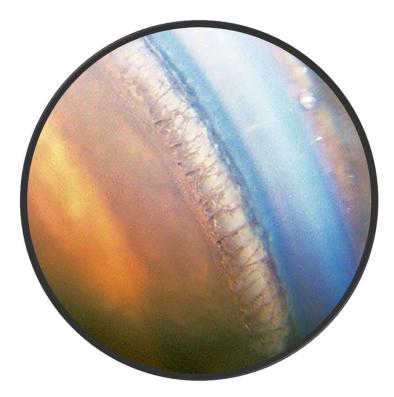
HED session Gonioscopy



Marianne Richter ECVO Congress, Florence 2018

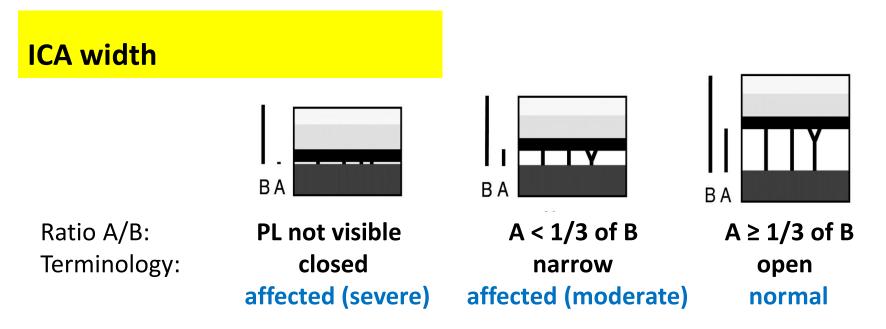
HED Manual: Definition & Guidelines

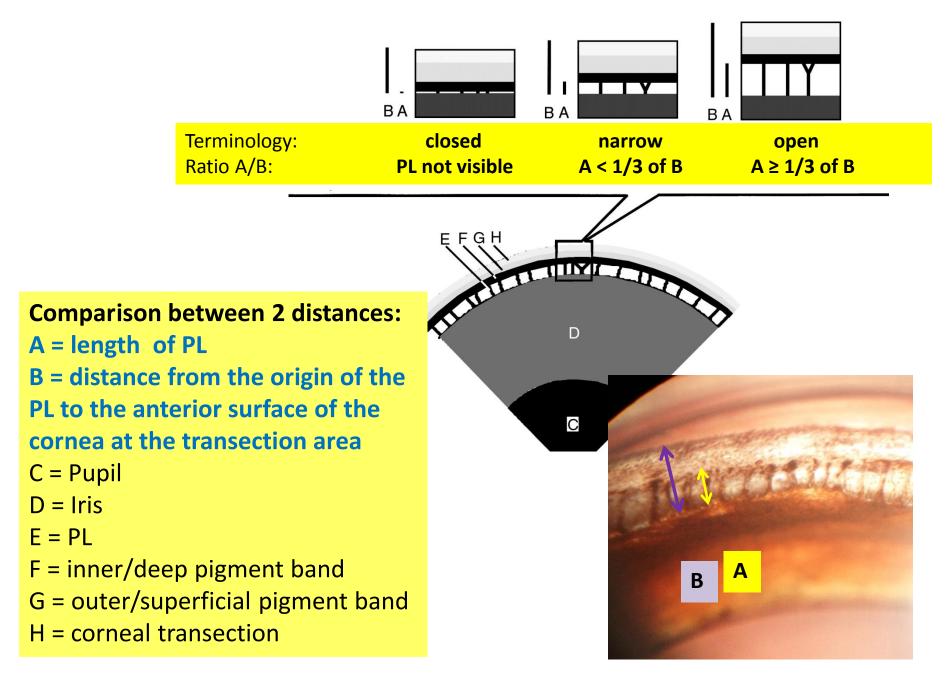
Two predominant types of involvement of the angle are distinguished. The pectinate ligament (PL) and the iridocorneal angle (ICA) width are evaluated by gonioscopy in its extent of 360 degrees.

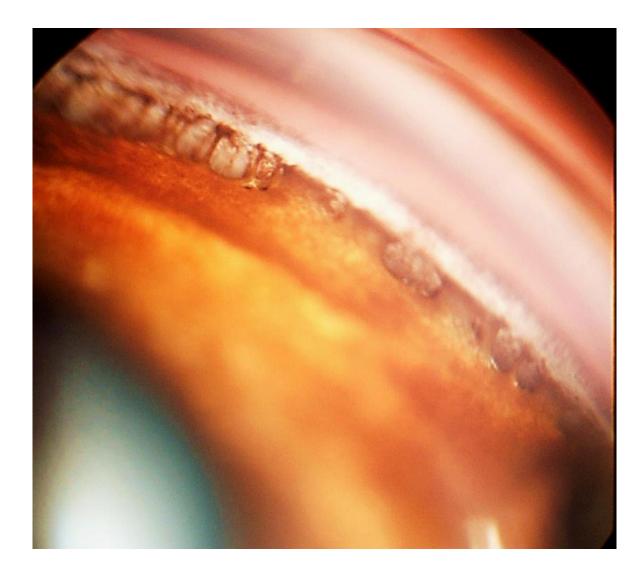
- Pectinate ligament abnormality (PLA): presumed hereditary eye disease; characterized by an abnormal PL that can be divided into 2 predominant types:
 - . Fibrae latae (FL) : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (<5 fibres)
 - . Laminae (LA): plates or sheets of continuous tissue (>5 fibres), with or without flow holes
- ["] Iridocorneal angle (ICA) width: the width of the ICA is evaluated by comparison of the length of the pectinate ligament (A) and the distance from the origin of the pectinate ligament to the anterior surface of the cornea at the transection area (B);

PLA

- ″ 0 − 50% FL = **unaffected**
- >50-100% FL and/or < 25% LA = affected (mild)</pre>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



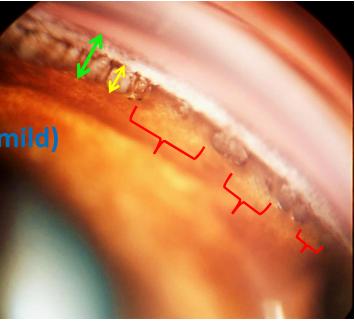




Right eye (OD)	Photographs:	lat./temp. med./nas.	Left eye (OS)		Photograp		d./nas. lat./temp.
Descriptive comments:			ICAA: PLA	\square mild	🖈 mod	lerate	severe severe
			ICA width	📖 narrow (m	oderate)		closed (severe)
Eye disease no.	. 🖂 mild	severe					
Results for the known or presumed	hereditary eye dise	eases (KP-HED):	Results	valid for 12 mon	ths	***	*
ι	UNAFFECTED UNDETERMI	NED AFFECTED		1	UNAFFECTED S	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)		iris lens	□cornea □lamina 11. Entropio	n/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1 grade 2-6	12. Ectropio	n/Macroblepharon			
3. Cataract (congenital)		(multi)focal	13. Distichia	asis /Ectopic cilia			
4. Retinal Dysplasia (RD)		geographica	al 14. Corneal	dystrophy			cortical post. pol.
5. Hypoplastic-/Micro-papilla		choroid. hyp	15. Catarac	t (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)		coloboma		ation (primary)			nucleus
7. Other:		mild	17. Retinal of	degeneration (PRA			
8. IridoCorneal Angle Abnormality. (ICAA)		moderate severe					
Interpretation			-				

PLA

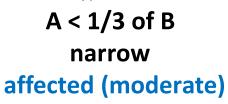
- *˜* 0 − 50% FL = unaffected
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



ICA width

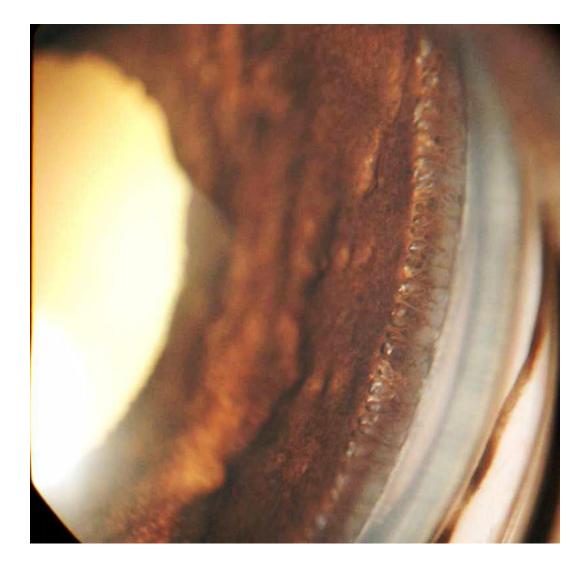


Ratio A/B: Terminology: PL not visible closed affected (severe) B A





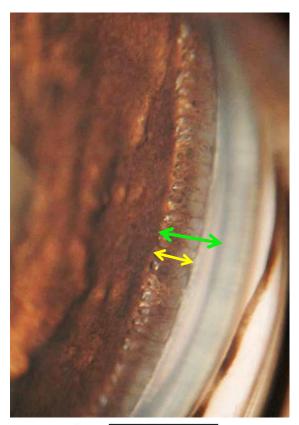
A ≥ 1/3 of B open ✓ normal



Right eye (OD)	Photographs:	lat./temp. med./nas.	Left eye (OS)		Photograp		d./nas. lat./temp.
Descriptive comments:			. ICAA: PLA	🖂 mild	📖 moo	derate	severe severe
			ICA widt	h 📖 narrow (m	oderate)		closed (severe)
Eye disease no.	mild	severe					
Results for the known or presumed	hereditary eye o	diseases (KP-HED):	Res	ults valid for 12 mont	hs		
l	JNAFFECTED UNDETE	* * RMINED AFFECTED		ι	NAFFECTED :	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)		iris lens	Cornea 11. Entro	pion/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1	6 12. Ectro	pion/Macroblepharon			
3. Cataract (congenital)		(multi)fo	13. Disti	chiasis /Ectopic cilia			
4. Retinal Dysplasia (RD)				eal dystrophy			cortical post. pol.
5. Hypoplastic-/Micro-papilla			hypoplasia 15. Cata	ract (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)				luxation (primary)			punctata nucleus other
7. Other:			17. Retir	nal degeneration (PRA))		
8. IridoCorneal Angle Abnormality. (ICAA)	X	moderat	e	r:			
Interpretation			Tio. Oule	••			

PLA

- " 0 − 50% FL √unaffected
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)

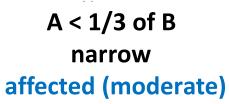


ICA width



Ratio A/B: Terminology: PL not visible closed affected (severe)

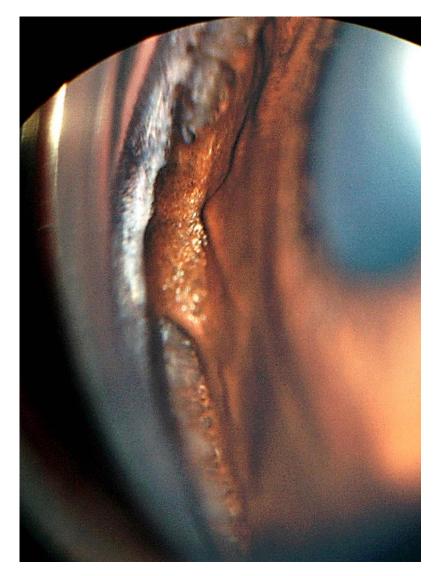
11	I Y
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A ≥ 1/3 of B open ✓ normal

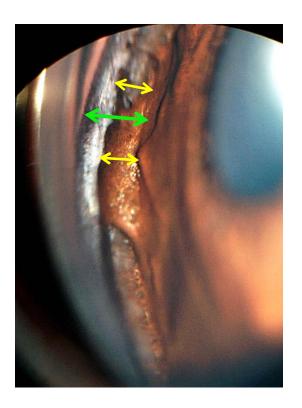
Gonioscopy: the slide shows a **single abnormal area**, the rest of the ICA looks normal.



Right eye (OD)	Photographs:	t./temp. med./nas.	Left eye (OS)		Photograp		L/nas. lat./temp.
Descriptive comments:			ICAA: PLA	対 mild	□ moo	derate	severe severe
			ICA width	📖 narrow (m	noderate)		closed (severe)
Eye disease no.	. 🖂 mild	severe					, <i>,</i>
Results for the known or presumed	hereditary eye disea	ases (KP-HED):	Results	s valid for 12 mon	ths		
ι	UNAFFECTED UNDETERMINE	ED AFFECTED			UNAFFECTED :	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)		iris lens	lamina 11. Entropic	on/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1 grade 2-6	12. Ectropic	on/Macroblepharon			
3. Cataract (congenital)		(multi)foca	13. Distichia	asis /Ectopic cilia			
4. Retinal Dysplasia (RD)		geographi		dystrophy			cortical post. pol.
5. Hypoplastic-/Micro-papilla		Choroid. h	15. Catarac	t (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)		coloboma		kation (primary)			punctata nucleus other
7. Other:		mild	17. Retinal	degeneration (PRA)		
8. IridoCorneal Angle Abnormality. (ICAA) Interpretation		moderate severe					

PLA

- ″ 0 − 50% FL = **unaffected**
- >50-100% FL and/or < 25% LA _affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



ICA width



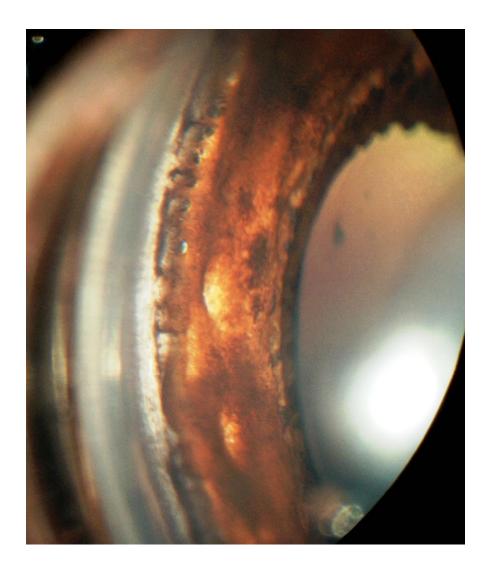
Ratio A/B: Terminology: PL not visible closed affected (severe)

I	
11	I Y
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A < 1/3 of B narrow affected (moderate)



A ≥ 1/3 of B open ✓ normal



Right eye (OD)	Photographs:	lat./temp. med./nas.	Left eye (OS)		Photograph		L/nas. lat./temp.
Descriptive comments:			8. ICAA: PLA	\square mild	🗙 mod	erate	severe severe
			ICA width	📖 narrow (m	oderate)		closed (severe)
Eye disease no.	. 🖂 mild	severe					
Results for the known or presumed	hereditary eye d	liseases (KP-HED):	Results	valid for 12 mon	ths	***	*
ι	UNAFFECTED UNDETER	RMINED AFFECTED		1	UNAFFECTED SU	USPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)			Interpretation Interpretatio Interpretation Interpretation Interpretation Interpr	on/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)] grade 1 grade 2-	6 12. Ectropio	n/Macroblepharon			
3. Cataract (congenital)] (multi)fo	13. Distichia	asis /Ectopic cilia			
4. Retinal Dysplasia (RD)] geograp		dystrophy			cortical post. pol.
5. Hypoplastic-/Micro-papilla			hypoplasia 15. Catarac	t (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)		Colobom		(ation (primary)			punctata nucleus other
7. Other:		i mild	17. Retinal	degeneration (PRA)		
8. IridoCorneal Angle Abnormality. (ICAA)		moderat	te				
Interpretation							

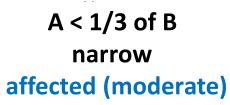
PLA

- ″ 0 − 50% FL = **unaffected**
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA affected (moderate)
- % > 50% LA = affected (severe)

ICA width

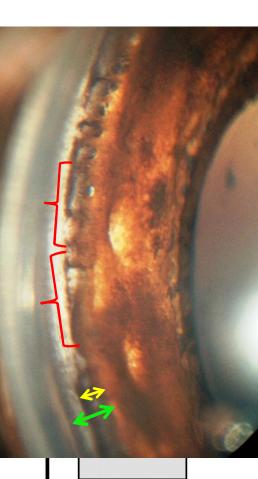


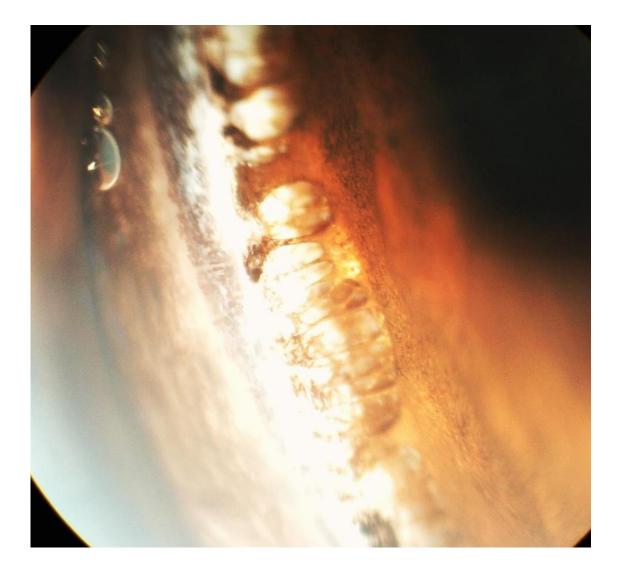
Ratio A/B: Terminology: PL not visible closed affected (severe) B A







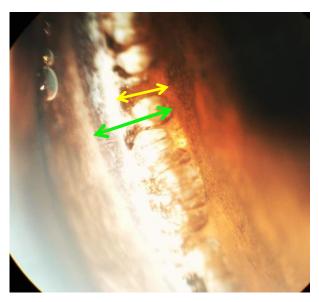




Right eye (OD)	Photographs:	lat./temp. med./nas.	Left eye (OS)		Photograp		d./nas. lat./temp.
Descriptive comments:			ICAA: PLA	📖 mild	□ moo	derate	severe
			ICA width	📖 narrow (m	oderate)		closed (severe)
Eye disease no.	. 🖂 mild	severe					
Results for the known or presumed	hereditary eye dis	eases (KP-HED):	Result	s valid for 12 mon	ths	***	*
l l l l l l l l l l l l l l l l l l l	UNAFFECTED UNDETERM	INED AFFECTED			UNAFFECTED	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)		iris lens	lamina 11. Entropio	on/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1 grade 2-6	12. Ectropic	on/Macroblepharon			
3. Cataract (congenital)		(multi)foca	13. Distichi	asis /Ectopic cilia			
4. Retinal Dysplasia (RD)		geographi		l dystrophy			cortical
5. Hypoplastic-/Micro-papilla		choroid. h	15. Catarac	ct (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)		Coloboma		xation (primary)			punctata nucleus other
7. Other:		mild	17. Retinal	degeneration (PRA			
8. IridoCorneal Angle Abnormality. (ICAA)	$\overrightarrow{\mathbf{X}}$	moderate					
Interpretation			pro. e alor.				

PLA

- " 0 − 50% FL **z** unaffected
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)

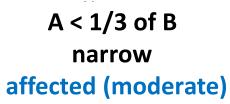


ICA width



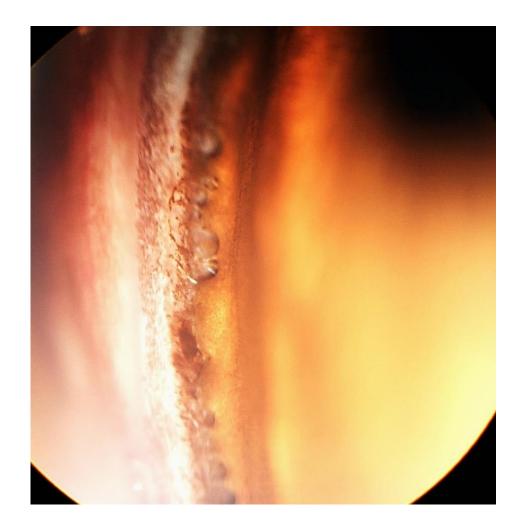
Ratio A/B: Terminology: PL not visible closed affected (severe)

I	
11	
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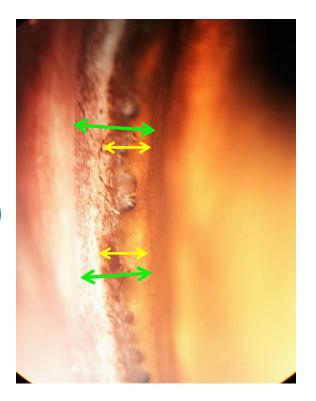
A ≥ 1/3 of B open ✓ normal



Right eye (OD)	Photographs:	lat./temp.	med./nas.	Left eye (os)	Photogra		d/nas. lat/temp.
Descriptive comments:				ICAA: I	PLA 🖂 mild	□ mo	derate	severe
				I	CA width 🖂 narro	w (moderate)		closed (severe)
Eye disease no.	ild mild	s	severe					
Results for the known or presumed	hereditary eye	diseases (KP-	HED):		Results valid for 12	months		
U	NAFFECTED UNDET	TERMINED AFFECTED)			UNAFFECTED	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)			lens	cornea Iamina	11. Entropion/Trichiasis			
 Persistent Hyperpl. Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV) 			grade 1 grade 2-6		12. Ectropion/Macrobleph	aron		
3. Cataract (congenital)			(multi)focal		13. Distichiasis /Ectopic o	ilia 🗆		
4. Retinal Dysplasia (RD)		$\neg \prec$	geographical		14. Corneal dystrophy			
5. Hypoplastic-/Micro-papilla			choroid. hypo	onlasia	15. Cataract (non-conger	nital) 🖂		post. pol. ant sut. I.
6. Collie Eye Anomaly (CEA)		$\neg \prec$	coloboma	I	16. Lens luxation (primar	y) 🗆		punctata nucleus
7. Other:					17. Retinal degeneration	(PRA)		\other
8. IridoCorneal Angle Abnormality. (ICAA)		X	moderate severe		18. Other:			

PLA

- ″ 0 − 50% FL = **unaffected**
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA affected (severe)

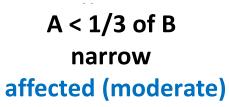


ICA width



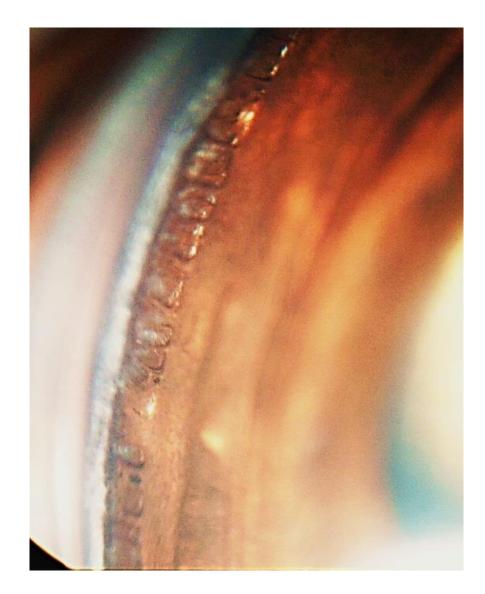
Ratio A/B: Terminology: PL not visible closed affected (severe)

11	I Y
ΒA	









Right eye (OD)	Photographs:	Lef	ft eye (OS)	Photographs:	ed./nas. lat./temp.
Descriptive comments:			AA: PLA 🖂 mild	□ moderate	severe severe
			ICA width 🛛 narrow (n	noderate) 🖂	closed (severe)
Eye disease no.	. 🖂 mild	severe			
Results for the known or presumed	hereditary eye disea	ses (KP-HED):	Results valid for 12 mor	nths	
t	UNAFFECTED UNDETERMINE	D AFFECTED		UNAFFECTED SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)			mina 11. Entropion/Trichiasis		
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1 grade 2-6	12. Ectropion/Macroblepharon		
3. Cataract (congenital)		(multi)focal	13. Distichiasis /Ectopic cilia		
4. Retinal Dysplasia (RD)		geographical	14. Corneal dystrophy		cortical
5. Hypoplastic-/Micro-papilla		choroid. hypopla	15. Cataract (non-congenital)		ant sut. I.
6. Collie Eye Anomaly (CEA)		coloboma	16. Lens luxation (primary)		punctata nucleus other
7. Other:		mild	17. Retinal degeneration (PRA	A)	
8. IridoCorneal Angle Abnormality. (ICAA)		moderate	18. Other:		
Interpretation					

PLA

- ″ 0 50% Fl **≠ unaffected**
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)

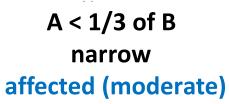


ICA width



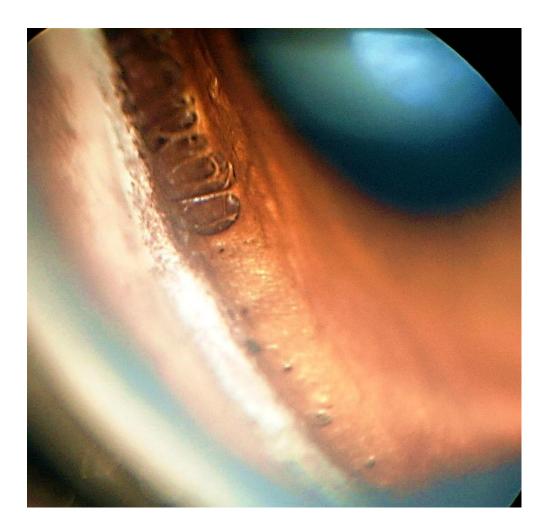
Ratio A/B: Terminology: PL not visible closed affected (severe)

Γ	
11	I Y
ΒA	





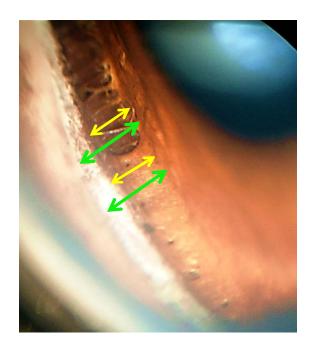
A ≥ 1/3 of B open ✓ normal



Right eye (OD)	Photographs:	lat/temp. med	Left eye	(OS)	Photograp		d./nas. lat./temp.
Descriptive comments:			8. ICAA:	PLA 🖂 mild	□ moo	derate	severe
				ICA width 🛛 narrow (m	noderate)		closed (severe)
Eye disease no.	ild mild	severe)				
Results for the known or presumed	hereditary eye	diseases (KP-HED):	:	Results valid for 12 mor	nths		
U	INAFFECTED UNDETE	ERMINED AFFECTED			UNAFFECTED	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)			ris cornea ens lamina	11. Entropion/Trichiasis			
 Persistent Hyperpl. Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV) 			grade 1 grade 2-6	12. Ectropion/Macroblepharon			
3. Cataract (congenital)			multi)focal	13. Distichiasis /Ectopic cilia			
4. Retinal Dysplasia (RD)			jeographical otal	14. Corneal dystrophy			
5. Hypoplastic-/Micro-papilla			choroid. hypoplasia	15. Cataract (non-congenital)			post. pol. ant sut. I.
6. Collie Eye Anomaly (CEA)			xoloboma other:	16. Lens luxation (primary)			punctata nucleus
7. Other:			mild	17. Retinal degeneration (PRA			\ other
8. IridoCorneal Angle Abnormality. (ICAA)			noderate severe	18. Other:			

PLA

- ″ 0 − 50% FL = **unaffected**
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



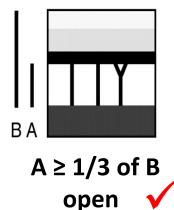
ICA width



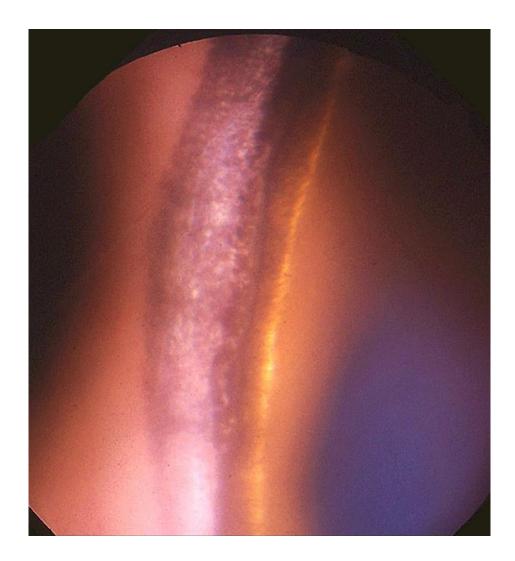
Ratio A/B: Terminology: PL not visible closed affected (severe)

1.	T I Y
ΒA	

A < 1/3 of B narrow affected (moderate)



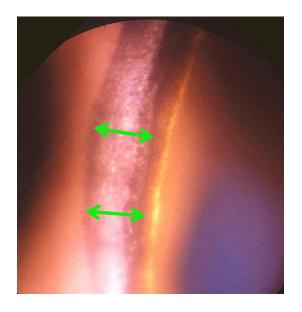
normal



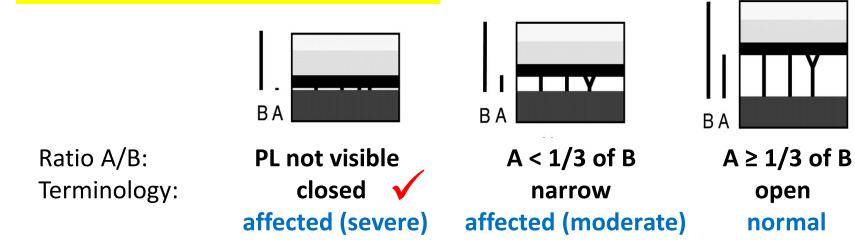
Right eye (OD)	Photographs:	temp. med./nas.	Left eye (OS) ant. Photographs: post. med./nas. lat./temp.
Descriptive comments:			ICAA: PLA 🖂 mild 🦳 moderate 🗔 severe
			ICA width 🖂 narrow (moderate) 🏋 closed (severe)
Eye disease no.	mild	severe	· · ·
Results for the known or presumed	hereditary eye diseas	ses (KP-HED):	Results valid for 12 months
U	JNAFFECTED UNDETERMINED	AFFECTED	UNAFFECTED SUSPICIOUS AFFECTED
1. Persistent Pupillary Membrane (PPM)			It. Entropion/Trichiasis
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1 grade 2-6	12. Ectropion/Macroblepharon
3. Cataract (congenital)		(multi)focal	13. Distichiasis /Ectopic cilia
4. Retinal Dysplasia (RD)		geographical	14. Corneal dystrophy
5. Hypoplastic-/Micro-papilla		choroid. hypo	oplasia 15. Cataract (non-congenital)
6. Collie Eye Anomaly (CEA)		coloboma	16. Lens luxation (primary)
7. Other:		mild	17. Retinal degeneration (PRA)
8. IridoCorneal Angle Abnormality. (ICAA)		moderate	18. Other:

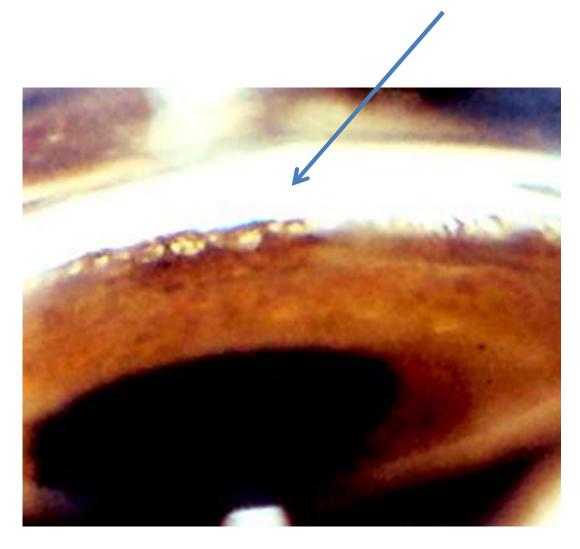
PLA

- *˜* 0 − 50% FL = unaffected
- >50-100% FL and/or < 25% LA = affected (mild)</pre>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



ICA width





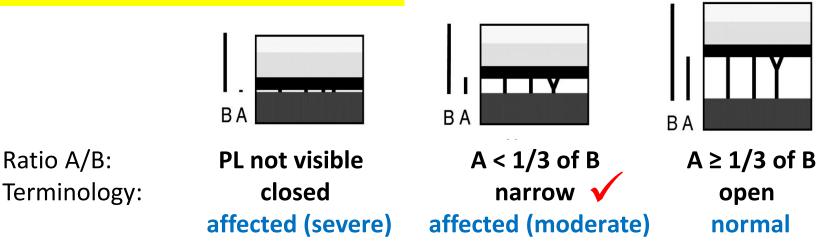
Right eye (OD)	Photographs:	lat./temp. med./nas.	Left eye (OS)		Photograp		L/nas. lat./temp.
Descriptive comments:			. ICAA: PLA	\square mild	🖂 mod	lerate	severe severe
			ICA width	🗙 narrow (m	oderate)		closed (severe)
Eye disease no.	mild	severe					
Results for the known or presumed	hereditary eye d	seases (KP-HED):	Results	valid for 12 mont	ths	***	*
ι	UNAFFECTED UNDETER	MINED AFFECTED		ι	UNAFFECTED S	SUSPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)			International In	n/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1	6 12. Ectropio	n/Macroblepharon			
3. Cataract (congenital)) (multi)foo	13. Distichia	isis /Ectopic cilia			
4. Retinal Dysplasia (RD)		l geograph		dystrophy			cortical post. pol.
5. Hypoplastic-/Micro-papilla			hypoplasia 15. Cataract	t (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)		colobom		ation (primary)			nucleus
7. Other:		mild	17. Retinal of	degeneration (PRA)		
8. IridoCorneal Angle Abnormality. (ICAA)		moderate severe	e				
Interpretation		-	•				

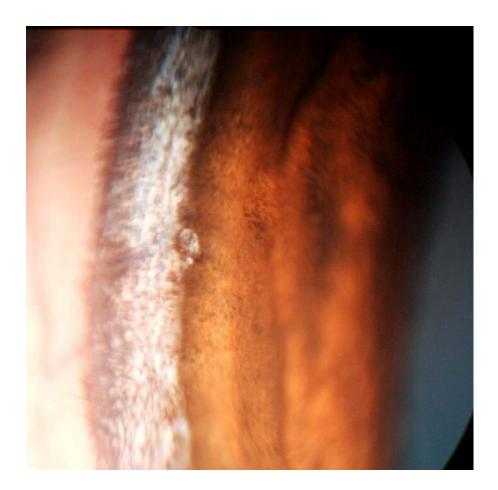
PLA

- \sim 0 50% FL = unaffected \checkmark
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



ICA width

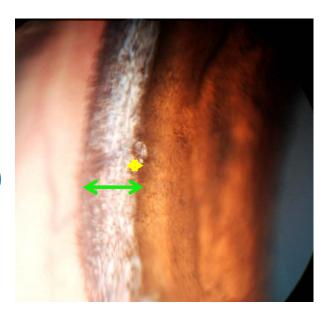




Right eye (OD)	Photographs:	lat./temp. med./nas.	Left eye (OS)		Photograp		L/nas. lat./temp.
Descriptive comments:			ICAA: PLA	── mild	📖 mod	erate	severe severe
			ICA width	📖 narrow (m	oderate)	* (closed (severe)
Eye disease no.	. 🖂 mild	severe					
Results for the known or presumed	hereditary eye dis	eases (KP-HED):	Results	valid for 12 mont	ths	***	*
t	UNAFFECTED UNDETERN	INED AFFECTED		ι	UNAFFECTED S	USPICIOUS	AFFECTED
1. Persistent Pupillary Membrane (PPM)		iris lens	□cornea □lamina 11. Entropio	n/Trichiasis			
2. Persistent Hyperpl.Tunica Vasculosa Lentis/Primary Vitreous (PHTVL/PHPV)		grade 1 grade 2-6	12. Ectropio	n/Macroblepharon			
3. Cataract (congenital)		(multi)focal	13. Distichia	isis /Ectopic cilia			
4. Retinal Dysplasia (RD)		geographic total		dystrophy			cortical
5. Hypoplastic-/Micro-papilla		choroid. hy	15. Catarac	t (non-congenital)			ant sut. I.
6. Collie Eye Anomaly (CEA)				ation (primary)			punctata nucleus other
7. Other:		mild	17. Retinal	degeneration (PRA)		
8. IridoCorneal Angle Abnormality. (ICAA)		moderate	18. Other:				
Interpretation							

PLA

- ″ 0 − 50% FL = **unaffected**
- >50-100% FL and/or < 25% LA = affected (mild)</p>
- 25-50% LA = affected (moderate)
- % > 50% LA = affected (severe)



ICA width

