IOL, sutured scleral-fixated IOL, Carlevale IOL, 3-piece IOL for Yamane technique.

Methodology

The audit was performed as a retrospective notes review using an electronic patient record (Medisoft). The search terms “secondary IOL”, “IOL exchange”, and “scleral-fixed IOL” were employed to identify all relevant cases. Data were extracted in November 2023 from 1st January 2019 to 27th November 2023.

273 eyes were identified: 36 sutured scleral-fixated, 120 iris claw IOL, 72 sutureless scleral-fixated (Carlevale IOL), and 45 intrascleral haptic-fixated (Yamane).

Audit Standards and Results

	S	R
Service standards (S) & results (R)		
• Pre-op visual acuity documented	**100%**	**76%**
• Post op visual acuity documented	**100%**	**91%**
• Type of IOL inserted documented	**100%**	**94%**
• Refractive target documented	**100%**	**1%**
• Refractive outcome within 1D of target	**100%**	**25%**
Complications standards (S) & results (R)		
• Incidence of lens dislocation	**<28%**	**7.3%**
• Incidence of cystoid macular oedema	**<7%**	**20.7%**
• Incidence of uveitis	**<5%**	**3.7%**
• Incidence of glaucoma	**<28%**	**9.3%**
• Incidence of retinal break	**<3%**	**0%**
• Incidence of retinal detachment	**<8%**	**1.9%**
• Incidence of endophthalmitis	**<2.6%**	**0.2%**

Discussion

The overall incidence of each complication achieved the audit standard, except for the incidence of cystoid macular oedema (CMO, 20.7% vs <7%).

There was no significant difference in the individual incidence of each complication between the four surgical approaches (repeated measures analysis of variance, $p > 0.05$).

Cystoid macular oedema and type of sutured IOL

CMO occurrence after sutured scleral-fixated IOL implantation was strongly associated with IOL type (linear regression $p<0.0005$). Lenses implanted in this cohort were Envista MX60 (Bausch & Lomb UK, Ltd), Akreos Adapt (Bausch & Lomb UK, Ltd), MA50BM (Alcon), and Reper iris-lens complex (Reper-NN Ltd). The incidence of CMO was lowest following Envista IOL insertion (0 / 26 eyes).

Audit Conclusions

- Improved recording of target refraction is needed to enable better evaluation of final refractive outcome.
- Further research is required to investigate the incidence of post-operative CMO in our cohort.
- Choice of sutured scleral-fixated IOL may influence post-operative CMO occurrence.

References

1. Yamane S, Sato S, Maruyama-Inoue M, Kadonosono K. Flanged intrascleral intraocular lens fixation with double-needle technique. Ophthalmology. 2017;124(8):1136-1142.
2. Shen JF et al. Ophthalmology. 2020;127(9):1234-1258.