## Surgery for Vitreous Hemorrhage (PDR) Combined Vitrectomy, Laser and Anti VEGF

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# **Surgery for Vitreous Hemorrhage (PDR)**Combined Vitrectomy, Laser and Anti VEGF

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## DRVS for early vitrectomy in VH PDR (1985)

- Early VH, VA <5/200, ≥1 month are eligible for early pars plana vitrectomy (PPV) (in 1-6 months) or conventional (until macula detach or unclear vitreous >1 year)
  - After 2 yrs, good vision gain 25% in early PPV, 15% in conventional
  - Type I DM has better outcome than type II
  - Approximately 20% of these worsened to no light perception after PPV
  - Delayed PPV in type II is not recommended
- Improvements in PPV techniques such as endolaser, C3F8 injection, better microscopeviewing systems, and earlier vitrectomy
  - only 3% progressed to poor visual outcome (Mason AJO 2005)

## PPV for VH PDR: Indications

- Visually significant, non clearing hemorrhage
- Tractional RD involving or threatening macula
  - Combined Tractional-Rhegmatogen RD

Early PPV should be considered if NV is extensive and rapidly progressive





## PPV- difficulties

- Intraoperative hemorrhage
- Difficult to do fibrovascular membrane dissection (delamination or segmentation)
  - Postoperative vitreous hemorrhage (VH)

#### TIPS

Laser prior to PPV as much as possible (needs clear media, take 2-3 weeks until BV regressed, facilitate MP)

Avoid inflamed eye, risk of fragile retina (iatrogenic break, unreleased traction, etc): PRP













## Anti VEGF injection

- Regressed blood vessel (no need clear media, short effect)
  - Anti-inflammatory (swelling, inflamed vitreous/retina, etc)

### **PROs**

- To decrease intraoperative hemorrhage
- Facilitate fibrovascular membrane dissection, easier separation of FVM from the underlying retina
- Reduce postoperative vitreous hemorrhage (VH) rates



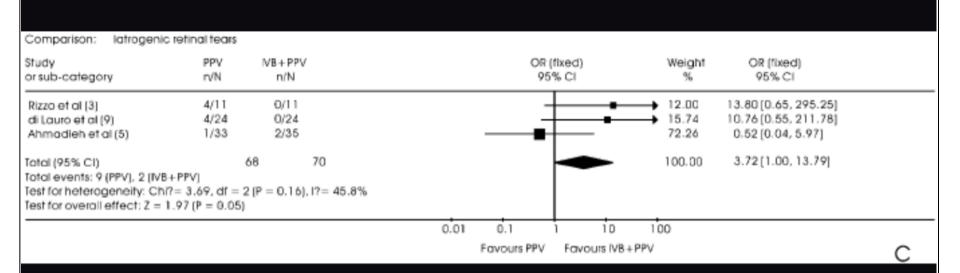
## Meta-analysis IVB Pre PPV

Comparison: Intraopera	ative bleeding						
Study or sub-category	PPV r/N	IVB+PPV n/N	OR (random) Weight OR (random) 95% CI % 95% CI				
Ahmadieh et al (5) di Lauro et al (9) Rizzo et al (3) Yang et al (6) Yeh et al (1)	17/33 19/24 9/11 3/24 17/22	10/35 2/24 2/11 2/16 2/21	24.59 2.66 [0.98, 7.23] 19.80 41.80 [7.26, 240.77] 17.16 20.25 [2.32, 176.79] 18.75 1.00 [0.15, 6.77] 19.70 32.30 [5.53, 188.79]				
Total (95% CI) 114 107  Total events: 65 (PPV), 18 (IVB+PPV)  Test for heterogeneity: Chi?= 15.33, df = 4 (P = 0.004), I?= 73.9%  Test for overall effect: Z = 2.95 (P = 0.003)							
			0.01 0.1 1 10 100  Favours PPV Favours IVB+PPV	Α			

Comparison: Frequency	of endodiathe	rmy							
Study or sub-category	PPV r/N	IVB+PPV n/N			,	fixed) % CI	Weight %	OR (fixed) 95% CI	
Rizzo et al (3) di Lauro et al (9)	9/11 13/24	2/11 2/24				_	28.40 71.60	20.25 [2.32, 176.79] 13.00 [2.48, 68.05]	
Total (95% CI) 35 35 35  Total events: 22 (PPV), 4 (IVB+PPV) Test for heterogeneity: Chi? = 0.10, df = 1 (P = 0.75), I? = 0% Test for overall effect: Z = 4.02 (P < 0.0001)									
				0.01	0.1 Favours PPV	1 10 1 Favours IVB+PPV	00		В







Study or sub-category	N	PPV Mean (SD)	N	IVB+PPV Mean (SD)		WMD (rando 95% CI	om)	Weight %	WMD (random) 95% CI	
di Lauro et al (9)	24	84.00(12.00)	24	65.00(18.00)		-		26.34	19.00 [10.35, 27.65]	
Modarres et al (4)	18	95.50(36.00)	22	62.00(57.30)			•	11.89	33.50 [4.35, 62.65]	
Rizzo et al [3]	11	83.00(11.00)	11	57.00(9.00)		-	-	26.52	26.00 [17.60, 34.40]	
Yang et al  6	24	110.60(33.20)	16	120.20(22.80)				19.44	-9.60 [-26.96, 7.76]	
Yeh et al (1)	22	176.00(32.50)	21	175.30(41.50)		+		15.81	0.70 [-21.65, 23.05]	
Total (95% CI)	99	94				•		100.00	14.13[1.17, 27.09]	
Test for heterogeneity: Ch	17- 16.60	), $df = 4 (P = 0.00)$	2), 1?-	75.9%		1				
Test for overall effect: Z =	2.14 (P =	0.03)								
					-100 -50	0	50	100		
					Favou	urs PPV Fav	vours IVB+P	PV		D





## IVB Pre PPV versus PPV Alone

- Incidence of intraoperative bleeding and frequency of endodiathermy p<0.01
- Less surgical time than the control group (p=0.003).
- Shorter reabsorption time of blood (p=0.04)
- Incidence of recurrent VH (p=0.05)
- Better final best-corrected visual acuity (p=0.003)
- Other complications, including final retinal detachment, and reoperation, were statistically insignificant





- The surgical endpoint was the relief of traction on the macula and areas of TRD and a clear vitreous cavity.
- Dose IVB 1.25 mg 2-4 days before PPV
  - early incidences of recurrent VH (<1 week) eligible for PPV
  - Can be detected in the retinal tissue 14 days after intravitreal injection (Chen, Retina 2006)
  - 7-day with 20-day previtrectomy IVB gave similar clinical outcome but more difficult surgery in 20-day group
  - Cikini Hospital: 2.5 mg/0.1 ml + 0.1 ml Dexa 1-10 days before PPV





## PROs and CONs

#### **PROs**

- To decrease intraoperative hemorrhage and
- Facilitate fibrovascular membrane dissection
- Reduce postoperative vitreous hemorrhage (VH) rates

### **CONs**

- Concern still exists that IVB may worsen TRD
- May cause the foveal vascular zone enlargement





## THANK YOU





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