

Clinical and Anatomic Outcomes of 3-Piece Poly(methyl methacrylate) Intraocular Lens Rescue and Needle-Assisted Intrasccleral Lens Fixation

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Background

Dislocated rigid PMMA IOL's present a challenge to the vitreoretinal surgeon

These lenses cannot be cut in half and require a large (6-7 mm) incision for explantation

Three options:

- IOL exchange
- IOL refixation with forcep/trocar assistance
- IOL refixation with double needle technique

Yemane technique most common, only described using modern-era foldable IOL's for exchange or primary implantation

In this case series, we report short-term surgical outcomes of single-stage rescue and sutureless 30-gauge needle-assisted transconjunctival intrascleral fixation of dislocated 3-piece rigid Poly(methyl methacrylate) (PMMA) intraocular lenses (IOLs).

Methods

Retrospective case series of patients with posteriorly dislocated 3-piece rigid PMMA IOLs who underwent 23- or 25-gauge pars plana vitrectomy (PPV).

All procedures performed by a single surgeon (MA)

Ultrasound biomicroscopy (UBM) was conducted on 7 eyes (6 patients) to measure lens tilt

IRB Approval granted by Rocky Vista University Institutional Review Board (#2019-0106)

Results

Intervention Outcomes:

LogMAR visual acuity significantly improved from 1.21 ± 0.79 (median 1.3, Snellen equivalent 20/400) preoperatively, to 0.28 ± 0.35 (median 0.14, Snellen equivalent 20/30) (Mann Whitney $U = 78$, $n_1=25$, $n_2=25$, $p < 0.0001$).

Table 1: Baseline Characteristics

Characteristic	Data
No. Eyes (patients)	25 (24)
Age (yrs)	
Mean \pm SD	76 ± 9.5
Range	60-95
Gender: N patients (%)	
Male	17 (71%)
Female	7 (29%)
Indication: N eyes (%)	
Dislocated IOL	24 (96%)
Pseudophakodonesis	1 (4%)
Visual Acuity (LogMAR)	
Mean \pm SD	1.21 ± 0.79
Range	0-2.7
Median	1.3
Prior Diagnosis or Procedure: N eyes (%)	
Retinal Detachment	12 (48%)
History of Scleral Buckle	8 (32%)
History of Pars Plana Vitrectomy	12 (48%)
Glaucoma	6 (24%)
Fuchs's Corneal Dystrophy	1 (4%)
Hypotony Maculopathy	1 (4%)
Follow Up (days)	
Mean \pm SD	348 ± 284
Median	260
Range	7-979

Figure 1: Modifications to the Yemane Technique

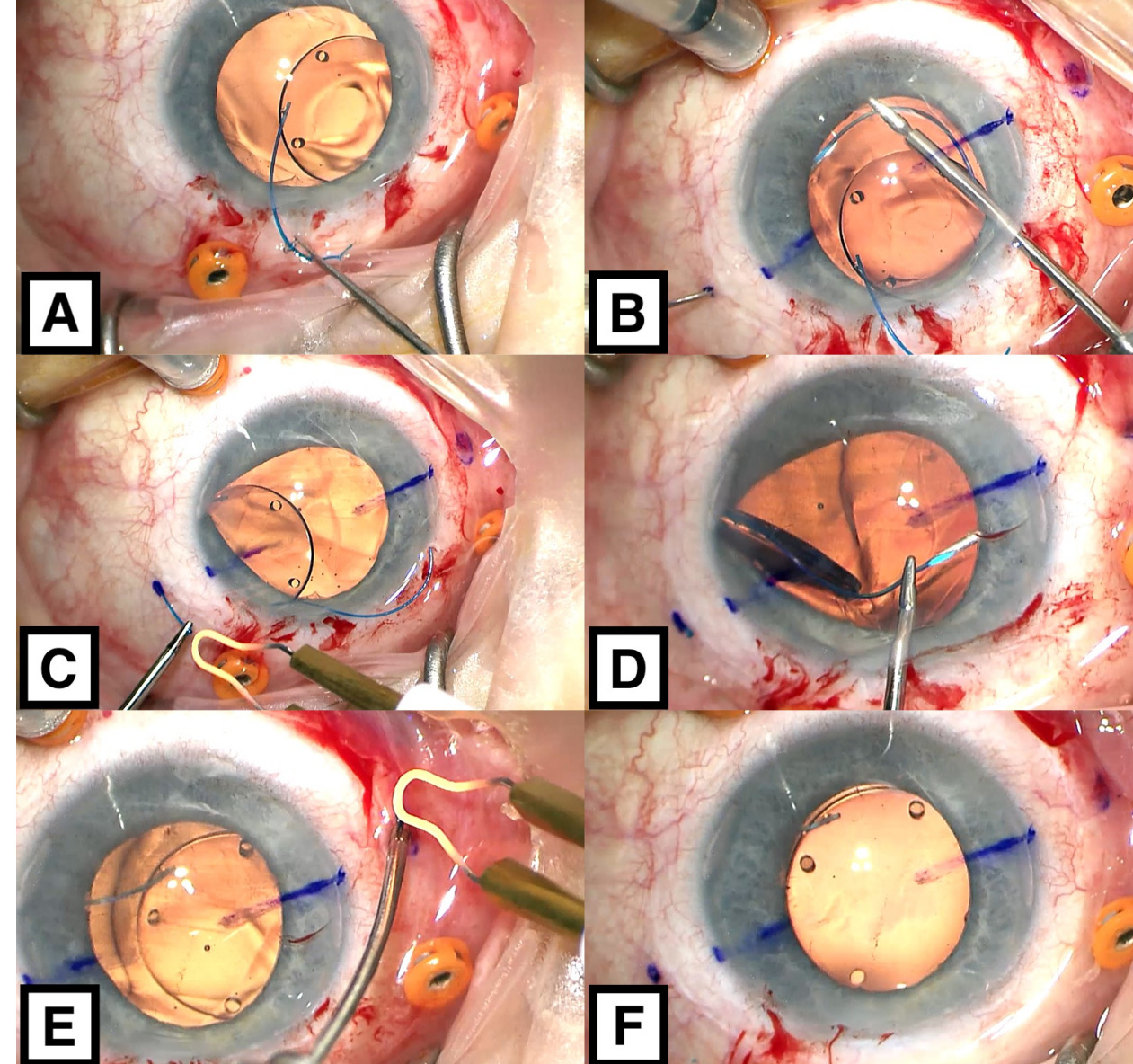


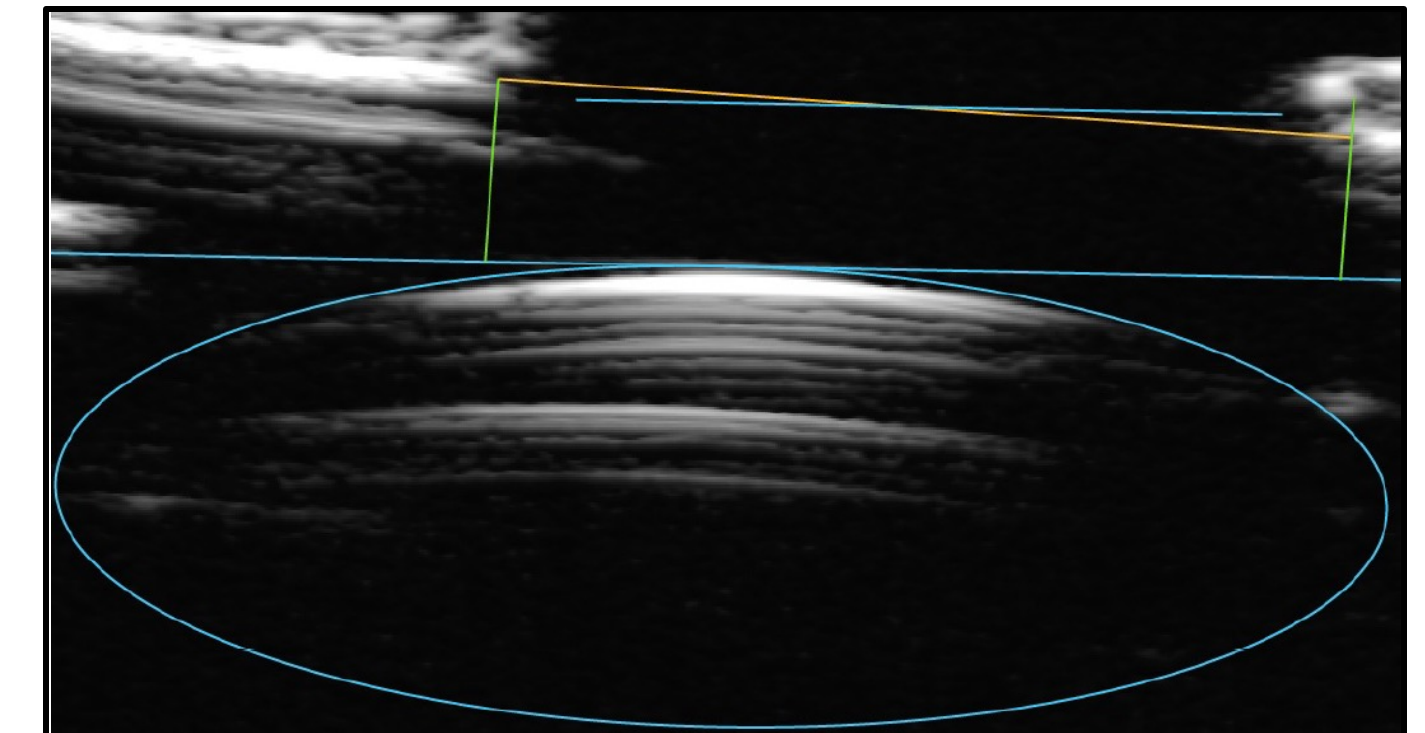
Fig. 1: Highlighted Modifications to the Yemane Technique
A) After the leading haptic has been cauterized to form a terminal flange, the trailing haptic presents a challenge to the retinal surgeon due to its poor angle of insertion into the second 30-gauge needle. B) A 3 mm limbal incision is made superiorly. C) and D) The trailing haptic is extruded through the limbal incision, allowing for easier grasping with intraocular forceps and a more ergonomic angle for docking. E) Intraocular forceps are used to grasp the trailing haptic and insert it into the second 30-gauge needle. F) The trailing needle is then used to externalize the haptic (not pictured) and the end of the trailing haptic is cauterized, leaving a terminal flange.

Table 2: Short-Term Complications

Short-Term Complication	N (%)
Retinal Detachment	1 (4%)
Choroidal Hemorrhage	2 (8%)
Hypotony	4 (16%)
Corneal Edema	8 (32%)
Vitreous Hemorrhage	8 (32%)

Table 3: Long-Term Complications

Long-Term Complication	N (%)
Retinal Detachment	1 (4%)
Vitreous Hemorrhage	1 (4%)
Epiretinal Membrane	2 (8%)
Ocular Hypertension	2 (8%)
Corneal Edema	3 (12%)
Cystoid Macular Edema	3 (12%)
IOL Decentration	3 (12%)



UBM results for 7 eyes (6 patients) demonstrated an average tilt angle of 3.79 ± 3.60 degrees with mean absolute tilt measured at 0.211 ± 0.271 mm.

Conclusions

Sutureless flanged intrascleral haptic lens fixation for a dislocated 3-piece PMMA lens by our modified Yamane technique is a simple, safe, and effective method to restore visual acuity without the need for lens explantation through a large incision.

Disclosures

Murtaza Adam, MD: Allergan/AbbVie (Consulting), EyePoint Pharmaceuticals (Consulting), Genetech (Consulting, Speakers Bureau), Novartis (Speakers Bureau), Regeneron (Speakers Bureau)
Christian Curran: none