Clinical Insights into Artisan Iris-Claw IOLs in Aphakic Patients at an Irish Tertiary Referral Centre

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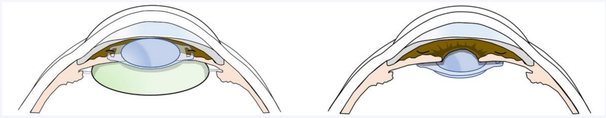
BACKGROUND

Cases of aphakia without adequate capsular support present a significant surgical challenge. While several intraocular lens (IOL) options are available – including anterior chamber IOLs, scleral-fixated lenses, and iris-sutured designs – each carries unique risks and technical demands.

Artisan iris-claw IOLs offer an increasingly favoured alternative when intracapsular IOL placement is not possible due to their sutureless fixation to the mid-peripheral iris, relative ease of implantation, and promising safety profile.

These rigid PMMA lenses are enclaved onto the iris, allowing stable positioning in either the anterior or retropupillary space. Their use is particularly appealing in complex aphakic cases where posterior capsule rupture, traumatic lens loss, or previous IOL explantation renders standard in-the-bag fixation impractical.

At our Irish tertiary referral centre, we routinely manage complex anterior segment pathology. There has been a recent trend towards favouring retropupillary fixation of Artisan lenses due to a perceived – but not-yet-proven – reduced risk of corneal touch and associated complications.



Artisan lens enclaved onto the iris in anterior (left image) and retropupillary position (right image) [1]

AIMS

Primary aim: to investigate the safety and efficacy of Artisan lens IOL insertion.

Secondary aims: to evaluate the benefits or otherwise of anterior vs. posterior enclavation sites, as well as to review refractive outcomes.

The biometric spread of implanted IOLs has also been presented to assist other units in establishing modified lens banks for the management of their patients perioperatively.

METHODS

Design: a single-centre retrospective study, reporting real-world outcomes of Artisan IOL implantation in a consecutive aphakic cohort.

Study period: April 2015 to July 2024

Theatre logs were used to identify all patients treated with Artisan IOLs at the Mater Misericordiae Hospital, Dublin, from April 2015 to July 2024.

Data collection included: patient demographics; ocular comorbidities; indication for Artisan IOL; approach used (anterior vs. posterior iris enclavation); strength of IOL inserted; post-operative complications; post-operative intraocular pressure (IOP) at 1 month; visual outcomes; and final refractive outcomes.

Visual outcomes were assessed on the basis of best corrected visual acuity (BCVA) on Snellen chart testing measured pre-operatively, BCVA at 3 months post-operatively, and final BCVA at 6-12 months.

Patients followed up for less than 6 months were excluded from outcomes analysis.

RESULTS

Indication for Artisan IOL insertion

Indication	N (%)
Complicated phacoemulsification	51 (37%)
Aphakic following retinal surgery	1 (0.7%)
Congenital cataracts	2 (1.4%)
Dislocated crystalline lens	17 (12%)
Dislocated IOL	39 (28%)
IOL opacity	7 (5%)
Trauma	20 (15%)

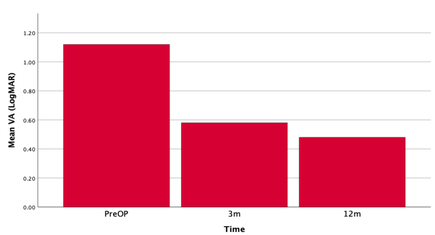
- Artisan IOLs were implanted into 140 eyes.
- Information on the specific indication could not be found for 3 eyes.

Ocular Comorbidities prior to IOL insertion

Comorbidity	N	%
Retinal detachment	18	22%
Pseudoexfoliation syndrome (PXF)	8	10%
ARMD	8	10%
Marfan's syndrome	6	7%
Amblyopia	5	6%
Homocystinuria	5	6%
Diabetic retinopathy	5	6%
Epiretinal membrane	4	5%
Aphakia due to congenital cataracts	3	4%
CMO	3	4%
Vitreous haemorrhage	2	2%
Corneal oedema	2	2%
Glaucoma	2	2%
Others	12	12%

- The patients included represented a complex cohort, with the majority having a significant ocular comorbidity prior to Artisan IOL insertion.

Efficacy: Change in Mean Visual Acuity



- Refractive outcomes were available for a smaller subset of 48 eyes.
- The mean final refraction was -0.46 D (range: -5.5 to +8.0 D; SD 1.97 D).
- 24 eyes (50%) achieved a final refraction within a range of -1 D to +1 D.

RESULTS

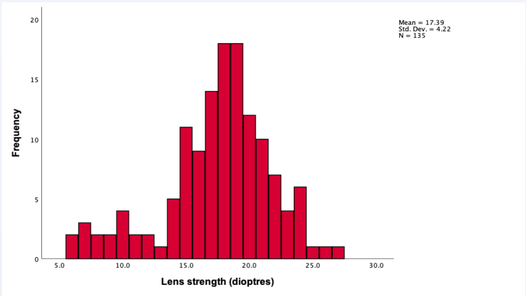
Safety: Complication rates

- All intraoperative complications were associated with complex trauma cases and eyes with significant comorbidities (e.g. RD, Stickler syndrome) – **no intraoperative complications occurred associated with Artisan insertion alone**.
- There were 22 cases of late-onset CMO: all uncomplicated cases resolved following a course of topical or injected steroids (sub-tenons or intraocular).
- **Artisan disenclavation occurred as a late complication in 4 eyes**: in 2 cases this was associated with trauma to the orbit, and in all cases a corrective follow-up procedure was successful.
- Complications rates were comparable between anterior and posterior iris enclavation groups.
- There were only 7 cases (5%) where visual acuity was worse following Artisan implantation, and these were all associated with severe complications/comorbidity (e.g. penetrating eye injury, Stickler syndrome, endophthalmitis).

Comparison of anterior vs. posterior enclavation

- Visual outcomes slightly favoured anterior enclavation, with a mean difference of 0.41 logMAR (95% CI: -0.15 – 0.84; p = 0.029); however, broad confidence intervals limit interpretation.
- Non-inferiority of posterior placement could not be confirmed due to the small sample size and lack of statistical power.
- Complication rates were lower in the posterior group (18% vs. 27% anterior), though this difference was not statistically significant (p = 0.59).
- All 5 cases of corneal decompensation occurred following anterior enclavation, supporting theoretical concerns about endothelial trauma.
- Posterior placement may offer long-term safety advantages, but further prospective studies with balanced cohorts are required to confirm this.

IOL lens strength of implanted Artisan lenses



- Information on the strength of Artisan IOLs was available for 135 eyes.
- The mean lens strength was +17.4 D (range: +6.0 D to +27.0 D; SD: 4.2 D).

DISCUSSION

- Artisan IOLs are a **safe, effective** solution for aphakia without capsular support, with lower risk of serious complications than scleral-fixated or angle-supported lenses.
- The lenses allow for a sutureless, reproducible technique with good intraoperative control and preservation of iris dilatory function postoperatively.
- Our cohort included a **complex case mix** referred from other centres; nearly 40% followed complicated phacoemulsification.
- Despite high comorbidity levels, **significant improvement in BCVA was achieved**, aligning with outcomes from comparable studies.
- Poorer outcomes were primarily linked to complex trauma or severe pre-existing ocular disease (e.g. Stickler syndrome, prior RD).
- Modest but significant BCVA improvement continued beyond 3 months, likely due to suture removal and astigmatism resolution.
- Retropupillary Artisan IOL placement may offer a protective effect for the corneal endothelium; all 5 cases of corneal decompensation occurred with anterior enclavation.
- Refractive outcomes, while variable, were largely satisfactory and aligned with patient preferences.
- Our full dataset of implanted lens powers highlights the value of maintaining a local lens bank with higher volumes stocked **in the +17.0D to +20.0D range**.
- Limitations of the study included: retrospective design, small sample size of the posterior enclavation subgroup, and some data

Key Takeaways

- This study reinforces that Artisan IOLs as a safe and effective approach in complex aphakic cases.
- Posterior (retropupillary) placement may reduce endothelial trauma and be associated with a lower complication rate overall.
- Real-world data on lens power use can guide stocking of IOLs and improve surgical logistics.
- Future prospective studies are needed to compare anterior vs. posterior placement of IOLs and to evaluate long-term endothelial effects.

REFERENCES

1. Yoo, T.K., Lee, S.M., Lee, H. et al. Retropupillary Iris Fixation of an Artisan Myopia Lens for Intraocular Lens Dislocation and Aphakia in Eyes with Extremely High Myopia: A Case Series and a Literature Review.Ophthalmol Ther 11, 1251–1260 (2022). https://doi.org/10.1007/s40123-022-00494-y

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