Anterior Vitrectomy

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Visual Axis Obscuration

↓

Posterior Capsule Opacification

↓

Posterior capsulotomy

↓

VAO

- Post-operative inflammation → Fibrous reactionary membrane
- Scaffold → LE proliferation and migration
- Metaplastic pigment cells → Vitreous opacification

Value:

Anterior vitrectomy is essential in congenital cataract surgery to:

- Maintain a clear visual axis (prevent VAO)
- Improve long-term visual rehabilitation
- Special cases (PFV, Posterior lenticonus, Weak zonular support)

Despite the positive outcomes, certain challenges and complications can arise from the procedure.

Challenges:

- Vitreous is more elastic and adherent.
- Smaller anterior chamber depth.
- Lower scleral rigidity.

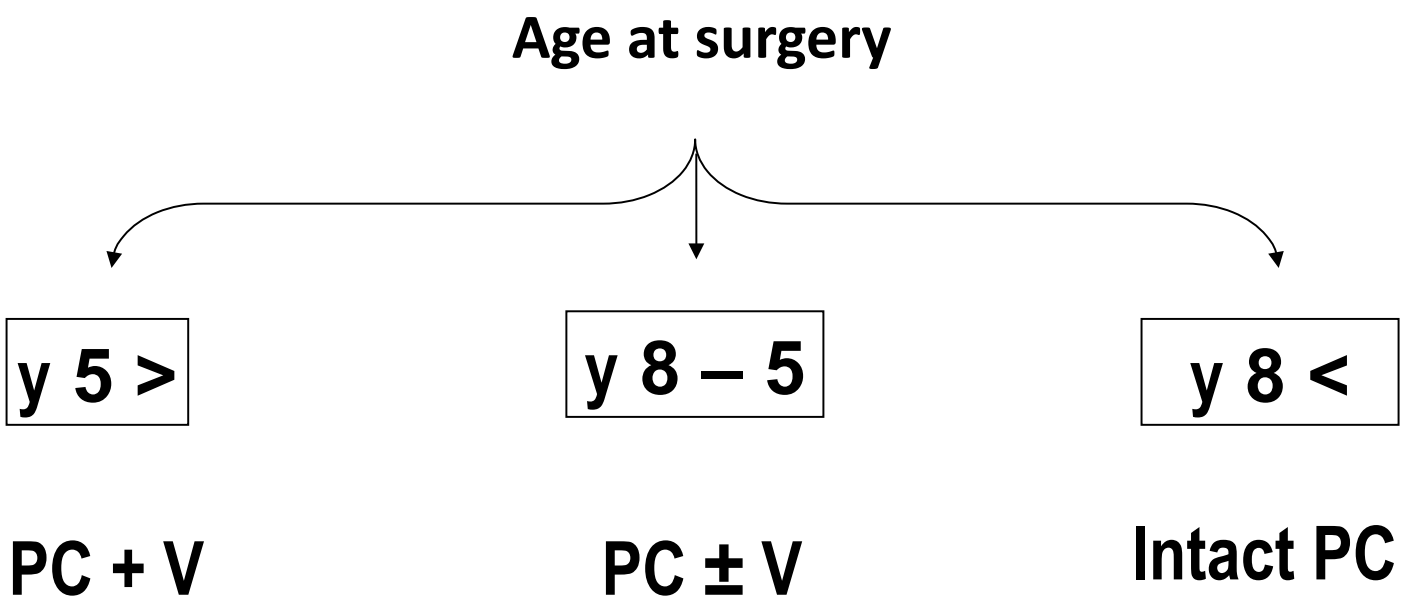
Complications:

- Opening of vitreous face
  - Chemical theory of PCSG
- Vitreous prolapse
  - Inflammation, AS, PS, and fibrosis
  - PCSG
  - Instable IOL
  - Retinal complications

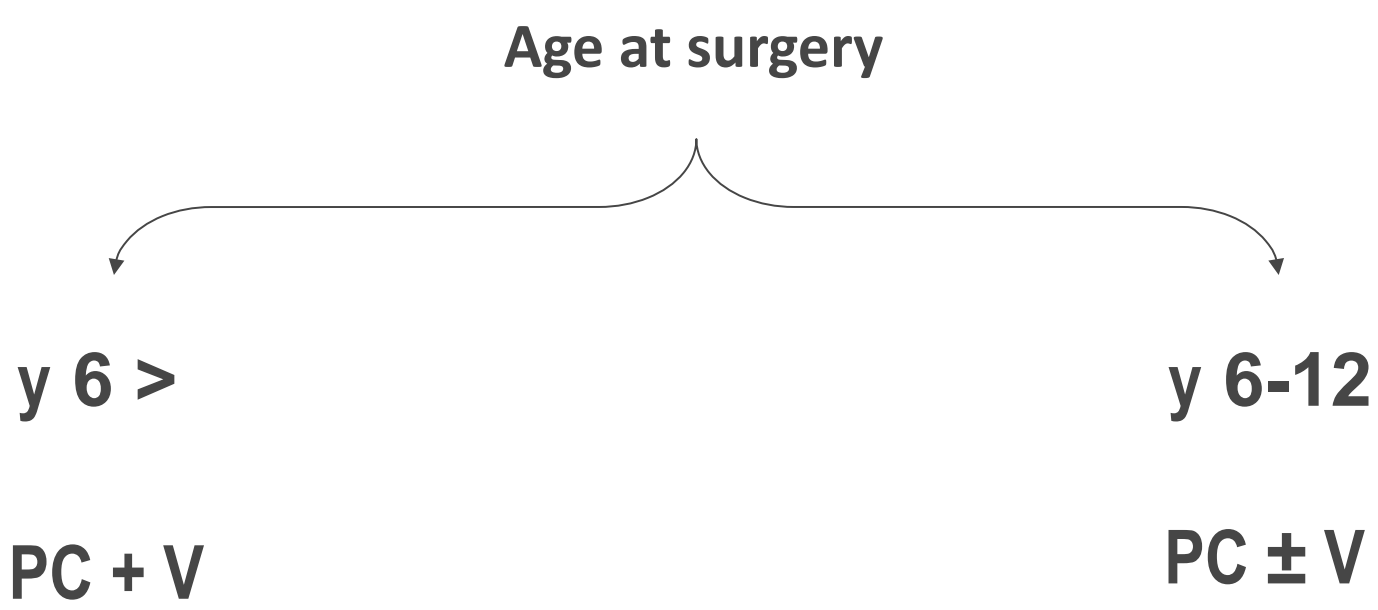
Guides

- AGE
- SYSTEM
- APPROACH
- STAIN

Age


Age at surgery
y 5 >
y 8 – 5
y 8 <
PC + V
PC ± V
Intact PC

Ocular/systemic comorbidity



Approach

	Ant. approach	Post. approach
Ant. seg. Surgeon	√	×
OVD removal	↓ ↓	↑ ↑
IOL Implantation	Difficult	Easier
Vitreous strands	++	--

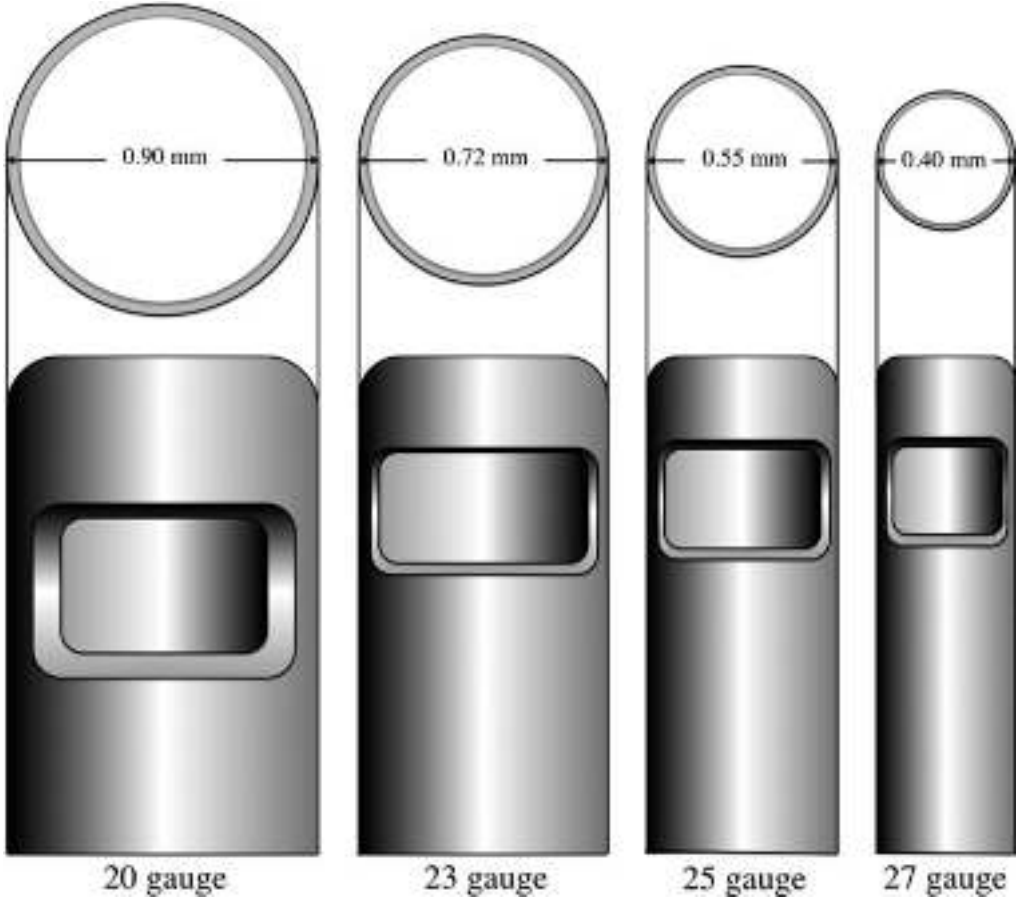
System

Probe – I/A- Machine console- Foot pedal

Probe:

Gauge:

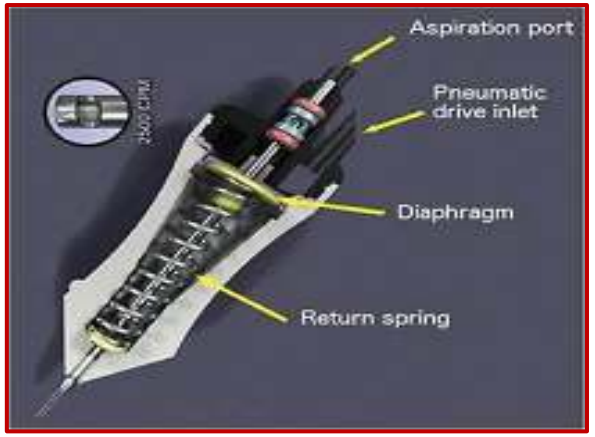
- 20G
- 23G
- 25G
- 27G



Probe:

Cutter action

- Pneumatic probe
  - Compressed air (no_2)
  - 2 tubes
  - Single, dual



- Electric probe
  - Pizzo electric
  - 1 tube, 1 wire

- Irrigation separated from the probe

Probe:

- Blade:
  - Single
  - Dual blade

Probe:

CUT RATE

- DC: percentage of time the cutter port is opened
  - Ant vit 50%
  - Post vit variable (constellation)
- Single pneumatic
  - 20G 700-800 c/m
  - 23G 1000-2500 c/m
- Dual 7500 c/m
- Double blade 25G, 27G (DC 92% - 16000 c/m)

Irrigation

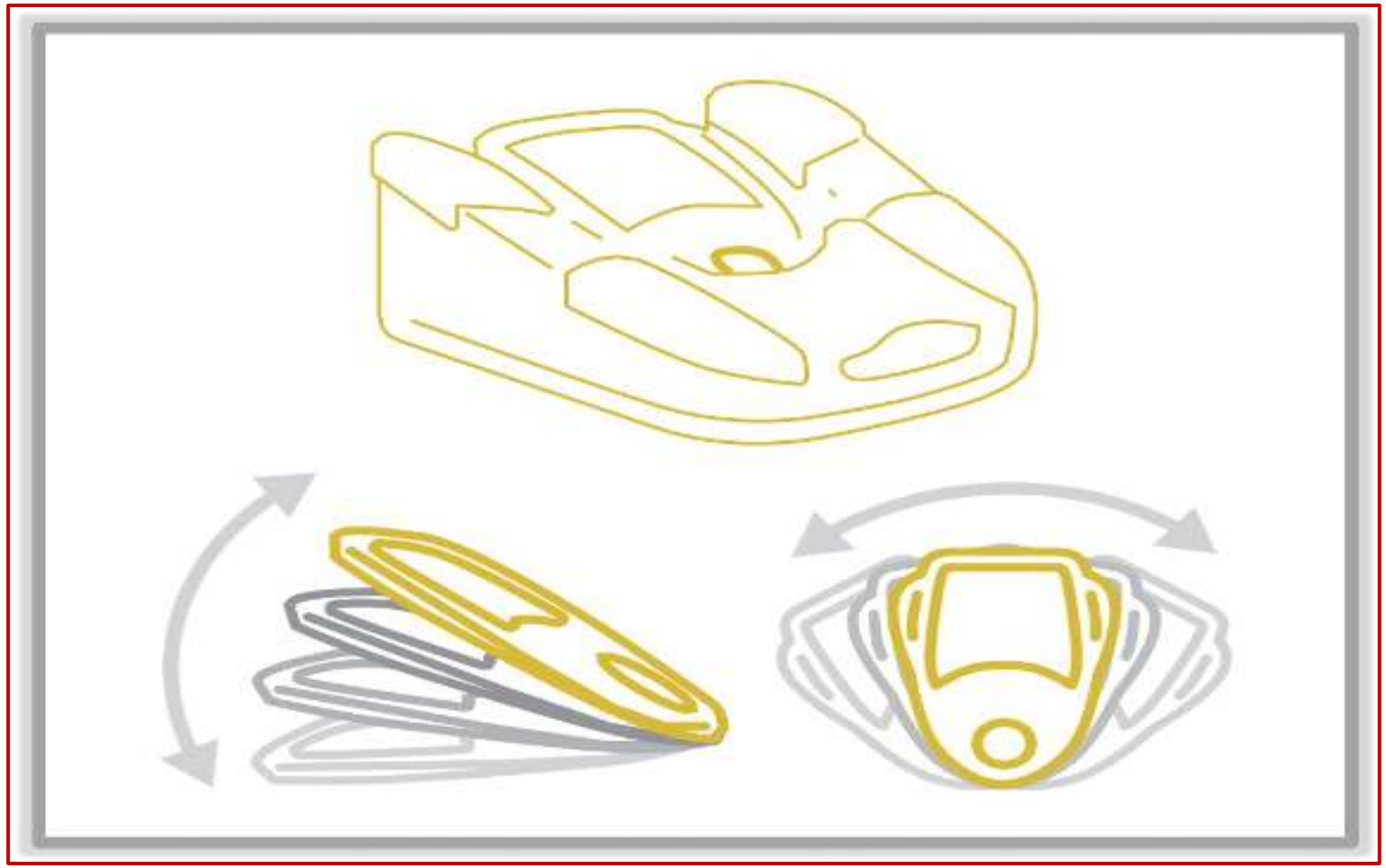
- Highet :
  - independent
  - dependent
    - 20g 45-60 cm
    - 23g 80-90 cm

Aspiration

- Peristaltic (Oretli Pharos)
- Venturi (Alcon Accurus)
- Both (Constellation, Oretli OS3)

- Vacuum 150-250 mmHg
- AFR 10-15

FOOT PEDAL



Vitreous Cutter (Model#)	Vitrectomy Consol	Probe (Gauge)	Vacuum (mmHg)	Maximum Rate (cuts/min)	Pneumatic Action	Shaft Diameter (μm)		
						External Shaft	Internal Shaft	
						External Diameter	Inner Diameter	Outer Diameter
Alcon[a] (#8065740253)	Accurus 800[a]	20-G	250	2500	Pneumatic	900	475	640
Bausch & Lomb[b] (#CX5825)	Millennium[b]	20-G	250	1500	Electric	870/730	400	-
Bausch & Lomb[b] (#DP4803)	Millennium[b]	20-G	250	750	Pneumatic	880	441	-
Midlabs[d] (#2540E)	Millenium[b] + [e]AVE	20-G	250	2500	Pneumatic	910	510	650
Alcon[a] (#806570821)	Accurus 800[a]	23-G	550	2500	Pneumatic	630	355	460
DORC[c] (#1226NMD06)	Accurus 800[a]	23-G	550	2500	Pneumatic	590	410	490
Alcon[a] (#8065750220)	Accurus 800	25-G	550	1500	Pneumatic	500	227	-
Bausch & Lomb[b] (#CX5825)	Millennium[b]	25-G	550	1500	Electric	500	247	-
DORC[c] (#1226NMD05)	Millenium[b]	25-G	550	750	Pneumatic	490	291	-
Midlabs[d] (#2540E)	Millenium[b] + [e]AVE	25-G	550	2500	Pneumatic	500	292	370

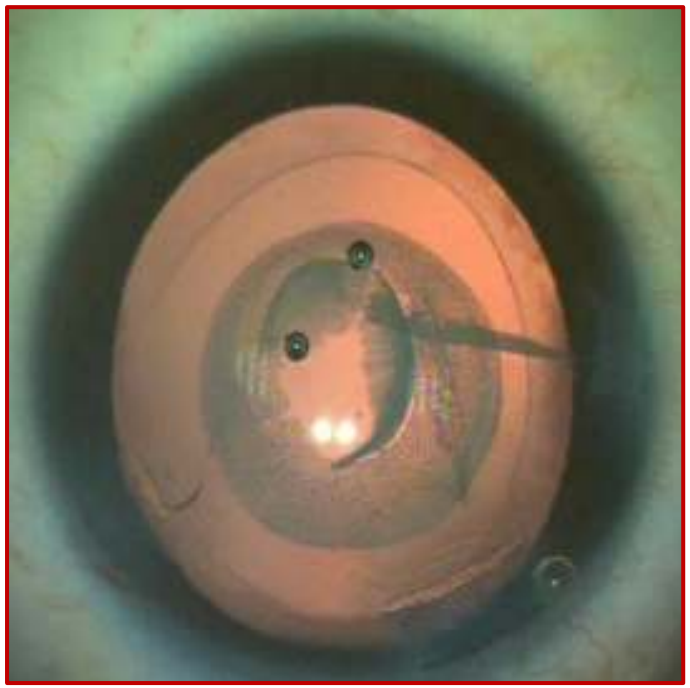
[a]Alcon Surgical, Forth Worth, TX. [b]Storz Millennium Microsurgical System, Bausch & Lomb, St Louis, MO. [c]Dutch Ophthalmic USA, Kingston, NH. [d]Midlabs, San Leandro, CA. [e]Storz Millennium Microsurgical System, Bausch & Lomb, in association with the AVE 2500 P module, Medical Instrument Development Labs Inc. (Midlabs).

Stain

Randomized Controlled Trial > Eur J Ophthalmol. 2018 Nov;28(6):633-638.
doi: 10.1177/1120672117754168. Epub 2018 Apr 5.

Outcome of pediatric cataract surgery with intraocular injection of triamcinolone acetonide: Randomized controlled trial

Ghada Allam [1], Rasheed Ellakkany [1], Adel Ellayeh [1], Tarek Mohsen [1], Hossam ElDin Abouelkheir [1], Walid Gaafar [1]



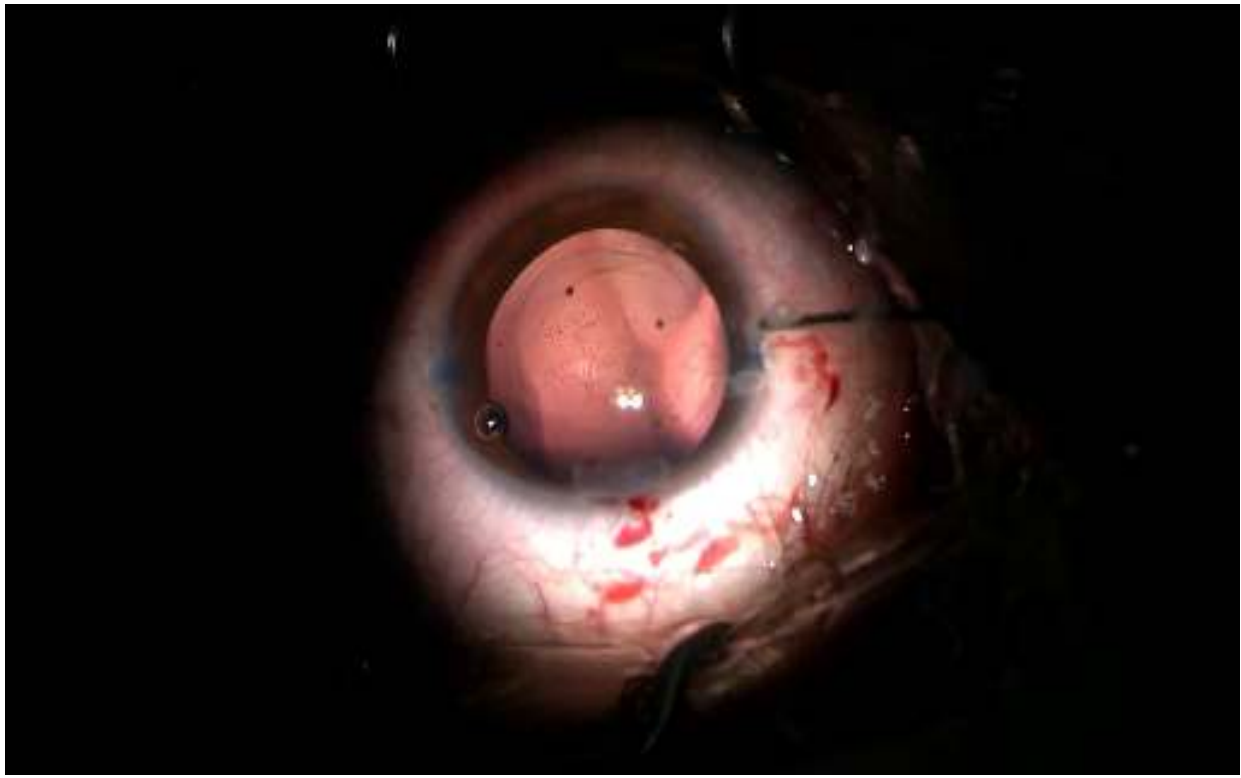
Recommended Ant Vit

Settings:

- 20G
  - 700-800 c/m
  - VACCUM 150 mmHg
  - 45-60 cm
- 23G
  - 1000-2500 c/m
  - VACCUM 150 mmHg
  - 80-90 cm
- AFR 10-15 cc/min

Technique:

- Stain the vitreous
- Irrigation direction: iris plane
- Cutter port: up
- 1-3mm depth
- Extend beyond posterior capsulotomy
- Stop when TAA is freely circulating
- Take care of OVD
- Avoid hydrating the vitreous
  - Don’t start irrigation until the Vit probe is in place
  - Don’t direct irrigation cannula to the vitreous




Thank You