

FLANGED INTRASCLERAL HAPTIC FIXATION



Two studies evaluate the accuracy of refractive outcomes after cataract surgery for eyes in which this technique was used.

BY ZACHARY ZAVODNI, MD

REFRACTIVE OUTCOMES OF THE YAMANE FLANGED INTRASCLERAL HAPTIC FIXATION TECHNIQUE

Rocke J, McGuinness M, Atkins W, et al¹
Industry support: No

ABSTRACT SUMMARY

Rocke and colleagues retrospectively examined the refractive outcomes of 115 consecutive patients who underwent flanged intrascleral haptic fixation at a tertiary eye hospital. There were multiple operating retina-trained surgeons, but all of them used the same technique² and the same three-piece IOL (Tecnis model ZA9003, Johnson & Johnson Vision). All IOL powers were chosen based on preoperative optical biometry performed with either an IOLMaster 500 or 700 (Carl Zeiss Meditec). For IOL selection, a position in the bag was chosen based on the Barrett Universal II (BUII) formula (v1.05, 2018).

The primary outcome variable was postoperative subjective refraction, reported as spherical equivalent (SE) error and measured more than 1 month (mean, 4.7 ± 3.4 months) after surgery. The refractive prediction error (RPE) was calculated by subtracting the predicted SE based on the BUII calculation from the actual postoperative SE. The mean RPE was +0.04 ± 0.88 D, and 50% of patients were within ±0.50 D of the expected outcome.

The investigators collected the same data for 100 routine in-the-bag

phaco cases as a reference point for refractive error. A significant difference in mean RPE was not found between the groups. A significantly greater proportion (72%, $P = .001$) of patients from the bag group, however, were within ±0.50 D of the expected outcome. Similarly, the median refractive error was statistically different (0.50 D for the flanged group vs 0.32 D for the bag group, $P = .011$).

DISCUSSION

Flanged intrascleral haptic fixation has become a widely popular approach to IOL fixation because of its relatively atraumatic nature (not requiring a conjunctival peritomy or large corneal incisions), the speed with which it can be performed, and its excellent safety profile. As more surgeons adopt this technique, interest increases in

the best means by which to predict refractive outcomes for these eyes.

Effective lens position (ELP) is certain to have greater variability with the flanged technique because of inherent differences in sclerotomy length and radial needle placement and location. Moreover, one would expect ELP variance because the sclerotomy location remains 2.0 mm posterior to the limbus regardless of the axial length of each eye. Not surprisingly, the variance of refractive error was significantly smaller in eyes undergoing routine cataract surgery. Nonetheless, this series and one previously presented by Yamane et al² demonstrated a relatively predictable mean refractive outcome, suggesting that surgeons should feel confident about IOL power selection for patients undergoing this fixation procedure.

STUDY IN BRIEF

- A retrospective study compared the postoperative refractive outcomes of patients undergoing flanged intrascleral haptic fixation to predicted refractive outcomes using the Barrett Universal II formula.

WHY IT MATTERS

Consistently predicting effective lens position is difficult with flanged intrascleral haptic fixation. This relatively large series begins to provide the data required to identify trends in the refractive outcomes of these patients.

ACCURACY OF INTRAOCULAR LENS CALCULATION FORMULAS FOR FLANGED INTRASCLERAL INTRAOCULAR LENS FIXATION WITH DOUBLE-NEEDLE TECHNIQUE

McMillin J, Wang L, Wang M, et al³
Industry support: No

ABSTRACT SUMMARY

McMillin and colleagues retrospectively evaluated the RPEs of four IOL calculation formulas in 40 eyes that underwent flanged intrascleral haptic fixation. Preoperative axial length and keratometry values were recorded from the Lenstar 900 optical biometer (Haag-Streit), and these values were used to calculate the predicted postoperative SE values for the implanted IOL using the BUII, Holladay 1, Hoffer Q, and SRK/T formulas (placement in the bag was assumed for the calculations). The Wang-Koch adjustment was manually applied to the Holladay 1 formula for eyes with an axial length greater than 25.0 mm.⁴

All surgeries were conducted at the same academic institution by one of five surgeons. All procedures were performed according to Yamane's original technique,² with sclerotomies made 2.0 mm posterior to the surgical limbus. Two three-piece IOL models were used, Tecnis model ZA9003 and the CT Lucia 602 (Carl Zeiss Meditec).

The RPE was calculated as the difference between the actual postoperative SE refraction and the predicted SE by each formula. All of the formulas tested produced a hyperopic mean RPE (Holladay 1, +0.73 D; BUII, +0.76 D; SRK/T, +0.80 D; Hoffer Q, +0.86 D). For all of the formulas, 70% of the outcomes were hyperopic compared to the predicted SE. The percentage of eyes with an RPE of less than 0.50 D

was 45% for the Holladay 1, 38.5% for the BUII, 32.5% for the SRK/T, and 27.5% for the Hoffer Q. There was no statistical difference in refractive error between the formulas. No correlation was made between RPE size and axial length.

DISCUSSION

This is the first peer-reviewed report in which the RPEs for multiple commonly used formulas were compared for eyes undergoing cataract surgery in which the flanged intrascleral haptic fixation technique was used. Compared to earlier studies,^{1,2} the size of the average RPE presented within this series is larger, and all formulas resulted in a hyperopic mean RPE that was statistically different from zero/plano. Given that each of the formulas had a mean RPE greater than 0.70 D, these data support aiming for at least 0.50 to 0.75 D of myopia with lens calculations for these cases.

The difference in RPE between the two presented studies^{1,3} is striking and highlights the difficulty of accurately predicting ELP in eyes that undergo cataract surgery and flanged intrascleral haptic fixation of the IOL. Differences in the radial distance of the sclerotomies from the limbus, the length of the haptics that are cauterized, additional shortening of the haptic tips for IOL centration, and white-to-white distance all influence

the ELP and make consistent prediction highly challenging. Larger data sets are required to increase the accuracy of IOL calculations for eyes in which the flanged technique is used. In the meantime, these studies should motivate surgeons to evaluate their own RPEs for flanged intrascleral haptic fixation because there is likely a large variation in ELP based on surgeon-to-surgeon nuances in technique that make drawing universal conclusions difficult. ■

STUDY IN BRIEF

► A retrospective study evaluated the refractive prediction errors with different IOL calculation formulas in eyes that underwent flanged haptic intrascleral fixation.

WHY IT MATTERS

As this fixation technique becomes more popular, surgeons are searching for an IOL calculation formula that accurately predicts postoperative refractive outcomes in these eyes.

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