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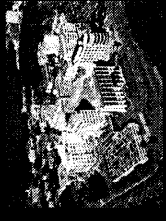
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**Management of Posterior Dislocated Lens
with New Generation Phakofragmentation,
Ultra High Speed Vitrectomy and Foldable
Suture in Posterior Chamber Lens Implant**

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Management of Posterior Lens Dislocation with Phakofragmentation, High Speed Vitrectomy and Foldable Suture in PC Intraocular Lens Implant

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Introduction

Managing a dislocated or subluxated lens due to the insufficient or absence of lens capsular or zonular ligament support is the most common retinal consultation from the cataract surgeons



Etiology of Subluxation or Dislocation of Lens

- Zonular dehiscence
- Congenital : Marfan's syndrome, Homocystinuria, Well-Marchesani syndrome, Ehlers-Danlos syndrome
- Spontaneous: Pseudoexfoliation of lens capsule, buphthalmos, intraocular inflammation, hypermature cataract
- Traumatic
- Capsular tear
- Traumatic
- Surgical complication with iatrogenic capsular tear

Treatment Options

- Non-surgical
 - Anti-inflammatory and anti-glaucomatous treatment if needed
 - Aphakic spectacles
 - Contact lens
- Surgical
 - Present generation of anterior chamber IOL
 - Iris supported "modified Claw lens"
 - Iris sutured IOL
 - Scleral sutured IOL

Scleral sutured IOL

- Scleral Sutured PCIOL
- Technique developed since late 1980's
- Several techniques used during
 - Penetrating Keratoplasty
 - Complicated Cataract Extraction
 - Vitrectomy

Scleral Sutured IOL

Advantage

- Indicated for any condition with severe derangement of anterior ocular structure
- Less issue with endothelial damage
- Less issue with persistent uveitis or iris atrophy
- Stable centration
- Stable fixation
- IOL closer to the anatomic lens position

Scleral sutured IOL

Disadvantage

- More technical demanding
- Potential complications
 1. IOL tilt
 2. Vitreous hemorrhage
 3. Suture erosion or exposure
 4. Retinal tear or detachment
 5. Late implant dislocation

Purpose

- To study the intra-operative complications, visual outcome and late postoperative complications of phakofragmentation , ultra high speed vitrectomy, and suture in posterior chamber lens implant for dislocated or subluxated lens

Methods

- Retrospective chart review of patients underwent PPV, with or without phako, and SSPCIOL
- Between January 2001 and December 2008
- All surgeries performed by a single surgeon (CJC)
- Exclusion criteria:
 - ◆ Incomplete medical record
 - ◆ Less than 3 months follow up

Methods

- Parameters analyzed
 - Patient demographics
 - Surgical parameters
 - Preoperative and postoperative visual acuities
 - Surgical complications

Methods

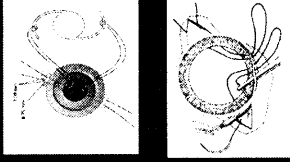
- All patient underwent 3-port, 20- or 23-gauge PPV
- Ab-externo and ab-interno scleral suture fixation
- Choice of IOL:
 - ◆ Foldable IOL: 166 (76%)
 - SA60AT Alcon
 - SN60AT Alcon
 - ◆ Non-foldable IOL: 52 (24%)
 - CZ70BD Alcon
 - CZ70BD Alcon
 - 6BUY20-24 Surgidev

Technique of Dislocated Lens Removal

- Small gauge ultra-high speed PP vitrectomy
- Retrieval of dislocated lens with suction aspiration from vitrector tip
- Insertion of pic to the center of nucleus like a lollipop to move the lens forward
- Proportional phakofragmentation either anteriorly with pic support or posteriorly with balancing phako and suction power

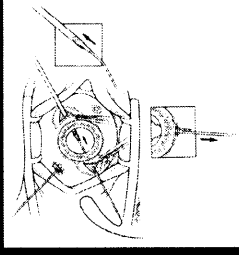
Surgical Technique

- Ab-interno approach
 - During PKP
 - PCIOL
 - 10-0 prolene
 - CIF needle



Surgical Technique

- Ab-externo
 - 10-0 prolene
 - STC-6 needle

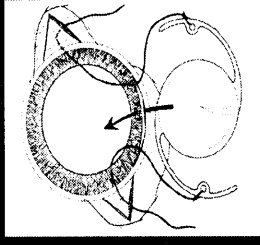


Small Incision Scleral Sutured PCIOL

- Surgical technique for scleral sutured PCIOL using small corneal incision
 - Ab-externo approach
 - 10-0 prolene STC-6 double armed straight needle
 - Alcon Acrysoft foldable PCIOL SA60

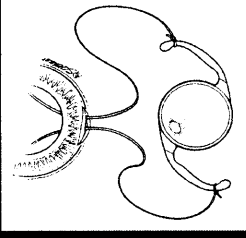
Scleral Sutured PCIOL with Non-foldable Lens

- Regardless of surgical approach, a 6-7 mm incision site is needed
- IOLs
 - Pharmacia UI52S
 - Alcon CZ70BD
 - ORC C540MC



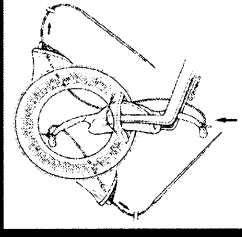
Small Incision : Foldable Scleral Sutured PCIOL

- Corneal incision: 3 to 3.5 mm
- IOL: Alcon SA60



Small Incision Foldable Scleral Sutured PCIOL

- Acrylic foldable implant: Alcon SA60
- Insertion through small corneal incision



**Scleral Sutured PCIOL
Through
Small Clear Corneal Incision
Surgery:
Video Demonstration**

Surgery: Video Demonstration

Results

- A total of 218 eyes on 197 patients
- Follow up:
Mean - 16.4 months (3.0 - 94.4 months)

Results: Patient Demographics

Age (years)	1 - 90
Range	54 ± 23
Gender	
Males	126 (64%)
Females	71 (36%)
Race	
Caucasian	128 (65%)
African American	61 (31%)
American Indian	8 (4%)

Results: Preoperative Diagnosis

Cataract surgery complications with retained lens fragments	18 (8.3%)
Dislocated IOL	53 (24.3%)
Trauma induced lens damage	44 (20.2%)
Surgery-rendered aphakia (RD or PDR)	38 (17.4%)
Opacified IOL	16 (7.3%)
Congenital or acquired lens dislocation	22 (10.1%)
Others (IOL complications, needed IOL exchange)	27 (12.4%)

Results: Visual Acuity

Snellen VA	Pre-OP VA	BCVA	Final VA
20/20-20/40	49 (23.1%)	116 (53.7%)	92 (42.6%)
20/50-20/80	37 (17.3%)	35 (16.2%)	43 (19.9%)
20/100-20/200	34 (16%)	21 (9.7%)	17 (7.9%)
20/300-20/400	13 (6.1%)	15 (6.9%)	16 (7.4%)
CF	39 (18.4%)	17 (7.9%)	19 (8.8%)
HM	29 (13.7%)	6 (2.8%)	13 (6%)
LP	11 (5.2%)	6 (2.8%)	16 (7.4%)

Results: Visual Acuity

Preoperative logMAR visual acuity
 Range (-0.12) – 2.70
 Mean ± Standard Deviation 1.14 ± 0.86

Best postoperative logMAR visual acuity
 Range (-0.12) – 3.00
 Mean ± Standard Deviation 0.62 ± 0.73

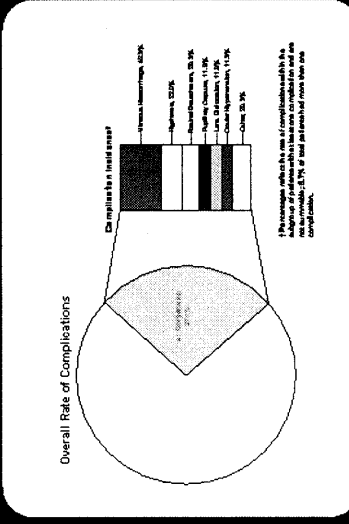
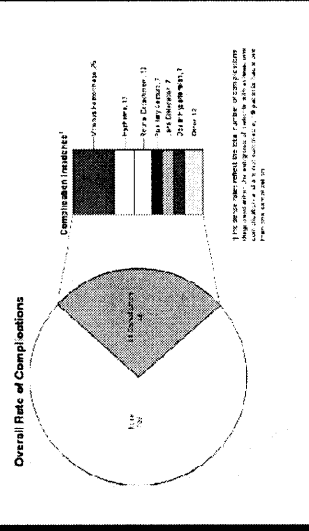
Last postoperative logMAR visual acuity
 Range 0.00 – 3.00
 Mean ± Standard Deviation 0.84 ± 0.87

Results

- There was significant difference between pre-operative logMar and both the last logMar score (p=0.000) and the best logMar score (p=0.000).
- There was also a significant difference between the last logMar score and the best logMar score (p=0.000).

Results

- Most common post-operative complications:
 - Vitreous hemorrhage : 25 (11.5%)
 - Hyphema : 13 (6.0%)
 - Retinal detachment : 12 (5.5%)
 - Lens dislocation : 7 (3.2%)
 - Pupillary capture : 7 (3.2%)
 - Elevated IOP : 7 (3.2%)
 - Suture knots erosion : 3 (1.4%)



Discussion

Author	Year	Case number	Mean FU (month)	BCVA > 20/40	BCVA < 20/200
Mintevfethanise et al	1995	21	29.5	80.9%	4.7%
Heldal et al	1996	41	12	61%	none
Johnston et al	2000	63	20	76%	6%
Sarafrazadeh et al	2001	30	34	63%	3%
Grigorian et al	2003	24	6	22%	50%
Yore et al	2006	61	67		
Singh et al	2007	53	69.3		
Chen et al	2008	218	16.4	53.7%	20.4%

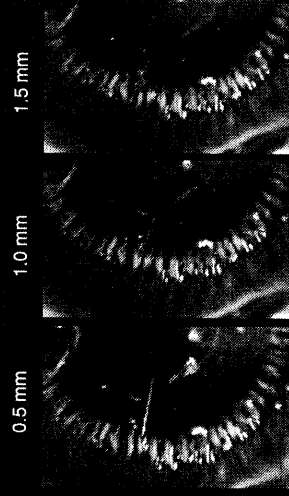
Discussion

- History of previous ocular surgery: 172 (79%)
- History of previous retinal detachment repair: 37 (17%)
- History of previous ocular trauma: 44 (20%)

Discussion

Author	Year	Case No.	Vitreous Hem	IOP	IOL Disloc.	RD
Mittelman et al	1995	21	0	4.7%	4.7%	9.5%
Held et al	1996	41	0	2.4%	2.4%	2.4%
Johnston et al	2000	63	4.8%	na	1.6%	3.2%
Sarrafzadeh et al	2001	30	na	na	3%	7%
Grigorian et al	2003	24	12.5%	na	4.2%	8.3%
Yote et al	2006	61	na	22%	27.9%	8.2%
Shugh et al	2007	53	11.4%	2.8%	5.7%	3.2%
Chen et al	2008	218	11.5%	3.2%	3.2%	5.5%

Discussion: Vitreous Hemorrhage



Discussion

- There was no significant association between previous history of RD and postoperative RD ($P=0.398$)
- When complications were analyzed against type of implant, vitreous hemorrhage was found to be 15% more likely with foldable lenses than with non-foldable ones ($p=0.003$)

Conclusions on

Small Incision Scleral Sutured PCIOL

- IOL is placed closest to the natural anatomical position
- No compromise to AC angle
- Can accommodate a wide spectrum of ocular conditions with minimal or no capsular support
- Can accommodate eyes with significant loss of uveal tissue
- Minimal complications encountered
- Visual result comparable to other techniques

Conclusions

- Transient vitreous hemorrhage was a common complication, but usually cleared without surgical intervention
- Vitreous hemorrhage was 15% more likely to happen in foldable than with non-foldable IOL
- No endophthalmitis or hypotony were encountered
- Complication rate of RD, glaucoma, implant dislocation, pupillary capture was acceptable
- Pre-operative conditions dictate the chance of a successful recovery of postoperative visual acuity

3/31/2010

Thank you for your attention !