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UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES

Air-Fluid Exchange for Vitreous Cavity Hemorrhage after Pars Plana Vitrectomy in Diabetic Eyes

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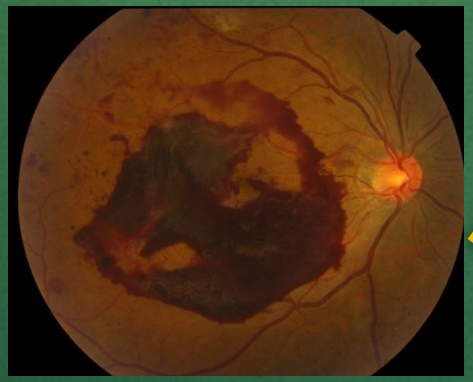
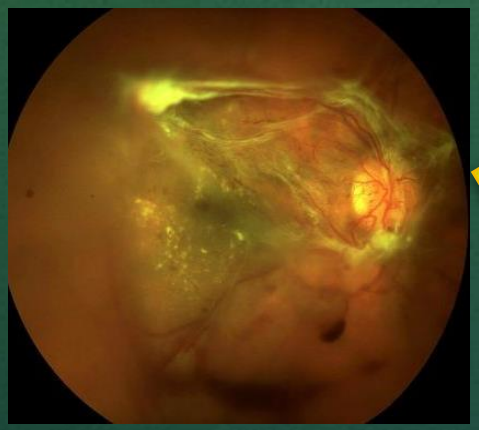
Abbreviations

- AFX: Air-Fluid Exchange
- PDR: Proliferative diabetic retinopathy
- PPV: Pars plana vitrectomy
- TRD: Traction retinal detachment
- VH: Vitreous hemorrhage
- VCH: vitreous cavity hemorrhage

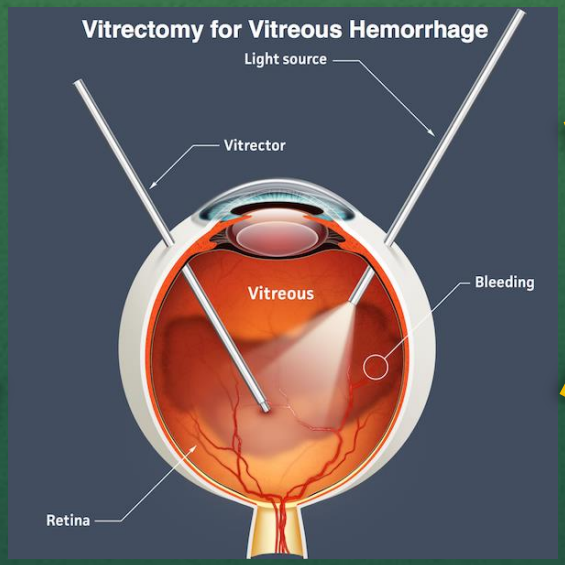
Background

Vitreous hemorrhage without TRD

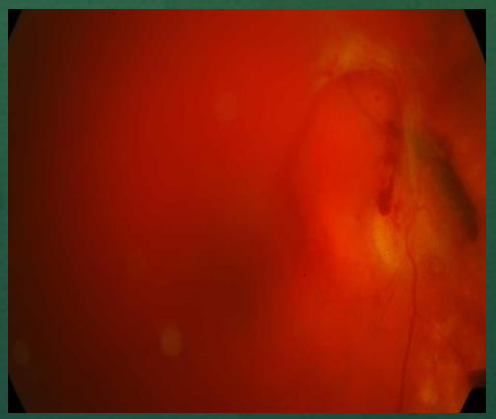




Vitreous hemorrhage with TRD

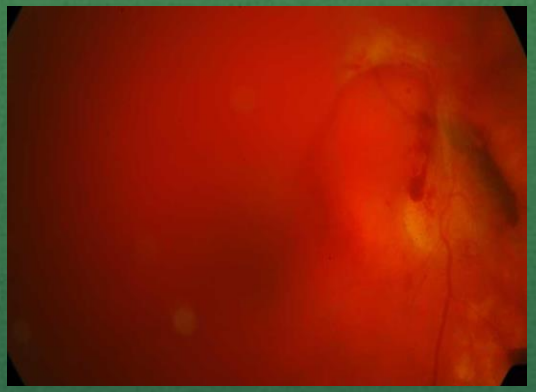


Clearance of VH

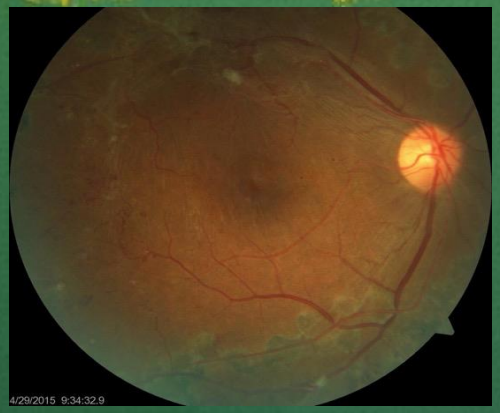


6% to 49% develop Post-PPV VCH

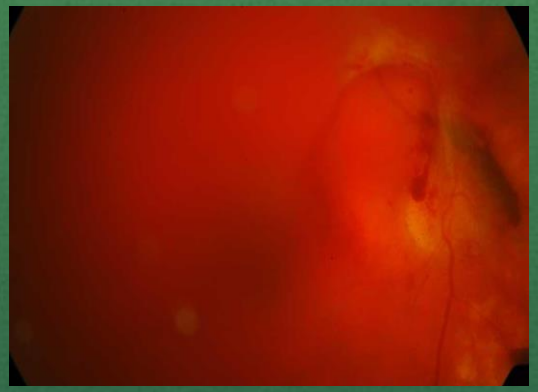
Background



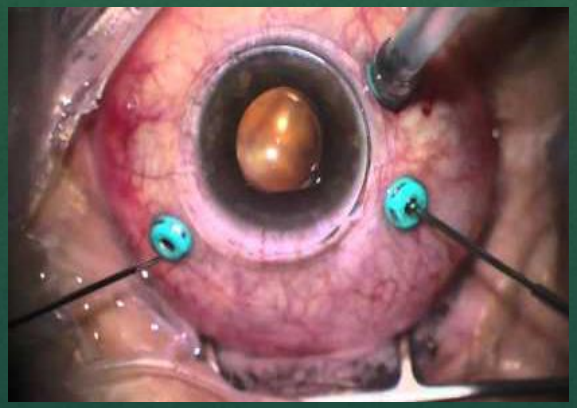
Background



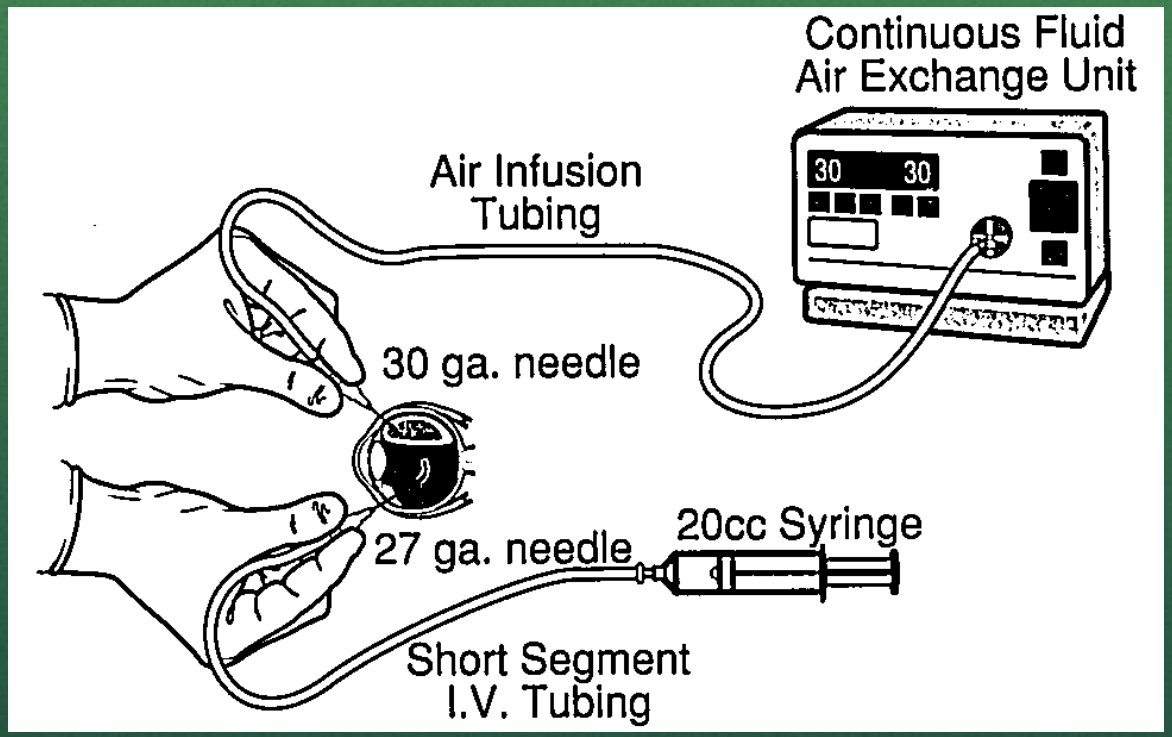
Spontaneous Clearing



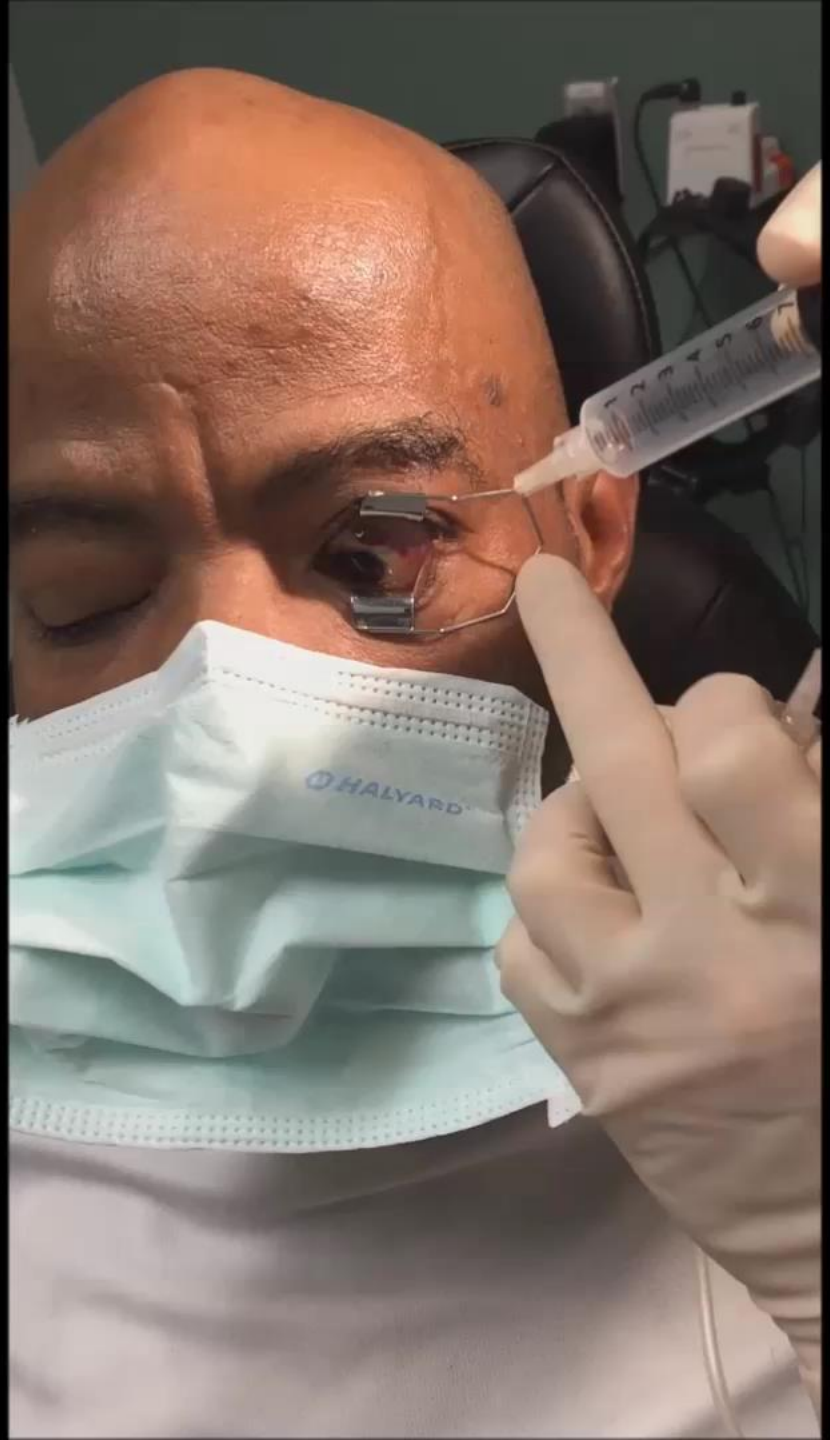
5.6-15% Non-clearing VCH



Air/Gas-fluid exchange device/set-up



Operative apparatus for Two-needle pars plana injection/aspiration technique
Han et al. Retina 1991: 11 (3)


HALYARD

Background

- **Advance in vitreoretinal surgery**
  - Less intraoperative macular ischemia
    - Use of Oxygenated Perfluorocarbonate fluid
  - Less fibrovascular growth/proliferative vitreoretinopathy
    - Better viewing system
    - Use of 5-FU
- **There is paucity of data on visual outcome of office based Air-Fluid Exchange since 1990s**

1. Mason JO. et al. *Current opinion in ophthalmology*. 2006; 17 (3): 281-5.
2. Freeman WR. *International ophthalmology clinics*. 1992; 32 (2): 15-33.
3. Lane RG, et al. *Graefes Arch Clin Exp Ophthalmol* 2005; 243: 701–705
4. Quiroz-Mercado H, et al. *Graefe's Archive for Clinical and Experimental Ophthalmolog*
5. Blankenship GW. Ophthalmology. 1986;93:39-44.
6. Han DP, Murphy ML, Mieler WF, Abrams GW. Retina. 1991;11(3):309
7. Martin DF, McCuen BW. Am J Ophthalmol. 1992 Oct15;114(4):457-63

Aim of the Study

- To analyze the visual outcome and complications of office based AFX for management of diabetic post vitrectomy VCH
- Compare the cost effectiveness of office-based AFX vs. repeat PPV

Methods

- 10-year Retrospective chart review (January 2006 to November 2016)
- CPT code of air fluid exchange (67025)
- Post PPV VCH in eyes with PDR
- Post AFX follow-up 3-8 months

Methods

- Collected data
  - Visual acuity pre-AFX, post AFX
  - Complication of AFX
  - Cost review of AFX based on Medicare Physician Fee Schedule 2016

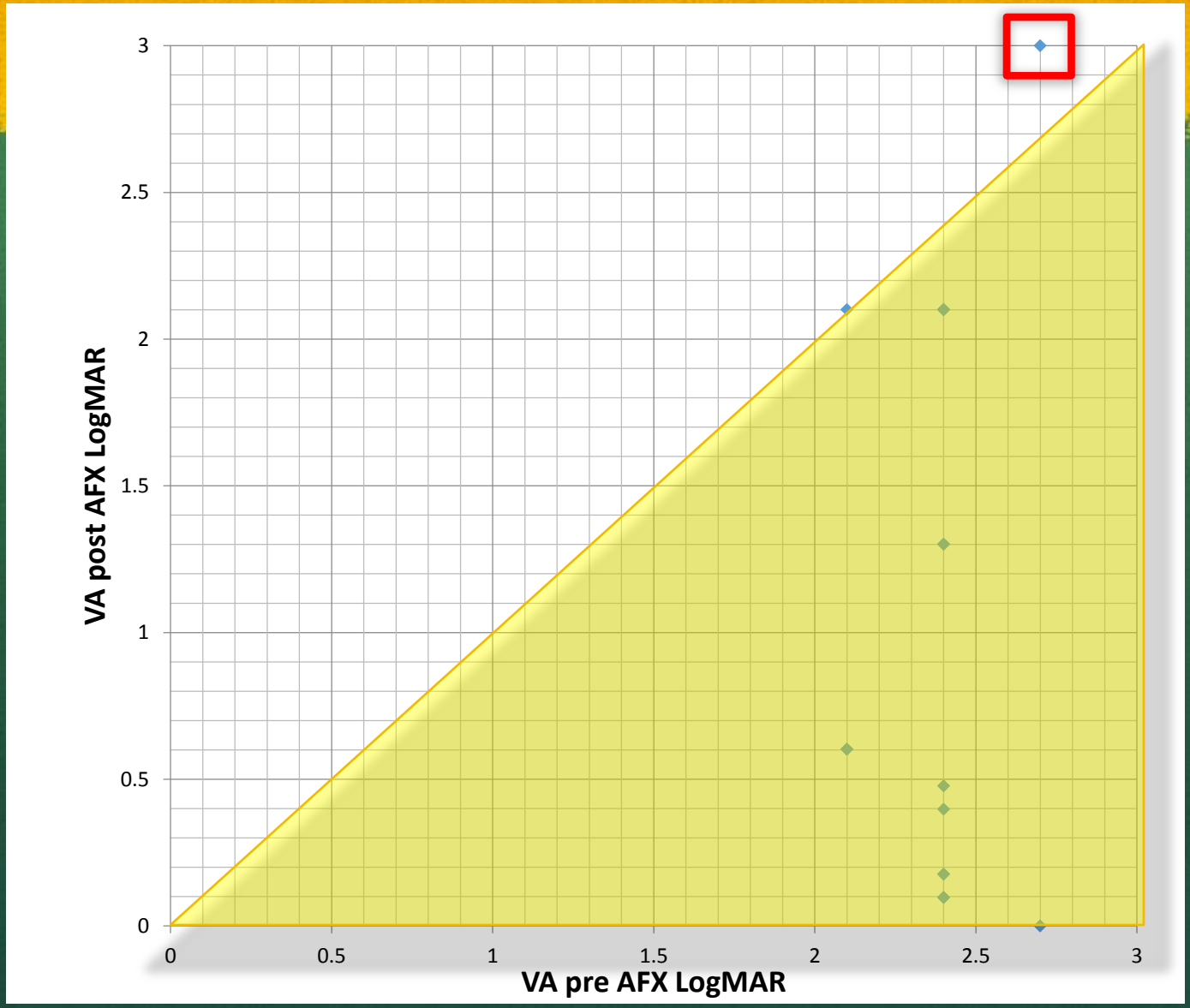
Results

Patient Characteristics (N=16)	
Gender	Male: 7 (44%) Female 9 (56%)
Ethnicity	Black: 9 (56%) White: 5 (31%) Hispanic: 1 (7%)
Laterality	Right: 7 (44%) Left: 9 (56%)
Lens status prior to AFX	Phakic: 5 (31%) **Pseudophakic: 11 (69%)** Aphakic: 0
Indication for initial PPV	**VH: 7 (44%)** **VH w/ TRD: 9 (56%)**

Results

	Mean	Range
Onset of VCH (months)	5.79 (±7.15)	0.07-23
Duration of VCH (weeks)	5.30 (±9.20)	1.00-39.4

Post-AFX BCVA vs. Pre-AFX BCVA (LogMAR)



No TRD vs. TRD

	VH w/o TRD	VH w/ TRD
Mean Pre-VA	2.40±0.17	**2.37±0.18**
Mean Final VA	0.39±0.46	1.54±0.97
Improvement of VA	2.09±0.53	0.82±0.91

Prognostic Factors

- Eyes w/o TRD has greater VA improvement than eyes w/ TRD
- Later onset of VCH has greater improvement of VA after AFX (p=0.02)*
- Earlier intervention of VCH leads to greater VA improvement (p=0.02)*

*Spearman's Rho test

Cost review

	AFX (CPT code 67025)	PPV (CPT code 67036 without modifier)
Total RVU *	20.53	25.54
Professional fee	$700.96	$914.44
Facility fee	N/A	$976.17
Anesthesia fee (CPT 00145-1hr VR surgery)	N/A	$219.94
Total fees	$700.96	$3024.99

Centers for Medicare and Medicaid Services. CY 2016 Physician Fee Schedule.
CY 2016 PFS Final Rule Calculation of the National Average Anesthesia Conversion Factor

Complications

Complications		No. of cases
Hypotony		1 (7%)
Elevated IOP (1wk post AFX) *	IOP (30-40) IOP (22-30)	1 (7%) 2 (13%)
Hyphema		2 (13%)
Worsening Cataract		5/5 (100%)
Cataract surgery post AFX		5 (100%)
Recurrent TRD**		4/9 (44%)
NVI**		1/16 (7%)
NVG**		1/16 (7%)

- *IOP in all three cases after AFX lower than pre-AFX
- ** Complication of PDR

Discussion/Conclusions

- This study is the first contemporary study evaluating visual outcome of AFX for diabetic VCH
- Office based AFX is effective for VCH in eyes without co-existing TRD
- Office based AFX is cost effective and has acceptable adverse effect

Discussion/Conclusions

- Limitations of this study:
  1. Retrospective, non-randomized design
  2. Short follow-up
  3. Small Sample size

Thank you

- Dr. Ahmed Sallam
- Dr. Sami Uwaydat
- Summar Tackett, COMT