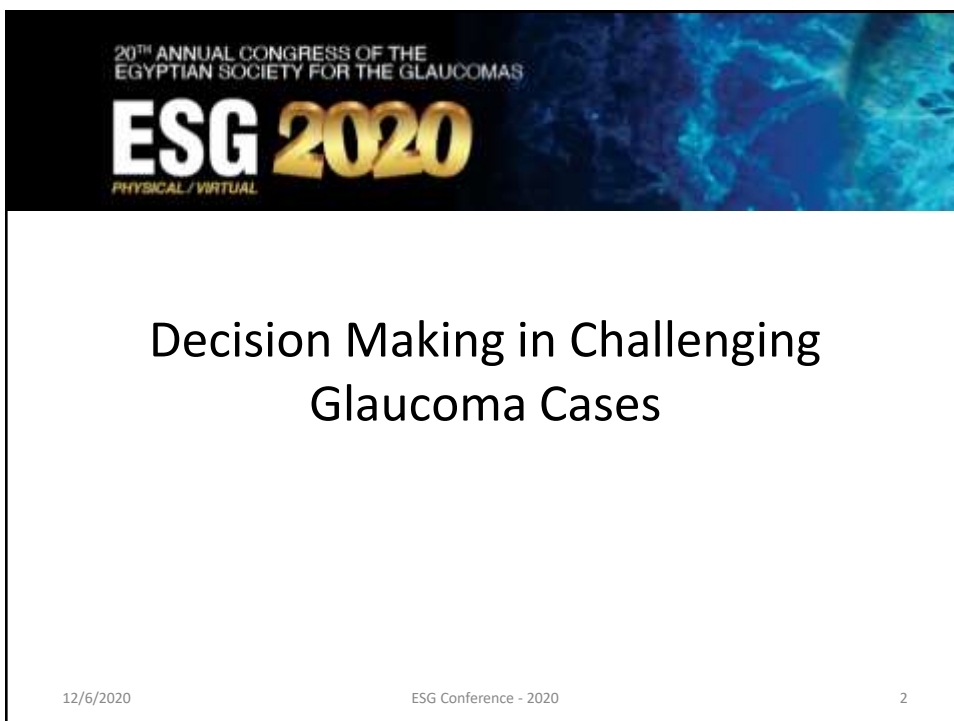




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Decision Making in Challenging Cases

Panelists

- Prof Dr Ahmed Abou El Einien • Military Academy
- Prof Dr Adel Farag • Zagazig University
- Prof Dr Mohamed Saad • Alexandria University
- Prof Dr Yasmin El Sayed • Cairo University



Moderator

- Nader Bayoumi

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Case 1

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	39yr	Female
General medical Hx	Asthmatic	
Remarks	Lost (OD) to glaucoma	"Laser Rx" (since 2 yrs)
Current meds	<ul style="list-style-type: none"> •Travoprost/Timolol combination ED 1x1 •Brimonidine ED 1x3 •Acetazolamide tab 1x3 	
Presentation (C/O)	Lost eye	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	No PL	0.1
Refraction		+12 DS
IOP (GAT) (mmHg)	38	26
Cornea / CCT (μ)	Free, 528	Free, 516
Anterior Chamber	ND & C	ND & C
Iris / Pupil		PI temporal
Lens		Clear
Gonioscopy		PAS (\approx 300 $^\circ$) (sparing superotemporal quadrant)
Fundus		
Optic nerve	Total cupping	C/D = 0.8
Retina	Unremarkable	Unremarkable
Remarks		
Axial length (mm)	16.14	15.75

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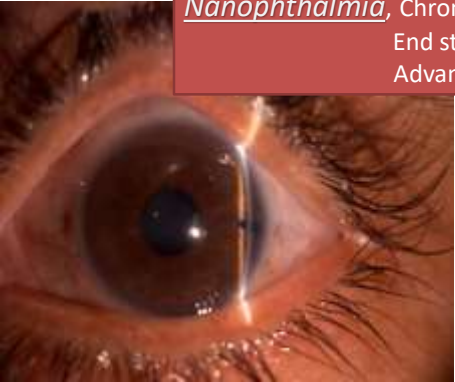
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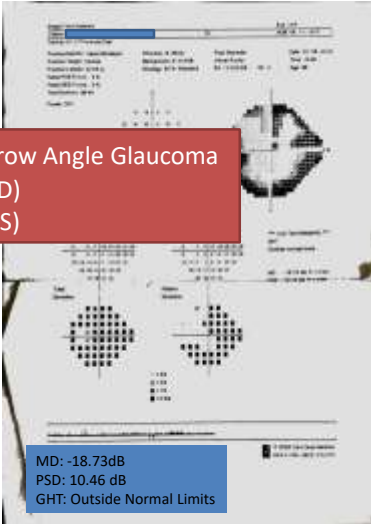
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Decision Making in Challenging Cases

Axial Length < 17 mm (OU)
 IOP > 21 mmHg (OU)
 Cup/Disc ratio advanced (OU)



Nanophthalmia, Chronic Narrow Angle Glaucoma
 End stage (OD)
 Advanced (OS)



MD: -18.73dB
 PSD: 10.46 dB
 GHT: Outside Normal Limits


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Decision Making in Challenging Cases

What is the reliability of the IOP measurement in nanophthalmia?

- Cornea → curvature, biomechanics
- Wide ocular pulse amplitude → visible pulsations on GAT → difficult judgment of end point
- Normal range of IOP in nanophthalmia ???



Nanophthalmia, Chronic Narrow Angle Glaucoma
 End stage (OD)
 Advanced (OS)



MD: -18.73dB
 PSD: 10.46 dB
 GHT: Outside Normal Limits

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Decision Making in Challenging Cases

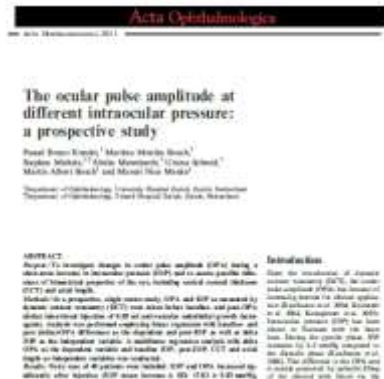


2010

CONCLUSION: Shorter eyes had a larger 24-hour IOP variation than longer eyes in healthy young adults.

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Decision Making in Challenging Cases



2011

CONCLUSION: Multiple regression analysis with delta *OPA* as the dependent variable and baseline IOP, post-IOP, CRT and axial length as independent variables revealed a partial correlation coefficient of -0.26 (p = 0.084) for baseline IOP, 0.47 (p = 0.003) for post-IOP, 0.09 (p = 0.518) for CRT and 0.024 (p = 0.873) for axial length.

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Decision Making in Challenging Cases

Measurement of Intraocular Pressure in Nanophthalmic Eyes

2012

Corneal biomechanical properties and intraocular pressure measurement in patients with nanophthalmos.

Author Information
1 Beyoglu Eye Research and Training Hospital, Istanbul, Turkey

Abstract
AIM: To compare the biomechanical properties of the cornea and intraocular pressure (IOP) between patients with nanophthalmos and age-matched controls.

METHODS: In this prospective, cross-sectional and comparative study, 27 eyes of 27 healthy individuals (control group) and 27 eyes of 27 patients with nanophthalmos (study group) were enrolled. Corneal hysteresis (CH), corneal resistance factor (CRF), corneal compensated intraocular pressure (IOPcc) and Goldmann corneal intraocular pressure (IOPg) were recorded for the right eye of each participant using Pentacam Corneal Response Analysis measurements. Also, all participants in this study underwent a comprehensive ocular examination including IOP measurement with Goldmann applanation tonometry (IOP/GAT), central corneal thickness and axial length (AL) assessments.

RESULTS: Mean CH in the nanophthalmic eyes and in the control eyes were 13.3 ± 2.4 mm Hg and 11.8 ± 1.7 mm Hg, respectively (p=0.003); mean CRF values in the nanophthalmic and the control eyes were 13.2 ± 1.8 mm Hg and 11.4 ± 1.9 mm Hg, respectively (p=0.001); mean IOP/GAT was 18.2 ± 3.3 mm Hg in the nanophthalmic eyes and 12.8 ± 2.7 mm Hg in the control group (p=0.001); mean IOPg values for the nanophthalmic and the control groups were 17.1 ± 5.3 mm Hg and 16.7 ± 3.8 mm Hg, respectively (p=0.061). Mean IOPcc values in the nanophthalmic and the

CONCLUSION:

The *CH, CRF, IOPg and IOP(GAT)* were significantly higher in the nanophthalmic eyes, whereas no significant differences in IOPcc were observed. These findings may be taken into account when measuring IOP values in patients with nanophthalmos.

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Decision Making in Challenging Cases

Treatment →

Method of treatment →

Surgical →

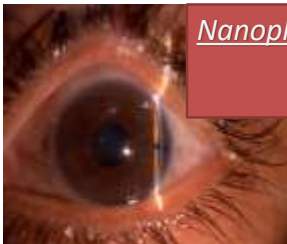
risk (nanophthalmia)

procedure →

filtering surgery ???

lensectomy ???

Precautions → preoperative, operative & postoperative



Nanophthalmia, Chronic Narrow Angle Glaucoma
End stage (OD)
Advanced (OS)



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Decision Making in Challenging Cases

2002

Treatment →

- What is the target IOP
- Method of treatment →
- Medical
- already on max

CONCLUSION:

- Target IOP → mid 20s
- Maximal topical IOP-Lowering therapy
- Step-wise approach →
 - Laser iridectomy
 - Laser peripheral iridoplasty
- Surgery →
 - + / - lens extraction (if cataract surgery was indicated)
 - Filtering surgery with antimetabolite coupled with → tight closure + sclerotomies

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Decision Making in Challenging Cases

Treatment →

- Enforce compliance
- Add systemic CAIs

After 3 months		
Current meds	OD	OS
		Travoprost/Timolol combination ED 1x1 Brimonidine ED 1x3 <u>Acetazolamide tab 1x3</u>
Best Corrected Visual Acuity (BCVA) (Decimal)	No PL	0.1
Refraction		+12 DS
IOP (GAT) (mmHg)	38	17
Fundus		
Optic nerve	Total cupping	C/D = 0.8

Controlled medically →

- For how long?
- Next move when medical Rx fails?

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Decision Making in Challenging Cases

Take Home Message

Medical treatment may have a role in the management of challenging cases of nanophthamia with glaucoma

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Case 2

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	59yr	Female
General medical Hx	Hypertensive	
Family Hx	Siblings (2 sisters, 1 brother) + Father + Father's brother (العم) → same condition	
Remarks	"Laser Rx" (since 7 months)	"Laser Rx" (since 7 months) CRVO (since 5 months) → potentially one-eyed
Current meds	<ul style="list-style-type: none"> •Latanoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine ED 1x3 	<ul style="list-style-type: none"> •Latanoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine ED 1x3
Presentation (C/O)	Referred for surgical intervention	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.4	< 0.05 (2/60)
Refraction	+12.0 DS	-6.0 cyl -3.50*160
IOP (GAT) (mmHg)	38	36
Cornea / CCT (μ)	Free, 539	Free, 562
Anterior Chamber	Shallow	Shallow
Iris / Pupil	PI	PI
Lens	Clear	Pseudophakic
Gonioscopy	A(C), 20°, b, trTMP Pigment anterior to TM	PAS (≈270°) (sparing temporal quadrant → A(C), 20°, b, trTMP)
Fundus		
Optic nerve	C/D = 0.4 Healthy neural rim	C/D = (could not be assessed) Pale rim, blurred disc edges
Retina	Unremarkable	Unremarkable
Remarks		
Axial length (mm)	17.00	16.98

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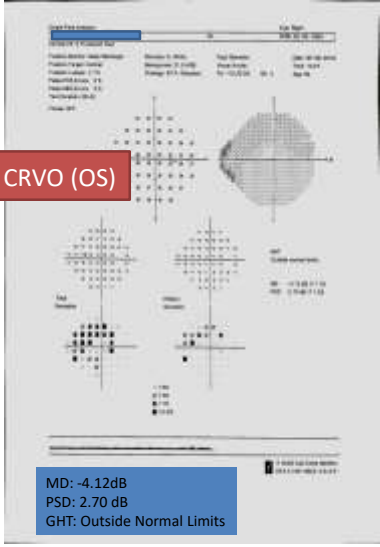
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Decision Making in Challenging Cases

Axial Length < 17 mm (OU)
 IOP > 21 mmHg (OU)
 Cup/Disc ratio within normal (OU)



Nanophthalmia, Old CRVO (OS)



MD: -4.12dB
 PSD: 2.70 dB
 GHT: Outside Normal Limits

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Decision Making in Challenging Cases


What is the Diagnosis →

Treatment →
 Target IOP ???
 Follow up on no treatment ???

Method →
 Medical →
 already on maximal topical meds (patient report) → IOP not controlled
 systemic CAIs → for how long?
 Surgical → *(discussed)*



Nanophthalmia, Old CRVO (OS)



MD: -4.12dB
 PSD: 2.70 dB
 GHT: Outside Normal Limits

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Decision Making in Challenging Cases

Table 1. Comparative analysis of anterior chamber depth (ACD) and horizontal corneal diameter (HCD) in patients with posterior microphthalmia (PM) and nanophthalmia (NT).

Parameter	PM (n=11)	NT (n=11)	P-value
Mean best-corrected log visual acuity (Snellen)	1.0	1.0	0.006
Corneal diameter (mm)	11.2	11.2	<0.001
Anterior chamber depth (mm)	3.5	3.5	<0.001
Lens thickness (mm)	4.5	4.5	<0.001

High-hyperopia database, part I: clinical characterization including morphometric (biometric) differentiation of posterior microphthalmia from nanophthalmia

CONCLUSION:

The horizontal corneal diameter was not measured, though apparently normal
 The diagnosis as such would be posterior microphthalmia rather than nanophthalmia →

CONCLUSION:

Patients were defined to have PM if the horizontal corneal diameter was $\geq 11\text{mm}$ and NO if the horizontal corneal diameter was $< 11\text{ mm}$
 For age < 1 year, an axial length of $< 19.2\text{mm}$ was considered

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Decision Making in Challenging Cases

Diagnosis →

- Ocular hypertension
- Angle closure suspect
- Chronic narrow angle

2018

CONCLUSION:

Higher IOP was significantly associated with *longer axial length* ($P = 0.016$; β : 0.05; B : 0.14; 95%CI: 0.03, 0.25) in normal individuals.

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Decision Making in Challenging Cases

Treatment →
Maintain topical meds

After 6 months		
Current meds	<ul style="list-style-type: none"> •Latanoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine ED 1x3 	<ul style="list-style-type: none"> •Latanoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine ED 1x3
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.4	< 0.05 (2/60)
Refraction	+12.0 DS	-6.0 cyl -3.50*160
IOP (GAT) (mmHg)	39	41
Fundus		
Optic nerve	C/D = 0.4 Healthy neural rim	C/D = (could not be assessed) Pale rim, blurred disc edges

Conclusion →
No progression of optic nerve cupping or VF despite elevated IOP

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Decision Making in Challenging Cases

Treatment →
Maintain topical meds

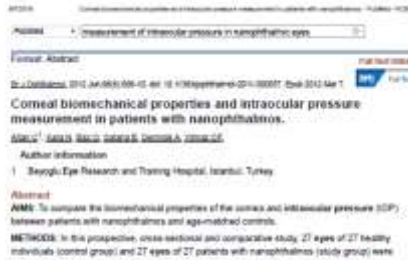
After 3 years		
Current meds	<ul style="list-style-type: none"> Latanoprost ED 1x1 Dorzolamide/beta-blocker combination ED 1x2 Brimonidine ED 1x3 	<ul style="list-style-type: none"> Latanoprost ED 1x1 Dorzolamide/beta-blocker combination ED 1x2 Brimonidine ED 1x3
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.5	< 0.05 (2/60)
Refraction	+12.0 DS	-6.0 cyl -3.50*160
IOP (GAT) (mmHg)	34	34
Fundus		
Optic nerve	C/D = 0.4 Healthy neural rim	C/D = (could not be assessed) Pale rim, blurred disc edges

Conclusion →
No progression of optic nerve cupping or VF despite elevated IOP

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Decision Making in Challenging Cases



Literature Review

Measured IOP in nanophthalmia maybe art factual

?? The optic nerve tolerates elevated IOP in nanophthalmia → no supporting studies

CONCLUSION:

The CH, CRF, IOPg and IOP(GAT) were significantly higher in the nanophthalmic eyes, whereas no significant differences in IOPcc were observed. These findings may be taken into account when measuring IOP values in patients with nanophthalmos.

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Case 3

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	42yr	Female
General medical Hx	Irrelevant	
Surgical Hx	High hyperopia (+12.0 DS)(OU) → CLE (Piggy-back IOL (OU)) (2007)	
Remarks	Known nanophthalmia	
Current meds	<ul style="list-style-type: none"> •Bimatoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine/beta-blocker combination ED 1x2 	<ul style="list-style-type: none"> •Bimatoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine/beta-blocker combination ED 1x2
Presentation (C/O)	Referred for surgical intervention	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.3	0.3
Refraction	-6.0 cyl -4.0*145	-1.75 cyl -2.25*5
IOP (GAT) (mmHg)	38	16
Cornea / CCT (μ)	Free	Free
Anterior Chamber	Irregular depth	Irregular depth
Iris / Pupil	PI	PI
Lens	Pseudophakic	Pseudophakic
Gonioscopy	A, 10°, b, TM not seen	A, 10°, b, TM not seen
Fundus		
Optic nerve	C/D = 0.4	C/D = 0.2
	Healthy neural rim	Healthy neural rim
Retina	Unremarkable	Unremarkable
Remarks		
Axial length (mm)		

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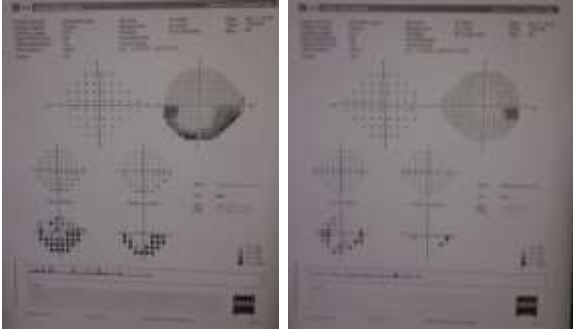
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Decision Making in Challenging Cases

Axial Length < 17 mm (OU)
 IOP > 21 mmHg (OD)
 Cup/Disc ratio asymmetrical > 0.1

Nanophthalmia, Pseudophakia
 uncontrolled glaucoma (OD)
 no glaucoma Vs controlled glaucoma (OS)

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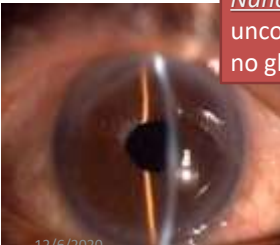
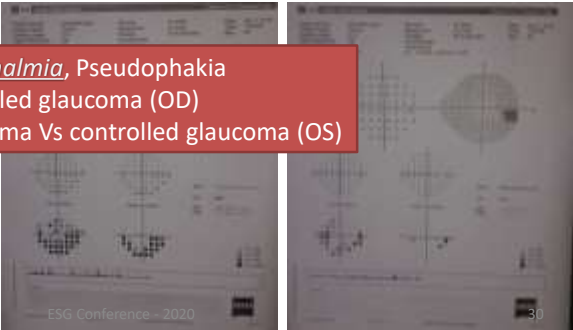
Decision Making in Challenging Cases

Diagnosis →

Treatment →
 Target IOP (discussed)
 Follow up on no treatment (discussed)

Method →
 Medical → (discussed)
 Surgical →
 Laser peripheral iridoplasty
 Filtering surgery ???

Nanophthalmia, Pseudophakia
 uncontrolled glaucoma (OD)
 no glaucoma Vs controlled glaucoma (OS)

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Decision Making in Challenging Cases

Small eyes big problems: is cataract surgery the best option for the nanophthalmic eyes?

Abstract

Author Information

1) Clinical Glaucoma Fellow, Moorfields Eye Hospital, London, UK.

Abstract

Nanophthalmos refers to an eyeball of short axial length, usually less than 22 mm which leads to angle closure glaucoma due to relatively large lens. Intra-ocular lens extraction relieves the angle closure in nanophthalmos. Cataract surgery in a nanophthalmic eye is technically difficult with high risk of complications such as posterior capsular rupture, axial effusion, choroidal haemorrhage, vitreous haemorrhage, malignant glaucoma, retinal detachment and squamous iridodiversion. Various options are explained in the literature to perform cataract surgery in nanophthalmos, like extracapsular cataract extraction with or without sclerostomy, small incision cataract extraction by phacomodification which not only helps maintain the anterior chamber during surgery but also reduces the incidence of complications, due to less fluctuation of intraocular pressure (IOP) during the surgery. Cataract surgery deepens and widens the anterior chamber angle in nanophthalmic eyes and has beneficial effects on IOP in eyes with nanophthalmos but is associated with a high incidence of complications.

PMID 24041611 [DOI: 10.1007/s12043-012-0380-0](https://doi.org/10.1007/s12043-012-0380-0)
Presented at ESGS 2012

2013

CONCLUSION:
 Intra-ocular lens extraction relieves the angle closure in nanophthalmos.
 Cataract surgery in a nanophthalmic eye is technically difficult with high risk of complications.

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Decision Making in Challenging Cases

Treatment →

Maintain topical meds

Add systemic CAIs

	After 6 months	
Current meds	OD	OS
	<ul style="list-style-type: none"> •Bimatoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine/beta-blocker combination ED 1x2 •Acetazolamide tab 1x3 	<ul style="list-style-type: none"> •Bimatoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine/beta-blocker combination ED 1x2 •Acetazolamide tab 1x3
Best Corrected Visual Acuity (BCVA) (Decimal)	0.3	0.3
Refraction	-6.0 cyl -4.0*145	-1.75 cyl -2.25*5
IOP (GAT) (mmHg)	18	14

Conclusion →

No progression of optic nerve cupping or VF

Lensectomy does not always solve the problem in nanophthalmia

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Case 4

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	58yr	Female
General medical Hx	Irrelevant	
Surgical Hx	Irrelevant	
Remarks	Attack of angle closure glaucoma 3 days earlier → resolved in response to PGAs 1x1, Dorzolamide/Beta-blocker combination 1x2, Acetazolamide tab 1x2	Irrelevant
Current meds	PGAs 1x1 Dorzolamide/Beta-blocker combination 1x2 Acetazolamide tab 1x2	•None
Presentation (C/O)	Referred for surgical intervention	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.9	1.0
Refraction	+2.50 cyl -1.0*145	+1.75 cyl -0.75*5
IOP (GAT) (mmHg)	11	11
Cornea / CCT (μ)	Free	Free
Anterior Chamber	Shallow. NC	Shallow. NC
Iris / Pupil	NP, sluggish reaction	NP, RRR(D & C)
Lens	Clear	Clear
Gonioscopy	A, 10°, b, TM not seen (Convex peripheral iris with no angle details seen)	A, 10°, b, TM not seen (Convex peripheral iris with no angle details seen)
Fundus		
Optic nerve	C/D = 0.1 Healthy neural rim	C/D = 0.1 Healthy neural rim
Retina	Unremarkable	Unremarkable

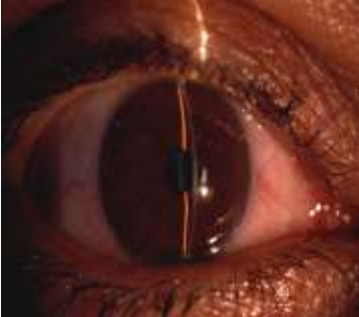
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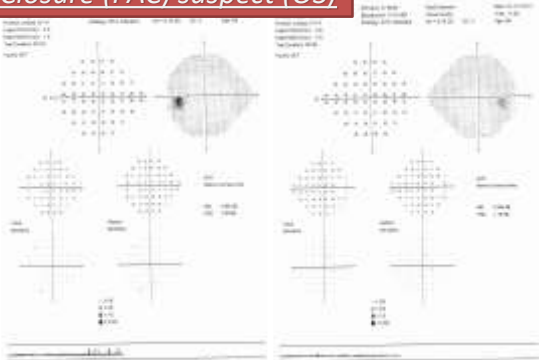
Decision Making in Challenging Cases

History of angle closure attack (OD)
 IOP < 21 mmHg (OU)
 Gonioscopically narrow angle (OU)
 Cup/Disc ratio \approx 0.1 (OU)

Primary Angle Closure (PAC) (OD)
Primary Angle Closure (PAC) suspect (OS)



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Decision Making in Challenging Cases

Diagnosis →

Treatment →

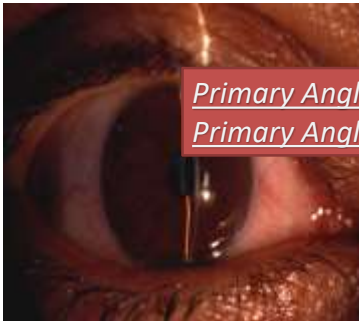
Follow up with no intervention ???

Method →

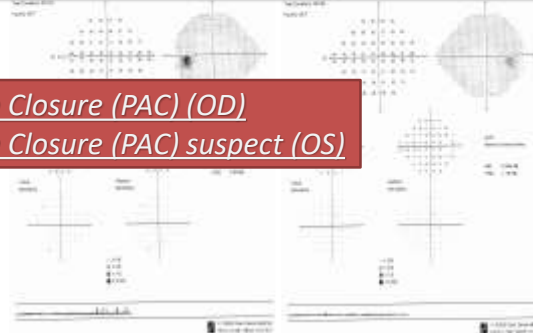
Surgical →

Laser peripheral iridectomy / iridoplasty

Lens surgery (clear lens, BCVA = 1.0, when??) ???



Primary Angle Closure (PAC) (OD)
Primary Angle Closure (PAC) suspect (OS)



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Decision Making in Challenging Cases

EAGLE Study

Effectiveness of early lens extraction for the treatment of primary angle-closure glaucoma (EAGLE): a randomised controlled trial

Background: Primary angle-closure glaucoma is a leading cause of blindness worldwide. In early-stage glaucoma, early lens extraction may reduce the risk of blindness compared with laser peripheral iridectomy.

Objective: To compare the effectiveness and safety of early lens extraction with laser peripheral iridectomy in the treatment of primary angle-closure glaucoma.

Design: Randomised controlled trial.

Setting: The study was conducted in a tertiary care hospital in Hong Kong.

Participants: 100 patients with primary angle-closure glaucoma were randomised to either early lens extraction or laser peripheral iridectomy.

Interventions: The early lens extraction group underwent phacolytic lens extraction, and the laser peripheral iridectomy group underwent laser peripheral iridectomy.

Measurements and Main Results: At 12 months, the mean intraocular pressure was significantly lower in the early lens extraction group compared with the laser peripheral iridectomy group. The early lens extraction group also had significantly fewer adverse events.

Conclusion: Early lens extraction is more effective and safer than laser peripheral iridectomy in the treatment of primary angle-closure glaucoma.

2016

CONCLUSION:
 Mean intraocular pressure (16.6 [SD 3.5] mm Hg) 1.18 mm Hg lower (95% CI -1.99 to -0.38, p=0.004) after clear-lens extraction than after standard care
 Clear-lens extraction showed greater efficacy and was more cost-effective than laser peripheral iridotomy, and should be considered as an option for first-line treatment

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Case 5

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	52yr	Female
General medical Hx	Irrelevant	
Surgical Hx	High myopia – Glaucoma (OU) → Combined Phaco-Trab (OU) (2004)	
Remarks	Irrelevant	Irrelevant
Current meds	Dorzolamide/beta-blocker combination ED 1x2	Dorzolamide/beta-blocker combination ED 1x2
Presentation (C/O)	Referred for surgical intervention	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	3 / 60	3 / 60
Refraction	plano	plano
IOP (GAT) (mmHg)	25	25
Cornea / CCT (μ)	Free, 598	Free, 593
Anterior Chamber	Deep	Deep
Iris / Pupil	PI	PI
Lens	Pseudophakic	Pseudophakic
Conjunctiva	Scarred flat bleb superiorly	Scarred flat bleb superiorly
Gonioscopy	Shaeffer Grade 4	Shaeffer Grade 4
Fundus		
Optic nerve	Tilted disc	Tilted disc
	C/D = 0.9	C/D = 1.0
	Polar notching Pale neural rim	Total cupping
Retina	Myopic with extensive chorioretinal atrophy and degeneration	Myopic with extensive chorioretinal atrophy and degeneration

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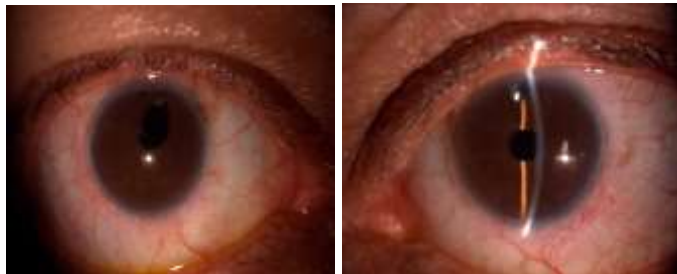
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Decision Making in Challenging Cases

History of high myopia (OU)
 IOP > 21 mmHg (OU)
 Gonioscopically open angle (OU)
 Cup/Disc ratio \approx 1.0 (OU)
 Myopic fundus

Primary Open Angle Glaucoma, High myopia, uncontrolled by surgery and medical Rx (OU)



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Decision Making in Challenging Cases

Diagnosis →

Method of follow up → (VA will not permit automated perimetry, Optic Nerve totally cupped, fundus: advanced myopic changes) → IOP only ???

Primary Open Angle Glaucoma, High myopia, uncontrolled by surgery and medical Rx (OU)



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Decision Making in Challenging Cases

Glaucoma in high myopia →



2017

CONCLUSION:

GON was associated with elevated IOP in myopic eyes with an axial length of < 27.4 mm. In more highly myopic eyes (axial length >27.5 mm), larger optic disc, longer axial elongation and older age—but not IOP mostly within its normal range—were factors associated with GON

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Decision Making in Challenging Cases

Glaucoma in high myopia →

2016

CONCLUSION:
 A total of 16.1% of defects in young **high myopes** were found to mimic classic glaucomatous defects
 A proposed combined visual field classification for **high myopia and glaucoma** demonstrates acceptable intergrader agreement.

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Decision Making in Challenging Cases

Glaucoma in high myopia →

2016

CONCLUSION:
 The application of a myopic normative database improved the specificity without compromising the sensitivity compared with the optical coherence tomography instrument's built-in normative database for detection of RNFL abnormalities in eyes with high myopia

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Decision Making in Challenging Cases

Diagnosis →

Treatment →

Target IOP ???

Method →

Medical →

IOP not controlled

Surgical → risk (High myopia)

SLT / ALT

Bleb revision

Filtering surgery / cyclodestruction ???

Primary Open Angle Glaucoma, High myopia, uncontrolled by surgery and medical Rx (OU)



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Decision Making in Challenging Cases

Treatment →

Target IOP ???

Method →

Medical →

IOP not controlled

Surgical → risk (High myopia)

SLT / ALT

Bleb revision

Filtering surgery



2016

CONCLUSION:
Shorter AL (HR for a 1-mm increase 0.72, P<0.05) were found to be significant risk factors for trabeculectomy failure based on an IOP of <15 mmHg
A longer AL was not a risk factor for trabeculectomy failure, but it may be a success factor for trabeculectomy with MMC

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Decision Making in Challenging Cases

Acta Ophthalmologica

Risk factors for the hypertensive phase after implantation of a glaucoma drainage device

Keywords: In Jang and Choi Eun Park

Journal of Glaucoma and Visual Science, 2017, 26(12): 1000-1005. Copyright of the American Society of Ophthalmology, Inc.

CONCLUSION:
Complications after filtering surgery

CONCLUSION:
Complications after filtering surgery (Hypertensive phase after GDDs)

2017

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Decision Making in Challenging Cases

Patient was lost for follow up for 4 years

	After 4 years	
Current meds	Latanoprost ED 1x1 Dorzolamide/beta-blocker combination ED 1x2 Brimonidine ED 1x2	Latanoprost ED 1x1 Dorzolamide/beta-blocker combination ED 1x2 Brimonidine ED 1x2
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	2 / 60	2 / 60
Refraction	Plano	Plano
IOP (GAT) (mmHg)	30	24
Fundus		
Optic nerve	Tilted disc C/D = 1.0 Total cupping	Tilted disc C/D = 1.0 Total cupping
	Myopic with extensive chorioretinal atrophy and degeneration	Myopic with extensive chorioretinal atrophy and degeneration

Needing revision with 5 FU → same condition as prior to needing

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Decision Making in Challenging Cases

Enforce compliance / adherence to meds

After 1 month

Conclusion →
 In high myopia →
 Measured level of IOP may not be accurate
 The condition may remain remarkably stable over a long time with a relatively elevated measured IOP

Best Corrected Visual Acuity (BCVA) (Decimal)	2 / 60	2 / 60
Refraction	Plano	Plano
IOP (GAT) (mmHg)	21	19
Fundus		
Optic nerve	Tilted disc C/D = 1.0 Total cupping	Tilted disc C/D = 1.0 Total cupping
	Myopic with extensive chorioretinal atrophy and degeneration	Myopic with extensive chorioretinal atrophy and degeneration

Maintained same level of IOP for 5 years !!! → stable visual acuity

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Case 6

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	41yr	Female
General medical Hx	Irrelevant	
Surgical Hx	High myopia (OU) – Retinal detachment (OD) → Pars Plana Vitrectomy + Silicone Oil Tamponade (2016) → Silicone oil removal (12/2016)	
Remarks	Irrelevant	Contact lens user
Current meds	•Latanoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2	None
Presentation (C/O)	Referred for surgical intervention	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.2	0.1
Refraction	-1.50 cyl -1.25 * 5	-27.0 cyl -1.0 * 140
IOP (GAT) (mmHg)	40	19
Cornea / CCT (μ)	KPs	Free
Anterior Chamber	Deep +1 flare +1 cells	Deep , NC
Iris / Pupil	Inferior PI	NP
Lens	Pseudophakic	Clear
Conjunctiva	Healthy	Healthy
Gonioscopy	D, 40, f, 4+ TMP	D, 40, f, tr TMP
Fundus		
Optic nerve	Flat, pale disc	Flat, pale disc
Retina	Myopic with extensive chorioretinal atrophy and degeneration Macular scar	Myopic with extensive chorioretinal atrophy and degeneration Macular scar

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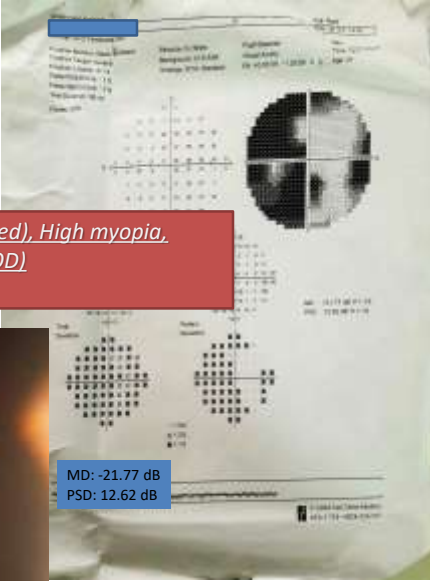
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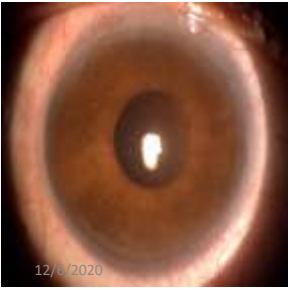
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Decision Making in Challenging Cases


History of high myopia (OU)
 IOP > 21 mmHg (OD)
 Gonioscopically open angle (OU)
 Cup/Disc ratio ≈ 1.0 (OD)
 Myopic fundus
 Tubular field (C10-2) (OD)



*Open Angle Glaucoma (Primary / Silicone Oil Induced), High myopia, uncontrolled by surgery and medical Rx, Primary (OD)
 High Myopia (OS)*



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MD: -21.77 dB
 PSD: 12.62 dB

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Decision Making in Challenging Cases

Diagnosis →


Treatment →

- Target IOP ???
- Method →
 - Medical →
 - IOP not controlled
 - For flare, cells → role of steroids (fear of steroid responder ??) ??
 - Surgical → risk (High myopia)
 - SLT / ALT
 - Filtering surgery
 - Glaucoma Drainage Devices
 - cyclodestruction ???

*Open Angle Glaucoma (Primary / Silicone Oil Induced), High myopia, uncontrolled by surgery and medical Rx, Primary (OD)
 High Myopia (OS)*



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Decision Making in Challenging Cases

Contraintrol.com, 2018 Jun 23;3(4), doi: 10.1155/000499792 [Epub ahead of print]

Incidence and Risk Factors of Ocular Hypertension following Pars Plana Vitrectomy and Silicone Oil Injection.

2018

Jabbur E, Acar O, Antonov Z, Koute HB, Abdelmassih Y, Jakhli A.
Author information
Abstract

PURPOSE:
To evaluate the risk factors for elevated intraocular pressure (IOP) after pars plana vitrectomy (PPV) with silicone oil injection (SOI).

PROCEDURES:
This prospective interventional study included 254 consecutive eyes receiving PPV with SOI.

RESULTS:
Elevated IOP developed in 48% of the eyes postoperatively. The onset of IOP elevation was early (<1 week) in 61.5% of the eyes, intermediate (1-6 weeks) in 28.7%, and late (> 6 weeks) in 9.8%. The incidence of IOP elevation was higher with primary uncomplicated rhegmatogenous retinal detachment than with tractional detachment ($p = 0.01$). Pseudophakia, high myopia, and high preoperative IOP were found to have higher incidences of ocular hypertension, whereas diabetic patients had a lower incidence.

CONCLUSION:
IOP elevation is a common complication following silicone oil (SO) tamponade. Risk factors for ocular hypertension development are pseudophakia, high myopia, high preoperative IOP, and low-viscosity SO.

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Decision Making in Challenging Cases

Add topical steroids, alpha agonists, systemic CAIs

	After 1 month	
Current meds	<ul style="list-style-type: none"> •Latanoprost ED 1x1 •Dorzolamide/beta-blocker combination ED 1x2 •Brimonidine ED 1x2 •Dexamethasone ED 1x3 •Acetazolamide tab 1x3 	•Latanoprost ED 1x1
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	0.2	0.1
Refraction	-1.50 cyl -1.25 * 5	-27.0 cyl -1.0 * 140
IOP (GAT) (mmHg)	16	14
Anterior Chamber	Deep, ND & C	Deep, ND & C
Fundus		
Optic nerve	Flat, pale disc	Flat, pale disc
	Myopic with extensive	Myopic with extensive

Conclusion →
Steroids may have a role in controlling inflammation and lowering IOP
Consider non-IOP-lowering therapy for glaucoma according to pathogenesis (*type of glaucoma*)

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Case 7

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	6yr	Male
General medical Hx	Irrelevant	
Surgical Hx	Irelevant	Irrelevant
Remarks	Examination under GA (inhalational halothane anaesthesia)	
Current meds	•None	None
Presentation (C/O)	Referred for surgical intervention	Referred for surgical intervention

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	- cyl -4.0 * 10	- cyl -4.0 * 155
IOP (Perkins) (mmHg)	28	26
Cornea / CCT (μ)	Free	Free
Anterior Chamber	ND&C	ND&C
Iris / Pupil	Aniridia	Aniridia
Lens	Ectopia	Ectopia
Conjunctiva	Healthy	Healthy
Gonioscopy	Stump of iris tissue seen reflected on TM	Stump of iris tissue seen reflected on TM
Fundus		
Optic nerve	C/D ratio = 0.3	C/D ratio = 0.2
Retina	Foveal hypoplasia	Foveal hypoplasia
Remarks		
Axial length (mm)	22.68	21.92

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Decision Making in Challenging Cases

Aniridia (OU)
 IOP > 21 mmHg (OU)
 Gonioscopically iris stump (OU)
 Cup/Disc ratio <0.2 (OD)
 Foveal hypoplasia

Aniridia with elevated IOP (OU)



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Decision Making in Challenging Cases

Diagnosis →

IOP elevated (normal range, under GA), yet C/D ratio is normal
 Hence: "Ocular hypertension" or "Glaucoma" with Aniridia ???
 Follow up Vs Intervention for progression of optic nerve cupping?

Aniridia with elevated IOP (OU)



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Decision Making in Challenging Cases

Prevalence, Incidence, and Risk Factors for the Development of Glaucoma in Patients With Aniridia.

2017

Abstract
PURPOSE: To assess the prevalence, incidence, and risk factors for the development of glaucoma in patients with aniridia.

METHODS: Retrospective analysis of case records of patients diagnosed as having congenital aniridia between January 1987 and December 2011 was performed. Patients with a follow-up of more than 12 months were included.

RESULTS: Ninety-one patients (180 eyes) with the diagnosis of aniridia were identified from the case records. Two eyes were excluded from the final analysis; one had developed phthisis and the other had been enucleated. Seventy-four patients (31.3%) were younger than 18 years at initial presentation. The prevalence of glaucoma at presentation was 28.8%, which could be further categorized as ocular hypertension in 19 eyes (10.5%) and glaucoma in 33 eyes (18.3%). Thirty-one eyes (28.4%) developed elevated intraocular pressure (IOP) during the follow-up period: ocular hypertension in 23 eyes (17.8%) and glaucoma in 8 eyes (6.25%). The mean IOP at the time of diagnosis was 33.9 ± 6.8 mm Hg (range, 24 to 65 mm Hg). The mean duration of follow-up was 5.1 ± 5.7 years (range, 1 to 20 years). The cumulative probability of developing elevated IOP was 4% at

CONCLUSION:

The prevalence of glaucoma at presentation was 28.8%, which could be further categorized as *ocular hypertension* in 19 eyes (10.5%) and *glaucoma* in 33 eyes (18.3%)
 Thirty-one eyes (28.4%) developed elevated intraocular pressure (IOP) *during the follow-up* period: ocular hypertension in 23 eyes (17.9%) and glaucoma in 8 eyes (6.25%)
Higher baseline IOP and *limbal stem cell deficiency* as significant risk factors for the development of elevated IOP

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Decision Making in Challenging Cases

Journal of Glaucoma Practice & Research 2015; 21(4): 201-205

Format: Abstract

doi:10.1097/IJG.0000000000000018

APJG

Accuracy of Intraocular Pressure Measurement With the Icare Tonometer in Children.

Shaw J, Lavin G, Green M, Anirudh A, Giammusso E, Green D, Shanks J

Author Information

Abstract

PURPOSE: The aim of this study was to evaluate the difference between intraocular pressure (IOP) measurements in children with the icare tonometer (IT) and applanation (AT), pneumatic (PT), or digital tonometers (TT).

DESIGN: A randomized prospective trial of children younger than age 10 attending the pediatric ophthalmology department of Manchester Royal Eye Hospital with ocularitis.

METHODS: Children had IOP measured twice, once with an IT and again with a TT, PT, or AT during the same clinic appointment.

RESULTS: Forty-four children (55 eyes) were included, with a mean (range) PEI age of 5.7 (2-14) months. Twelve eyes had anterior segment pathology (ASP), defined as aniridia, congenital glaucoma, or Peters anomaly. Regardless of the presence or absence of ASP, total mean difference (SD), 95% positive bias (PB), and limits of agreement (LOA) between IT and other instruments were as

2015

CONCLUSION:
 The aim of this study was to evaluate the difference between intraocular pressure (IOP) measurements in children with the Icare tonometer (IT) and applanation (AT), pneumatic (PT), or digital tonometers (TT).
 Twelve eyes had anterior segment pathology (ASP), defined as aniridia, congenital glaucoma, or Peters anomaly.
 In children with ASP, IOP measured with IT is higher than expected when compared with other tonometers, in some cases by up to 8 mm Hg.

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Decision Making in Challenging Cases

- Treatment →
 - Method →
 - Medical →
 - Young age & life-long Rx
 - Stem cell deficiency (although the cornea is free)
 - Surgical → risk →
 - Angle surgery → lens injury
 - Filtering surgery → failure in children
 - Glaucoma Drainage Devices → lens / cornea injury
 - cyclodestruction ??? → stem cell injury

Aniridia with elevated IOP (OU)



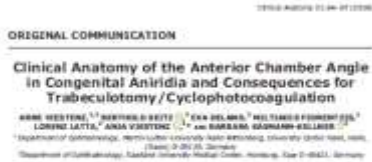
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Decision Making in Challenging Cases



2018

CONCLUSION:
No report on the outcome of glaucoma surgery.

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Decision Making in Challenging Cases



2018

CONCLUSION:
Deep sclerectomy with microperforations may be a viable option in eyes with congenital glaucoma associated with aniridia after failed conventional trabeculotomy surgery. In young children, this may avoid GDD surgery till later in life, when tube position may be more stable.

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Decision Making in Challenging Cases

After 6 weeks		
Current meds	•None	None
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	- cyl -4.0 * 10	- cyl -4.0 * 155
IOP (GAT) (mmHg)	26	12
Fundus		
Optic nerve	C/D ratio = 0.3	C/D ratio = 0.1
Axial length (mm)	22.54	21.66

Surgery (OD) was performed ... (Combined trabeculotomy-Trabeculectomy with Mitomycin C with releasable sutures)

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Decision Making in Challenging Cases

After 1 month postoperatively		
Current meds	•None	None
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	- cyl -4.0 * 10	- cyl -4.0 * 155
IOP (GAT) (mmHg)	6	22
Conjunctiva	Bleb: elevated, pale, diffuse	
Fundus		
Optic nerve	C/D ratio = 0.0 (no cup)	C/D ratio = 0.1
Axial length (mm)	21.24	21.91

Right eye IOP dropped, reversal of optic nerve cupping

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Decision Making in Challenging Cases

After 1 month postoperatively		
Current meds	•None	None
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	- cyl -4.0 * 10	- cyl -4.0 * 155
IOP (GAT) (mmHg)	15	36
Fundus		
Optic nerve	C/D ratio = 0.0 (no cup)	C/D ratio = 0.2
Axial length (mm)	21.79	22.26

Operate the left eye?? (IOP elevated, C/D ratio remains normal)

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Decision Making in Challenging Cases

Surgery (OS) was performed ... (Combined trabeculotomy-Trabeculectomy with Mitomycin C with releasable sutures)

After 5 months postoperatively		
Current meds	None	None
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	- cyl -4.0 * 10	- cyl -4.0 * 155
IOP (GAT) (mmHg)	9	6
Conjunctiva	Bleb: elevated, pale, diffuse	Bleb: elevated, pale, diffuse
Lens	Clear	Cataract
Fundus		
Optic nerve	C/D ratio = 0.1	C/D ratio = 0.1
Axial length (mm)	21.89	22.37

Surgery for cataract was performed → I/A & IOL (in the bag multi-piece PCIOL)

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Decision Making in Challenging Cases

Current meds	After 5 months postoperatively	
	None	None
	<i>OD</i>	<i>OS</i>
IOP (GAT) (mmHg)	12	14
Conjunctiva	Bleb: elevated, pale, diffuse	Bleb: elevated, pale, diffuse
Fundus		
Optic nerve	C/D ratio = 0.2	C/D ratio = 0.2

Conclusion →

Although not the only indication for surgery in aniridia with glaucoma, consider the IOP value and consider doing surgery if IOP is elevated, specially so if it fluctuates, even if the optic nerve is still healthy

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Case 8

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	4 months	Female
General medical Hx	Irrelevant	
Surgical Hx	Irelevant	Irrelevant
Remarks	Examination under GA (inhalational halothane anaesthesia)	
Current meds	•None	None
Presentation (C/O)	Abnormal external appearance	Abnormal external appearance

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (Perkins) (mmHg)	34	35
Cornea / CCT (μ)	Central ring-like localized haze with endothelial and posterior stromal defect	Central ring-like localized haze with endothelial and posterior stromal defect
Anterior Chamber	Could not be assessed	Could not be assessed
Iris / Pupil	Aniridia, with iris stump	Aniridia, with iris stump
Lens	Central cataract	Central cataract
Conjunctiva	Healthy	Healthy
Gonioscopy	Not possible	Not possible
Fundus		
Optic nerve	Not seen	Not seen
Retina	Not seen	Not seen
Remarks		
Axial length (mm)	21.45	21.47
Ultrasound	Free	Free

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Decision Making in Challenging Cases

Diagnosis →

Treatment →

- Target IOP ???
- Method →
 - Medical →
 - Young age & life-long Rx
 - Drug category → (abnormal anterior segment anatomy)
 - Aqueous suppressant
 - Surgical →
 - Angle surgery → lens injury
 - Filtering surgery → failure in children
 - Glaucoma Drainage Devices → lens / cornea injury
 - cyclodestruction ???



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Decision Making in Challenging Cases

Optical iridectomy for corneal opacities in Peter's anomaly - PubMed - NCBI

Journal: *J Cataract Refract Surg* 1998;24(12):1719-25

Optical iridectomy for corneal opacities in Peter's anomaly.

Zalman, G.D., Marmorstein, Y., Finkel, S.L.

Author information

Abstract

Three children were born with partial corneal opacity and anterior segment anomalies but no cataract (Peter's anomaly type 1). In each affected eye, the corneal scar was off center and encroached on the visual axis. Glaucoma (if present) was controlled medically or surgically, after which an optical iridectomy was performed in each eye (in lieu of a penetrating keratoplasty). After surgery, in all patients the pupil extended beyond the corneal opacity and the corneal opacity decreased slightly. All could fixate and follow around the opacity. Optical iridectomy should be considered in selected cases of congenital corneal opacities.

PMID: 9812468

PMCID: PMC1423142

Publication type, MeSH terms

Full Text - open access

CONCLUSION:
Glaucoma (if present) was controlled medically or surgically,

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Decision Making in Challenging Cases



2018

CONCLUSION:
 In this pilot study of a modest size cohort (26 eyes of 15 children), the presence of nystagmus, ASD or failed angle surgery early in the course of infantile-onset glaucoma management predicted poor final visual outcome, whereas failed angle surgery and presence of MO predicted poor final IOP control.

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Decision Making in Challenging Cases

Surgery (OD) was performed ... (Combined trabeculotomy-Trabeculectomy with Mitomycin C with releasable sutures)

	After 2 weeks postoperatively	
Current meds	None	None
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (GAT) (mmHg)	16	50
Cornea	Central scar with clear periphery	Central scar with clear periphery
Fundus		
Optic nerve	No cup	Not seen
Axial length (mm)	19.56	22.05

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Decision Making in Challenging Cases

Surgery (OS) was performed ... (Combined trabeculotomy-Trabeculectomy with Mitomycin C with releasable sutures)

After 1 month postoperatively		
Current meds	None	None
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (GAT) (mmHg)	28	24
Cornea	Central scar with clear periphery	Central scar with clear periphery
Conjunctiva	Bleb: pale, diffuse, low	Bleb: pale, diffuse, low
Fundus		
Optic nerve	Not seen	Not seen

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Decision Making in Challenging Cases

After 3 months postoperatively		
Current meds	None	None
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (GAT) (mmHg)	33	37
Fundus		
Optic nerve	C/D ratio = 0.8	Not seen
Axial length (mm)	21.08	22.42

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Decision Making in Challenging Cases

Next move with elevation of the IOP? →

Medical Rx

Surgical Rx

Filtering surgery

Combined surgery

Glaucoma drainage device

Cyclodestruction

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Decision Making in Challenging Cases

The child remains on topical medical Rx (Topical CAIs)

After 3 years postoperatively		
Current meds	Topical CAIs	Topical CAIs
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (GAT) (mmHg)	12	18
Conjunctiva	Bleb: elevated, pale, diffuse	Bleb: elevated, pale, diffuse
Lens	Aphakic	Aphakic
Fundus		
Optic nerve	C/D ratio = 0.8	C/D ratio = 1.0
Axial length (mm)	24.19	24.74

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Case 9

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Decision Making in Challenging Cases

History		
Age (DOB) at presentation, Gender	4 months	Male
General medical Hx	Irrelevant	
Surgical Hx	Irrelevant	Irrelevant
Remarks	Examination under GA (inhalational halothane anaesthesia)	
Current meds	•None	None
Presentation (C/O)	Abnormal external appearance (dermatologist)	Abnormal external appearance

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Decision Making in Challenging Cases

	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
IOP (Perkins) (mmHg)	8	8
Cornea / CCT (μ)	12 mm, Free	12 mm, Free
Anterior Chamber	ND&C	ND&C
Iris / Pupil	Normal pattern	Normal pattern
Lens	Clear	Clear
Conjunctiva / Sclera	Episcleral angioma	Episcleral angioma
Gonioscopy	Not possible	Not possible
Fundus		
Optic nerve	0.7	0.7
Retina	Free	Free
Remarks		
Axial length (mm)	21.46	21.12

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Decision Making in Challenging Cases

Facial Portwine stain



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Decision Making in Challenging Cases

Diagnosis →

Glaucoma →

IOP normal → art factually low due to GA

C/D ratio → neuronal damage, posterior bowing of the lamina cribrosa, enlargement as part of the AV shunt (akin to hemifacial hypertrophy)

? ? Method of follow up → IOP, C/D ratio, Axial length

Facial Portwine stain



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Decision Making in Challenging Cases



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CONCLUSION:

When the facial areas supplied by both the ophthalmic and maxillary divisions of the sensory branch of the trigeminal nerve were involved (26 patients) there was about a 45% chance of diagnosing glaucoma, either as "true" glaucoma (4/12, 33%)(with visual loss and raised intraocular pressure) or as "glaucoma suspect" (8/12, 66%)(without visual loss).

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Decision Making in Challenging Cases

Port-wine vascular malformations and glaucoma risk in Sturge-Weber syndrome

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2009

OBJECTIVE: To assess the impact of vascular malformations (port-wine stains) in Sturge-Weber syndrome on the risk of developing glaucoma. We conducted a retrospective analysis of 24 patients with Sturge-Weber syndrome who had been diagnosed with glaucoma. The aim of this study was to determine the prevalence of glaucoma in patients with Sturge-Weber syndrome and the impact of vascular malformations on the risk of developing glaucoma.

DESIGN: Retrospective analysis of 24 patients with Sturge-Weber syndrome who had been diagnosed with glaucoma. The patients were divided into two groups: those with glaucoma and those without glaucoma. The prevalence of glaucoma in patients with Sturge-Weber syndrome was compared to the prevalence of glaucoma in patients without Sturge-Weber syndrome.

SETTING: The study was conducted in a tertiary care hospital in Australia.

PARTICIPANTS: Twenty-four patients with Sturge-Weber syndrome who had been diagnosed with glaucoma. The patients were divided into two groups: those with glaucoma and those without glaucoma. The prevalence of glaucoma in patients with Sturge-Weber syndrome was compared to the prevalence of glaucoma in patients without Sturge-Weber syndrome.

MEASUREMENTS AND MAIN RESULTS: The prevalence of glaucoma in patients with Sturge-Weber syndrome was 58.3% (14/24). The mean age of onset of glaucoma was 2.9 years (range 0.0-16.5 years). The prevalence of glaucoma in patients with Sturge-Weber syndrome was significantly higher than the prevalence of glaucoma in patients without Sturge-Weber syndrome.

CONCLUSIONS: Glaucoma was observed in 24 patients (58.3%) at mean age of 2.9 years (range 0.0-16.5).

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Treatment →

Target IOP ???

Method →

Medical →

Young age & life-long Rx

Drug category → (abnormal aqueous drainage pathways)

Aqueous suppressant

Outflow increase

Surgical → risk → (Suprachoroidal effusion)

Angle surgery

Filtering surgery → failure in children

Glaucoma Drainage Devices

cyclodestruction ???

Facial Portwine stain



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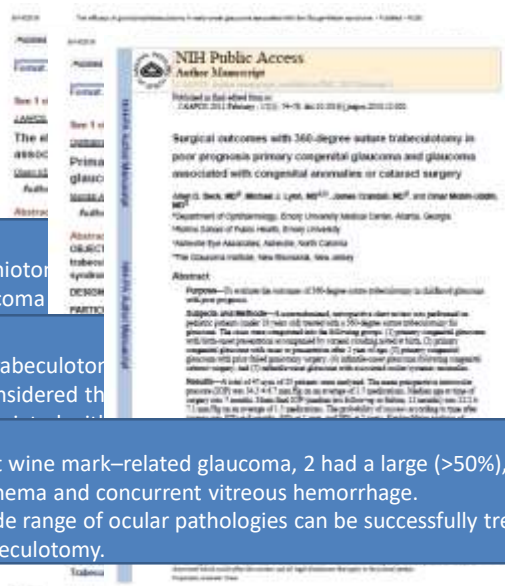


2003

CONCLUSION:
 Percentage success at 1 month, 3 months, 6 months, and 1 year was 70.6%, 64.7%, 58.9%, and 47.1%, respectively, of eyes treated which translated to 71.4%, 64.2%, 57.1%, and 50% respectively of patients treated.

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2011

CONCLUSION:
 Initial or repeated goniotomy for treatment of glaucoma

CONCLUSION:
 Primary combined trabeculotomy predictable to be considered the

CONCLUSION:
 Of 5 eyes with port wine mark-related glaucoma, 2 had a large (>50%), persistent postoperative hyphema and concurrent vitreous hemorrhage. Children with a wide range of ocular pathologies can be successfully treated with 360-degree suture trabeculotomy.

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2009

CONCLUSION:
Eighty percent of the eyes which underwent trabeculectomy developed *choroidal detachment* after operation.

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	After 3 months	
Current meds	Topical CAIs	Topical CAIs
	<i>OD</i>	<i>OS</i>
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (Perkins) (mmHg)	22	16
Cornea	Clear	Clear
Fundus		
Optic nerve	0.7	0.7
Axial length (mm)	23.19	21.53

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After 1 year		
Current meds	Topical CAIs	Topical CAIs
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (Perkins) (mmHg)	15	15
Cornea	Clear	Clear
Fundus		
Optic nerve	0.8	0.8
Axial length (mm)	23.58	22.85

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Surgery (OS) was performed ... (Combined trabeculotomy-Trabeculectomy with Mitomycin C with releasable sutures – inferior sclerotomy) → uneventful

After 3 years postoperatively		
Current meds	Topical CAIs	Topical CAIs
	OD	OS
Best Corrected Visual Acuity (BCVA) (Decimal)	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
Refraction	Could not be assessed	Could not be assessed
IOP (GAT) (mmHg)	6	16
Conjunctiva	Bleb: pale, thin, cystic	
Fundus		
Optic nerve	0.8	0.8
Axial length (mm)	23.34	23.82

No reversal of optic nerve cupping (OD)
?? Operate left eye??

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- Wrap up
 - These conditions warrant special diagnostic and therapeutic considerations →
 - Nanophthalmia
 - IOP measurement
 - High myopia
 - Diagnostic difficulties
 - Aniridia
 - Associated
 - Treatment indications
 - Stem cell deficiency
 - Facial Port Wine stain
 - Diagnostic difficulties
 - Treatment indications
 - Anterior segment dysgenesis
 - Operative complications

Thank you