

Appendix 1 – Validation of clinical Ocular parameters

The table 1 shows initial validation and revalidation of parameters by Bland Altman (black) ¹ and Kappa K (blue) ²

Assessment	Validation	Revalidation
Palpebral aperture	POOR	GOOD
Acute blepharitis	GOOD	
Chronic blepharitis	GOOD	
Presence of bleb	POOR K 0.0 (SE 0.28)	
Bleb size	POOR K 0.49	GOOD K 0.67 (SE 0.142)
Vertical bleb size	POOR	POOR
Horizontal bleb size	POOR	POOR
Height of bleb	POOR	GOOD
Area of thin bleb	GOOD K 0.8; (SE 0.17)	
Exposed bleb below lid	MODERATE	
Overhanging bleb	GOOD K 0.75 (SE 0.09)	
Bleb leak	POOR K 0.46 (SE 0.29)	GOOD K 0.7 (SE 0.196)
Fluorescein stain of bleb	MODERATE K 0.50 (SE 0.176)	
Rose Bengal stain of bleb	MODERATE K 0.435 (SE 0.128)	
Presence of suture	GOOD K 0.90 (SE 0.047)	
Bubble formation	POOR K 0.0 (SE 0.28)	MODERATE K 0.59 (SE 0.20).
Rose Bengal staining over conjunctiva	MODERATE K 0.58 (SE 0.079)	
Rose Bengal staining over cornea	POOR K 0.40 (SE 0.02)	
Dellen	POOR K 0.40 (SE 0.02)	

1. Altman DG. Inter-Rater Agreement. In: Altman DG, ed. Practical Statistics for Medical Research. First CRC Press Reprint 1999 ed Chapman&Hall/CRC; 1999: 403-5.
2. Landis JR and Koch GG 1977 The measurement of observer agreement for categorical data Biometrics:33;159-74

Appendix 2

Data collection process for the study

I Data retrieved from medical records

5.1 Patient characteristics

Age
Ethnicity
Gender

5.2 Ocular findings (Both eyes)

Preoperative data

Blepharitis

Dry eyes – burning sensation / redness / discharge

Contact lens use- Gas permeable / soft

Type of glaucoma- Primary open angle glaucoma
Angle closure glaucoma
Neovascular glaucoma
Uveitic glaucoma
Congenital glaucoma
Low tension glaucoma
Pigmentary glaucoma
Psuedoexfoliation glaucoma
Mixed mechanism

Previous surgery – Cataract extraction / others

Number of previous surgery-

Number of previous trabeculectomy-

Use of glaucoma treatment - β Blockers / Carbonic anhydrase inhibitor
Anticholinesterase inhibitors / Prostaglandin inhibitors
(With/ Without preservatives)

Ocular trauma

Refractive status

Surgical data

Date of surgery:

Eye operated- Right eye / Left Eye

Use of antimetabolite- None / 5 fluorouracil

Mitomycin 0.1/0.2/0.3/0.4mg/ml/ Beta radiation

Conjunctival flap- Fornix / limbal based

Bleb description (Kirwan, Crowston, Murdoch method)

Bleb location- 1 o'clock/ 2 o'clock/ 3 o'clock/ 4 o'clock/ 5 o'clock/ 6 o'clock

7 o'clock/ 8 o'clock/ 9 o'clock/ 10 o'clock/ 11 o'clock/ 12 o'clock

Route of antibiotics

at close of surgery- Topical / Subconjunctival injection

Releasable sutures- Yes / No

Postoperative data

Early < 4 weeks:

Bleb leak- Yes/ No

Shallow anterior chamber- Yes / No

Bleb description (Kirwan, Crowston, Murdoch method)

Bleb location- 1 o'clock/ 2 o'clock/ 3 o'clock/ 4 o'clock/ 5 o'clock/ 6 o'clock

7 o'clock/ 8 o'clock/ 9 o'clock/ 10 o'clock/ 11 o'clock/ 12 o'clock

Presence of microcysts- Yes / No

Thin / Thick wall

Flat / Raised

Vascularisation

Tenon's cyst

Average intraocular pressure

Bleb revision- Yes/ No

Subconjunctival 5 fluorouracil injection- Yes / No

Late > 4 weeks: last recording prior to infection

Bleb leak- Yes / No

Shallow anterior chamber- Yes / No

Bleb description (Kirwan, Crowston, Murdoch method)

Bleb location- 1 o'clock/ 2 o'clock/ 3 o'clock/ 4 o'clock/ 5 o'clock/ 6 o'clock
7 o'clock/ 8 o'clock/ 9 o'clock/ 10 o'clock/ 11 o'clock/ 12 o'clock

Presence of microcysts- Yes / No
Thin / Thick wall
Flat / Raised
Vascularisation
Tenon's cyst

Average intraocular pressure

Duration of topical eye drops- 4 weeks / 5 weeks / 6 weeks / 8 weeks / longer
Topical antiglaucoma medication-

Topical antiglaucoma medication

Type of bleb related infection

Date of infection- Eye Infected- Right Eye / Left Eye

Blebitis / Endophthalmitis

Duration between trabeculectomy and bleb related infection: -

5.3 Microbiology result

Positive / Negative / Not recorded / Not performed
Vitreous biopsy / No vitreous biopsy

Subsequent procedure

Redo trabeculectomy / Surgical revision of bleb / cataract surgery / others

5.4 Systemic disorders

Hypertension
Diabetes mellitus
Use of systemic steroids
Aspirin
Heart disease
Rheumatoid arthritis
Thyroid disease
Chronic inflammation (Sjogren's syndrome)
Nasal lacrimal obstruction (sinusitis)
Rosacea
Eczema

Allergy to medication

II Questionnaire

Patient characteristics

Age
Race
Gender

Current ocular history

Visual disturbance – No Change / Deterioration of vision / Better vision
(Compared to last visit)
Dry eyes – burning sensation / redness / discharge
Contact lens use- Gas permeable / soft
Discomfort in closure of eyes- Yes / No
Current topical medication- β Blocker / Carbonic anhydrase inhibitor
Prostaglandin inhibitor /Lubricants
Antibiotics/ Steroids

Past ocular history

Dry eye symptoms

(If answer is yes to dry eye symptoms)

Duration -
Lid hygiene performed – Yes / No
Lubricant prescribed- Yes / No
Duration of lubricant use-
Relief with lubricant- Yes / No
Has antibiotic been prescribed for blepharitis- Yes / No

Infection post-trabeculectomy

Yes / No (if answer is yes number of episodes and what measures were taken)
If answer is yes, when? - (Month or year)-
Number of episodes-
Was treatment received immediately- Yes / No (if answer is No, Why?)
If answer is Yes, what was the treatment received – Eye drops / Tablets / Surgery
Number of operation in each eye-
(Glaucoma / Cataract / Others)

Right Eye-
Left Eye-

History of allergy to eye drops- Yes / No
(Name of eye drop/ drops)

Past medical history

Hypertension
 Diabetes mellitus
 Use of systemic steroids / Aspirin
 Heart disease
 Rheumatoid arthritis
 Thyroid disease
 Chronic inflammation (Sjorgrens syndrome)
 Naso-lacrimal obstruction (sinusitis)
 Rosacea
 Eczema
 Allergy to medication
 Systemic medication- Carbonic anhydrase inhibitors / Antihypertensive / Inhalers
 Anti-diabetic medication/ Others

Diagnosis	Control	Infected Left eye	Infected Right eye
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Sitting here and now do you have in your Right eye</u>		<u>Sitting here and now do you have in Left eye</u>	
Burning sensation	Yes/No	Burning sensation	Yes/No
Pain	Yes/No	Pain	Yes/No
Watering	Yes/No	Watering	Yes/No
Discomfort on blinking	Yes/No	Discomfort on blinking	Yes/No
Sore eyelid	Yes/No	Sore eyelid	Yes/No
Ache	Yes/No	Ache	Yes/No

Name:	Hospital No:
DOB:	Gender:
Ethnicity:	

Infected Eye:	Right eye / Left Eye
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Snellen VA:
Logmar score:

Refraction:

Lid											
Acute Presentation:											
Normal			Mild			Moderate			Severe		
0	1	2	3	4	5	6	7	8	9	10	
<hr/>											
+/- Scaling				+/- Hyperemia				Thickened lid margin			
+/- Dilated meibomian glands			+/- Pouting MG			+/- Semisolid plaque			+/- Interfollicular abscess		
						+/- Punctum exposure					
						on MB					
						+/- Back dragging of MG					

<i>Lid margin:</i>	in mms	:	in mms
Exposed conj:	in mms	:	in mms

Chronic presentation											
Normal			Mild		Moderate			Severe			
0	1	2	3	4	5	6	7	8	9	10	
+/- Telangectasia				+/- Notching				+/- Madarosis			
							+/- Thickened lid margin		+/- Poliosis		
								+/- Scarring			

Bleb description

Bleb present:	Y	N
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Bleb size:	Flat	Small	Medium	Large
Height of bleb:	Flat	Mild	Moderate	Large
Overhanging bleb:			Y	N
Area of thin avascular bleb:				mm
1	2	3	>3	
Horizontal size (mms)				
Vertical size (mms)				
Bubble formation:			Y	N
Dellen on cornea:			Y	N
Suture:				
Exposed / Potential exposure / Buried:	Y			N

Schirmer 1 test:	<i>mm</i>
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Cornea:

Presence of filaments:	Y	N
Superficial punctate keratopathy	Y	N
Corneal sensation:	Y	N

Anterior chamber:

Depth:	≥3 CT	≥ 2 CT	≥ 1 CT	< 1 CT	lens-cornea touch
Cells:				Y	N
Flare:				Y	N

Iris:

Colour:
Areas of ischemia:
Peripheral iridotomy:

Intraocular pressure: mm HG

Lens:

Phakic	Aphakic	Pseudophakic
Cataract / clear lens		

Optic disc: CD Ratio
Macula:
Peripheral fundus:

Appendix 3

Manuals for the study

Manual for General data entry

Name: Free text

Hospital Number {HN}: Number

Date of birth {DOB}: < dd/mm/yyyy>

Gender {G}: 1= Male, 2= Female

Ethnicity {E}: (Number) 1=Caucasian, 2=Afro Caribbean, 3=Indian, 4=Chinese, 5=Mixed race

Diagnosis

Infected eye {IE}: RE=1, LE=2 Uninfected Control eye {UCE}: 3

Control eye {CE}: RE= 4, LE=5, Control =6 Contralateral Control eye {CCE}: 7

Type of glaucoma {TOG}: Number

1=POAG, 2=PACG, 3=NTG, 4=Secondary glaucoma

Associated ocular disease {AOD}: Number

1=Dry eyes, 2=Lid abnormality, 3=Uveitis, 4=Corneal disease,5=Cataract

Number of eye drops {NOD}:#

List of drops {LOD}: Free text

(1=PGA, 2=beta blocker, 3=alpha agonist, 4=CAI,5=parasympathomemetic, 6= Oral Diamox)

Allergy to eye drops {AED}: 0= No, 1= Yes

Name the medication: Free text

Relevant systemic disease

Diabetes mellitus {DM}: 0= No, 1= Yes

Asthma {A}:0= No, 1= Yes

Rheumatoid arthritis {RA}:0= No, 1= Yes

Thyroid disease {T}:0= No, 1= Yes

Eczema {E}:0= No, 1= Yes

Sjögren's Disease {SS}: 0= No, 1= Yes

Hypertension {HT}:0= No, 1= Yes

Hypercholesterolemia {HC}: 0= No, 1= Yes

Surgical data

Number of trabeculectomies {NOT}: Number

0= none, 1=1, 2=2, 3=3, 4= not known

Previous cataract surgery {PCS}: 0= No, 1= Yes

Diagnosis

Infected eye {IE}:1 Uninfected Control eye {UCE}:2

Control eye {CE}:3 Contralateral Control eye {CCE}:4

Right eye:

Date of surgery {DOSR} : <dd/mm/yyyy>

Antimetabolite use {AMUR}: (Number) 0= none, 1=5 Fluorouracil, 2=Beta radiation, 4= MMC 0.1mg/ml, 5= 0.2mg/ml, 6= 0.4mg/ml, 7= 0.5mg/ml

Duration of antimetabolite used {DOAMUR}: Number in minutes

Type of conjunctival flap {TOCFR}: 0= not mentioned, 1= Limbus based, 2= Fornix based

Left eye

Date of surgery {DOSL}: <dd/mm/yyyy>

Antimetabolite use {AMUL}: (Number) 0= None, 1=5 Fluorouracil, 2=Beta radiation, 4= MMC 0.1mg/ml, 5= 0.2mg/ml, 6= 0.4mg/ml, 7= 0.5mg/ml

Duration of antimetabolite used {DOAMUL}: Number in minutes

Type of conjunctival flap {TOCFL}: 0= not mentioned, 1= Limbus based, 2= Fornix based

Details from Notes

Initial diagnosis:

Type of glaucoma {TOG}:

1=POAG, 2=PACG, 3=NTG, 4=Secondary glaucoma

Age at diagnosis:

History of family history: ___freetxt_____

Initial intraocular pressure: Number

Duration from diagnosis to surgery: in yrs and months _____

Duration from surgery to infection: ___in yrs and months _____

Number of infections postsurgery: ___in numbers _____

Was there bleb revision following infection: N/A or yes describe _____

Number of glaucoma procedures following trabeculectomy: including laser _____

Number of tube insertion following trabeculectomy surgery: in numbers _____

Number of drainage procedure prior to Trabeculectomy: in number and describe _____

Prior cataract surgery: yes or no _____

Subsequent cataract surgery: ___yes or no(date) _____

Number of medication at time of surgery: List _____

IOP prior to surgery: _____in number _____

Documentation of blepharitis: _____yes or no _____

Documentation of dry eyes: _____yes or no _____

Allergies to drops prior to trabeculectomy: ___yes or no _____

Information of contralateral eye: _____describe _____

Manual for Questionnaire:

Diagnosis

Infected eye {IE}: RE=1, LE=2 Uninfected Control eye {UCE}: 3

Control eye {CE}: RE= 4, LE=5 Control =6 Contralateral Control eye {CCE}: 7

Patient characteristics:

Age {A}: in numbers

Race{R}: Numbers 1-5 (1- Caucasian; 2- Afro Caribbean; 3- Indian; 4- Chinese; 5-Mixed)

Gender{R}: Number: M-1, F -2

Current Ocular history:

Visual disturbance {VD}: 1- No change; 2- Deterioration of vision compared to last visit; 3- Better vision

Dry eye {DE}: 1- Burning sensation; 2- Redness; 3- Discharge; 4- more than one symptom

Contact lens use {CLU}: - 1- no CL use; 2- Gas permeable GP; 2- Soft CL

Discomfort in closure of eyes {DCE}: - 0- NO; 1- Yes

Current topical medication {CM}: 1, 2, 3 (number of drops)

Preservative free {PF}: 0-No; 1- Yes

Past ocular history:

Dry eye symptoms {DEP}: 0- No, 1- yes (if answer is no do not proceed with this section)

Proceed with the section below if answer is YES

Duration: free text, write in number of months

Lid hygiene performed {LHP}: 0-No; 1- Yes

Lubricant prescribed {LP}: 0-No; 1- Yes

Duration of lubricant use {DLU}: Numbers in months

Relief with lubricant {RWL}: 0-No; 1- Yes

Has antibiotic been prescribed for blepharitis {APB}: 0-No; 1- Yes

Infection posttrabeculectomy {IPT}: 0-No; 1- Yes (infected subject, Control subject)

Details of Infection/ surgery (in case of control) {DOI}: Do you remember the episode: free text

If answer to the above question is YES, then proceed to next section

When was the infection {DOI}: Write the date if mentioned

Collect from notes

Number of episodes: {NOE} Free text or numbers

Was treatment received immediately?{TRI}: 0-NO, 1-Yes

If treatment is yes, what was the treatment received: Free text

Number of operation in each eye {NOO}: Free text

History of allergy to eye drops {HAED}: 0- No, 1- Yes

Name of drops: Free text

Past medical history

Hypertension {HT}:0- No, 1- Yes

Diabetes {DM}:0- No, 1- Yes

Use of steroids/Asprin {USA}: 0=No, 1=Steroids, 2=Asprin

Heart disease {HD}:0- No, 1- Yes

Rheumatoid arthritis {RA}:0- No, 1- Yes

Thyroid disease {TD}:0- No, 1- Yes

Chronic inflammation (Sjörgren's Syndrome) {CI}:0- No, 1- Yes

Nasal lacrimal obstruction {NLO}:0- No, 1- Yes

Rosacea {R}:0- No, 1- Yes

Eczema{R}:0- No, 1- Yes

Asthma {A}:0- No, 1- Yes

Hypercholesterolemia {HC}:0- No, 1- Yes

Allergies to systemic medication {ASM}:0- No, 1- Yes

Systemic medications{SM}:0- No, 1- Yes

Sitting here and now do you have any of these symptoms in your right eye

Burning sensation {BSR}:0- No, 1- Yes

Pain {PR}:0- No, 1- Yes

Watering {WR}:0- No, 1- Yes

Discomfort on blinking {DOBR}:0- No, 1- Yes

Sore eyelid {SER}:0- No, 1- Yes

Ache {AR}:0- No, 1- Yes

Sitting here and now do you have any of these symptoms in your Left eye

Burning sensation {BSL}:0- No, 1- Yes

Pain {PL}:0- No, 1- Yes

Watering {WL}:0- No, 1- Yes

Discomfort on blinking {DOBL}: #

Sore eyelid {SEL}:0- No, 1- Yes

Ache {AL}:0- No, 1- Yes

Manual for clinical examination

Diagnosis

Infected eye {IE}: RE=1, LE=2 Uninfected Control eye {UCE}: 3

Control eye {CE}: RE= 4, LE=5, Control =6 Contralateral Control eye {CCE}: 7

Name: _____

Hospital Number {HN}: Number

DOB {DOB}: <dd/mm/yyyy>

Gender {G}: 1-M; 2-F

Ethnicity: {E}: Numbers 1-5 (1- Caucasian; 2- Afro Caribbean; 3- Indian; 4- Chinese; 5- Mixed)

Right Trabeculectomy of infected case {RTIC}: 0-No, 1-Yes

Left Trabeculectomy of infected case {LTIC}: 0-No, 1-Yes

Right Trabeculectomy of controlled case: {RTCC}: 0-No, 1-Yes

Left Trabeculectomy of controlled case {LTCC}: 0-No, 1-Yes

Date of Surgery {DOS}: <dd/mm/yyyy>

Date of Infection {DOI}: < dd/mm/yyyy>

Snellen VA Right Eye {RSVA}: Number & NPL=99; HM=88;CF=77

Snellen VA Left Eye {LSVA}: Number

Pinhole Right eye {PHR}: Number

Pinhole left eye {PHL}: Number

Log Mar Right eye {LRE}: Number

Log Mar Left eye {LLE}: Number

Refraction Right eye {RRE} Free text

RIGHT EYE

Acute Presentation Right Eye {APRE}: Number as below

0=normal, 1-3=mild, 4-7=Modulate, 8-10=Severe

Chronic Presentation Right Eye {CPRE}: Number as below

0=normal, 1-3=mild, 4-7=Modulate, 8-10=Severe

Lid margin Right eye {LMR}: Number in mm

Exposed Conjunctiva Right eye {ECRE}: Number in mm

Bleb description Right eye

Bleb present Right eye {BPRE}: 0-No, 1-Yes, 2- Not applicable

Bleb size Right eye {BSRE}: Number

Height of bleb Right eye {BHRE}: number in mm

Overhanging bleb Right eye {OHBRE}: number in mm

Size of overhanging bleb Right eye {SOHBRE}: number in mm

Height Size of Right bleb {HSRB}: number in mm

Vertical Size of Right bleb {VSRB}: number in mm

Bubble formation Right eye {BFRE}: 0-No, 1-Yes

Dellen formation Right eye {DFRE}: 0-No, 1-Yes

Suture Right eye {SRE}: 0=N, 1=Exposed, 2=Potential exposure, 3=Buried

Schirmer 1 test Right eye {STRE}: number in mm

Tear breakup time Right eye {TBUTRE}: number in seconds

Fluorescein staining Right eye

Leak Right eye {LRE}: 0=No leak, 1= Sweating, 2=Minimal leak, 3=Brisk leak

Position of leak Right eye {PLRE}: 1-at limbus, 2-over the conjunctiva

Fluorescein staining Right eye {FSRE}: 0-No, 1-Yes

Position of Fluorescein staining Right eye {PSRE}: 1- overlying bleb, 2- cornea

Rose bengal Right eye

Rose bengal Right eye {RBRE}: #

0= no stain, 1= over bleb, 2= over conjunctiva, 3=over cornea

Cornea

Presence of filaments Right eye {PFRE}: 0-No, 1-Yes

Superficial punctate keratopathy Right eye {SPKRE}: 0-No, 1-Yes

Corneal sensation Right eye {CSRE}: 0-No, 1-Yes

Anterior chamber of Right eye

Depth of anterior chamber right eye {DACRE}: Number (1- >3 CT, 2->2CT, 3->1CT, 4-<1CT, 5-lens corneal touch)

Cells in right eye {CRE}: 0-No, 1-Yes

Flare in right eye {FRE}: 0-No, 1-Yes

Iris colour Right eye {ICRE}: 0-No, 1-Yes

Area of ischemia Right eye {AIRE}: 0-No, 1-Yes

Peripheral iridotomy right eye {PIRE}: 0-No, 1-Yes

Intraocular pressure right eye {IOPRE}: Number in mm Hg

Status of Lens Right eye {SLRE}: 0- Clear lens, 1- Cataract, 2- Aphakia,
3- Psuedophakia

Fundus Right eye

Optic disc CD ratio Right eye {ODCDRE}: number

Macula Right eye: free text

Periphery Right eye: Free text

LEFT EYE

Acute Presentation Left Eye {APLE}: Number as below

0=normal, 1-3=mild, 4-7=Modulate, 8-10=Severe

Chronic Presentation Left Eye {CPLE}: Number as below

0=normal, 1-3=mild, 4-7=Modulate, 8-10=Severe

Lid margin Left eye {LML}: Number in mm

Exposed Conjunctiva Left eye {ECLE}: Number in mm

Bleb description Left eye

Bleb present Left eye {BPLE}: 0-No, 1-Yes, 2- Not applicable

Bleb size Left eye {BSLE}: Number

Height of bleb Left eye {BHLE}: number in mm

Overhanging bleb Left eye {OHBLE}: number in mm

Size of overhanging bleb Left eye {SOHBLE}: number in mm

Height Size of Left bleb {HSLB}: number in mm

Vertical Size of Left bleb {VSLB}: number in mm

Bubble formation Left eye {BFLE}: 0-No, 1-Yes

Dellen formation Left eye {DFLE}: 0-No, 1-Yes

Suture Left eye {SLE}: 0=N, 1=Exposed, 2=Potential exposure, 3=Buried

Schirmer 1 test Left eye {STLE}: number in mm

Tear breakup time Left eye {TBUTLE}: number in seconds

Fluorescein staining Left eye

Leak Left eye {LLE}: 0=No leak, 1= Sweating, 2=Minimal leak, 3=Brisk leak

Position of leak Left eye {PLLE}: 1-at limbus, 2-over the conjunctiva

Fluorescein staining Left eye {FSLE}: 0-No, 1-Yes

Position of Fluorescein staining Left eye {PSLE}: 1- overlying bleb, 2- cornea

Rose bengal Left eye

Rose bengal Left eye {RBLE}: #

0= no stain, 1= over bleb, 2= over conjunctiva, 3=over cornea

Cornea

Presence of filaments Left eye {PFLE}: 0-No, 1-Yes

Superficial punctate keratopathy Left eye {SPKLE}: 0-No, 1-Yes

Corneal sensation Left eye {CSLE}: 0-No, 1-Yes

Anterior chamber of Right eye

Depth of anterior chamber left eye {DACLE}: Number (1- >3 CT, 2->2CT, 3->1CT, 4-<1CT, 5-lens corneal touch)

Cells in left eye {CLE}: 0-No, 1-Yes

Flare in left eye {FLE}: 0-No, 1-Yes

Iris color Left eye {ICLE}: 0-No, 1-Yes

Area of ischemia Left eye {AILE}: 0-No, 1-Yes

Peripheral iridotomy left eye {PILE}: 0-No, 1-Yes

Intraocular pressure left eye {IOPLE}: Number in mm Hg

Status of Lens Left eye {SLLE}: 0- Clear lens, 1- Cataract, 2- Aphakia,
3- Psuedophakia

Fundus Left eye

Optic disc CD ratio Left eye {ODCDLE}: number

Macula Left eye: free text

Periphery Left eye: Free text

