7/15/2022 03:10 pm

Surgery Symposium 4

Fibrin Glue–Assisted Retinopexy for Rhegmatogenous Retinal Detachments: GUARD Study; Long-Term Outcomes of a New Surgical Technique With No Silicone Oil or Gas Tamponade

- Mudit Tyagi, MS, FASRS

Objective:
Can Fibrin glue be used as a temporary tamponade and can it help avoid the need for silicone oil or gas and also avoid the need for post operative positioning after PArs Plana Vitrectomy in cases of rhegmatogenous retinal detachments

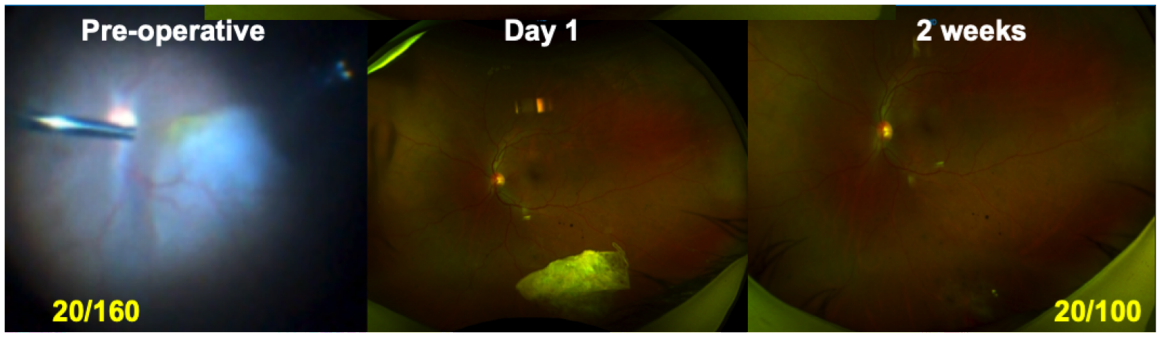
Purpose:
This study describe the long term outcomes of a new surgical technique utilizing fibrin glue as a temporary tamponade that obviates the need for oil or gas after PPV in cases of rhegmatogenous retinal detachments

Methods:
Prospective interventional study of 30 consecutive eyes of 30 patients with RRD. A complete PPV was done in all cases followed by fluid–air exchange, laser photocoagulation around the break/s and application of 0.1 to 0.2ml of fibrin glue. No long-acting gas or silicone oil was used subsequently for tamponade . No specific postoperative positioning was prescribed. The primary outcome measure was defined as successful anatomical retinal reattachment. Secondary outcome measures were postoperative improvement in best corrected visual acuity (BCVA) and complications. Only patients with more than 6 months of follow up were included

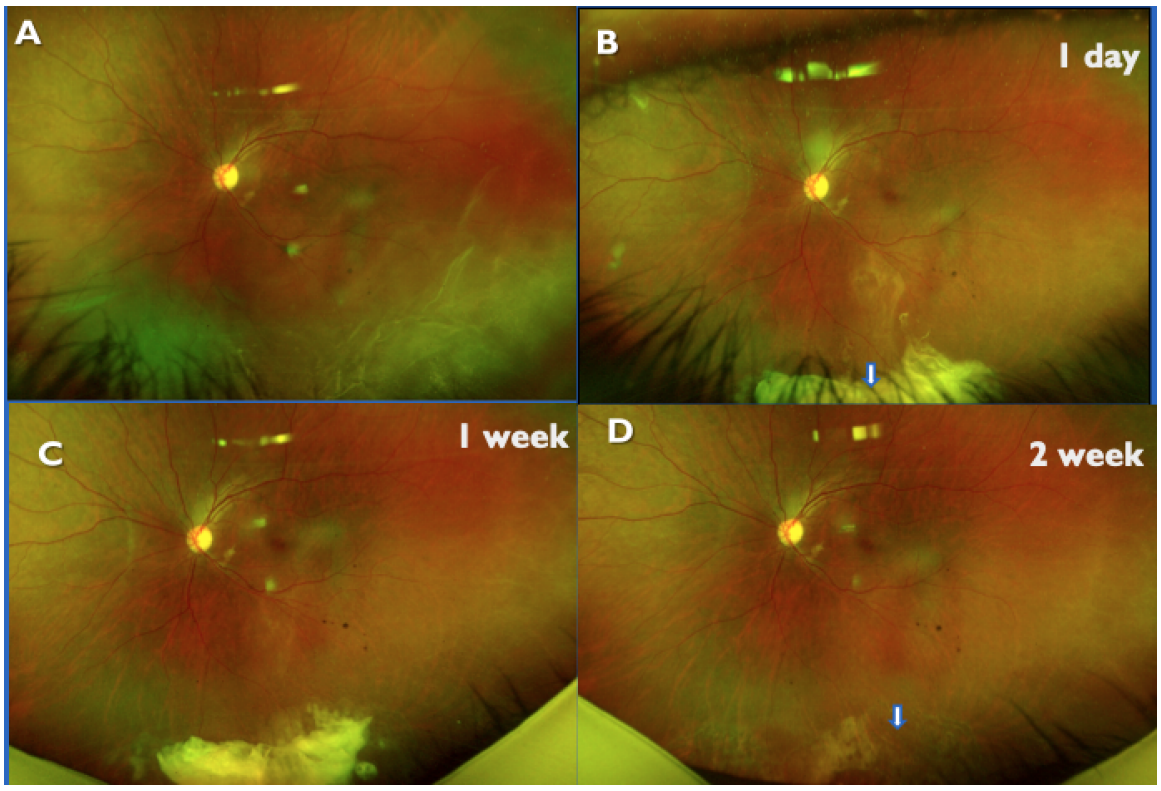
Results:
30 eyes of 30 patients with RRD were included in this study. The median age was 58 (range: 36-61 years) years and median duration of symptoms was 18 (range: 7- 60) days. 25 eyes were pseudophakic and 5 were phakic . 18 eyes had inferior ,7 had superior and 5 eyes had a total RD. Successful retinal reattachment was achieved in 26 out of 30 (87%) cases and was maintained at the end of 6 months of follow-up. The median BCVA improved from 20/100 preoperatively to 20/80 at 1-week and 20/50 at 1-month postoperatively. Fibrin glue plug was noted to be completely resorbed by the end of 2 weeks. No post operative positioning was given to any patient. None of the eyes had any elevated intra-ocular pressures or unexpected inflammation during the course of follow up. Two eyes developed cystoid macular edema at the end of 1 month visit which resolved with the use of topical nepafenac eye drops

Conclusion:
A fibrin plug can safely and adequately cover the bare retinal breaks until the effect of laser retinopexy effect became permanent. Thus GuARD is a promising technique for the treatment of simple uncomplicated rhegmatogenous RD that allows early visual recovery while avoiding the problems of gas or oil tamponade and obviating the need of any postoperative positioning

IRB APPROVAL Yes



RRD with attached retina and fibrin glue plug at Day 1 and 2 weeks



Complete resolution of fibrin plug at 2 weeks

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Surgery Symposium 4

Intravitreal Methotrexate Reduces Reoperation Rate and Improves Vision After Vitrectomy for Retinal Detachment, Trauma, and Proliferative Diabetic Retinopathy

- Alan Franklin, MD, PhD
- Lauren Gibson, MD

Objective:
The objective of this study is to identify potential benefits of 5 postoperative intravitreal methotrexate injections after vitrectomy for retinal detachment, penetrating globe trauma, or proliferative diabetic retinopathy.

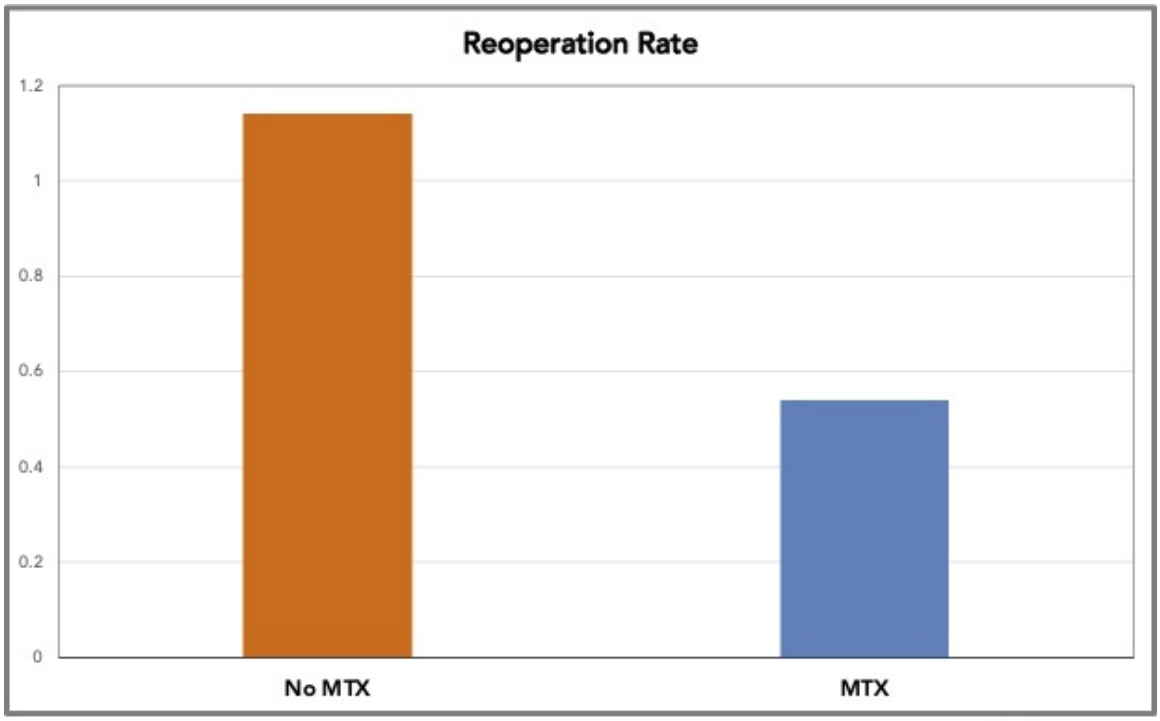
Purpose:
Recurrent retinal detachment characterized by fibrous proliferation is one the largest surgical challenges that present to retinal specialists. Studies have indicated a potential role for weekly postoperative intravitreal methotrexate for 3 months after previous failed retinal detachment surgery. We included previously unoperated eyes at high risk for failure because of large retinal breaks, penetrating trauma, existing proliferative vitreoretinopathy, or advanced proliferative diabetic retinopathy.

Methods:
This is a retrospective chart review of patients who underwent retinal detachment surgery for the following reasons: 1) Failed previous retinal reattachment surgery, 2) Advanced Proliferative Diabetic Retinopathy, 3) Initial surgery for retinal detachment associated with penetrating trauma, or 4) Primary retinal detachments associated with Grade C proliferative vitreoretinopathy or large retinal breaks. Methotrexate, 200µg, was administered intravitreally via the inferotemporal par plana at post op weeks 1, 2, 4, 7, and 11. Reoperation rate, visual acuity, physical exam, and OCT biomarkers were analyzed for 6 months postoperatively.

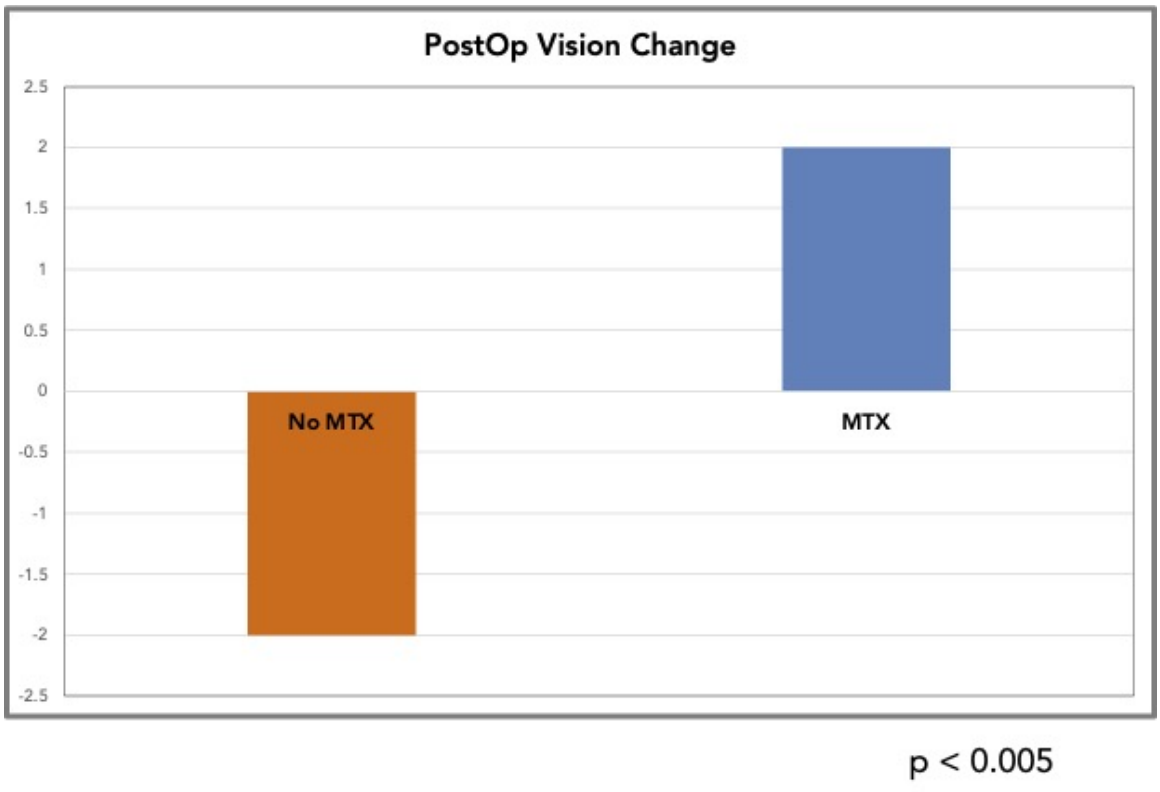
Results:
A total number of 167 eyes were evaluated in this study. Intravitreal methotrexate was administered to 47 eyes and compared to 120 eyes that were not injected with methotrexate. Injection of intravitreal methotrexate diminished reoperation rate by over 50%, $p < 0.05$ amongst all eyes. Eyes with advanced proliferative diabetic retinopathy, 22, had similar favorable results with at least a 50% reduction in reoperations. Similarly, many patients with advanced proliferative diabetic retinopathy who required surgery in both eyes required less operations in the eyes that received postoperative intravitreal methotrexate compared to the fellow eye that was not injected. On exam, eyes injected with methotrexate had less postoperative epiretinal membrane proliferation compared to uninjected eye. Visual acuity was also significantly improved with a 2 line gain in eyes that received intravitreal injection compared to those who did not. OCT analysis qualitatively shows less recurrent epiretinal membrane formation in eyes that received postoperative methotrexate. There were no significant safety issues associated with intravitreal methotrexate injection.

Conclusion:
We report that 5 postoperative intravitreal injections of methotrexate reduce reoperation rates and improve vision in eyes with complex pathology that include failed previous retinal reattachment surgery, penetrated globe trauma, and eyes that are higher risk to fail primary surgery because of grade C proliferative vitreoretinopathy, large retinal breaks, or advanced diabetic retinopathy. The lower treatment burden in this study appears to be effective in a wide variety of complex surgical pathologies that include advanced proliferative diabetic retinopathy.

IRB APPROVAL Yes



Intravitreal Methotrexate reduces reoperation rate



Intravitreal Methotrexate improves visual acuity

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Surgery Symposium 4

Vitrectomy vs Vitrectomy With Scleral Buckling in the Treatment of Giant Retinal Tear Related Retinal Detachments: International Multicenter Study

- Sally Ong, MD
- Ishrat Ahmed, MD, PhD
- Anthony Gonzales, OD, FAAO
- Abdullmajeed Al-Fakhri, MD
- Hamad Al-Subaie, MD
- Faisal Al-Qhatani
- Sulaiman Al Sulaiman, MD
- Marco Mura, MD
- Mauricio Maia, MD, PhD
- Dante Kuroiwa, MD
- Natalia Maia
- Maria Berrocal, MD
- Lihteh Wu, MD
- Marcelo Zas, MD PhD
- Juan Pablo Francos, MD
- JUAN MANUEL CUBERO PARRA, MD
- Jiangxia Wang
- Lubaina Arsiwala, BDS, MHS
- James Handa, MD
- J. Fernando Arevalo, MD, PhD, FACS, FASRS

Objective:
To determine the practice pattern for treating giant retinal tear (GRT) related detachments, and their anatomic and visual outcomes with pars plana vitrectomy (PPV) with or without scleral buckling (SB).

Purpose:
The addition of scleral buckling to PPV in the management of GRT related detachments has been controversial. We therefore sought to determine the practice patterns for treating GRT related detachments by an international cohort of surgeons in a real-world setting and to compare anatomic and visual outcomes amongst eyes with GRT associated retinal detachments that were treated with PPV alone vs PPV/SB.

Methods:
In this retrospective cohort study, eyes with GRT detachments repaired from 2008-2020 with at least 6 months of follow-up were collected from seven institutions in North and South America, Europe, and Asia. Anatomic and functional outcomes amongst eyes repaired using PPV versus PPV/SB were compared.

Results:
A comparable number of eyes underwent PPV (n=101) and PPV/SB (n=99). No differences in baseline demographics, ocular characteristics, or intraoperative surgical adjuncts were observed between the two groups. Overall single surgery anatomic success at 6 months and 1 year was similar between the groups (82.2% and 77.2% of PPV and 87.9% and 85.7% of PPV/SB). However, when stratified by age, the 1-year single surgery anatomic success rate was higher for PPV/SB (88.5%) than PPV (56.3%) (p=0.03) in children less than 18 years of age. For both children and adults, mean best corrected visual acuity (BCVA) at baseline did not differ between the PPV and PPV/SB groups. In children, BCVA at 1 year was better in the PPV/SB than PPV groups (p=0.001) while in adults, no difference was found between the two surgical groups. The mean time to first redetachment was 7.9 months in the PPV group and 5.5 months in the PPV/SB group (p=0.8). PVR was the most common cause for redetachment (70.4% of PPV and 93.8% of PPV/SB in redetached eyes; p=0.1). Postoperative complications were also similar between the two groups including ocular hypertension, epiretinal membrane, and cataract.

Conclusion:
PPV and PPV/SB are equally popular among surgeons globally for managing GRT detachments and have comparable anatomic and visual outcomes in adults. In children, PPV/SB is superior to PPV for anatomic and functional success at one year. In adults, the relief of traction by the GRT may reduce peripheral traction and obviate the need for a SB. However, in children, a supplemental SB can be beneficial as complete vitreous shaving and posterior hyaloid detachment, and postoperative positioning are difficult in this group.

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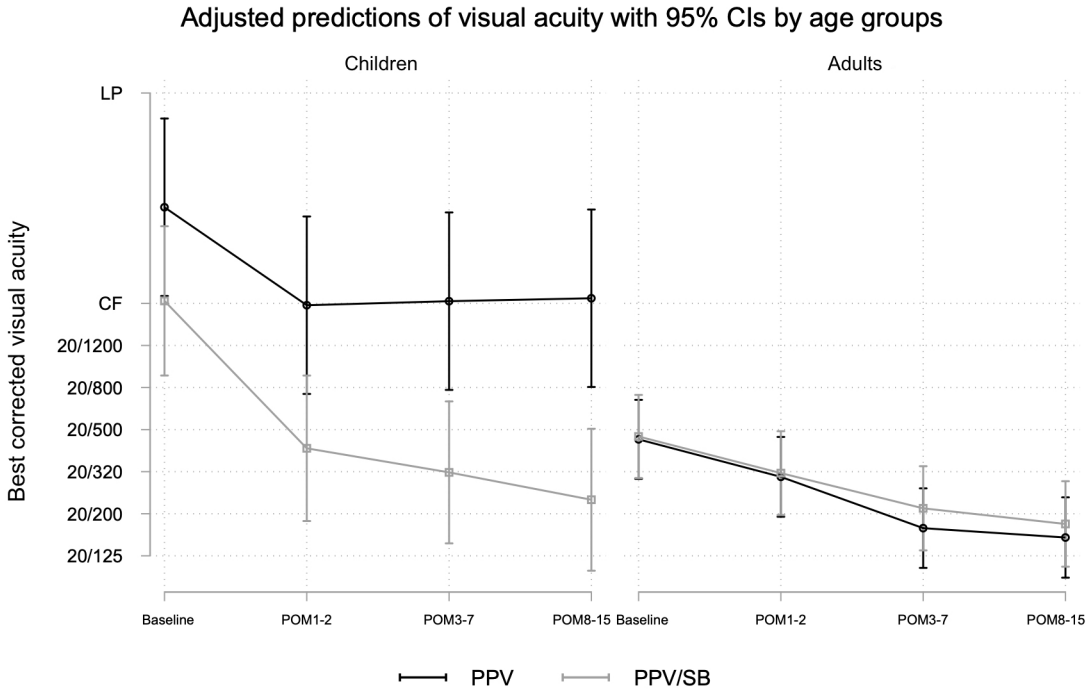

Comparison of BCVA among PPV vs PPV/SB in children (<18 years) and adults.

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Surgery Symposium 4

Long-Term Visual Outcomes of Fovea-Splitting Rhegmatogenous Retinal Detachments

- Jeremy Wolfe, MD, MS
- Ramon Lee, MD

Objective:
How do the visual outcomes of fovea splitting retinal detachments compare with those of fovea-on and fovea-off detachemnts?

Purpose:
To evaluate the visual outcomes of surgical repair of fovea-splitting rhegmatogenous retinal detachments.

Methods:
This was a retrospective, consecutive cohort study of patients that underwent primary surgery for RRD involving the macula from multiple surgeons from a single center from June 1, 2013, to December 31, 2018. The inclusion criteria were eyes with macula-involving primary RRD confirmed with preoperative macular OCT that underwent successful, primary RRD repair and had at least 3 months of postoperative follow-up. Exclusion criteria included eyes undergoing surgery for recurrent RRD, any previous retinal surgery, or significant preoperative macular pathology apart from RRD that would limit visual recovery, such as advanced agerelated macular degeneration or diabetic macular edema. All clinic visits and operative report notes were reviewed, and data were obtained for age, gender, eye laterality, visual acuity, clinical examination findings, surgical technique, and OCT imaging.

Results:
The mean logMAR visual acuity at the last follow-up improved from the mean preoperative logMAR visual acuity for all groups to 0.12 ± 0.18 (Snellen 20/25) (P = 0.001), the fovea-on group to 0.07 ± 0.13 (Snellen 20/25) (P = 0.002), the foveasplitting group to 0.10 ± 0.15 (Snellen 20/25) (P = 0.001), and the fovea-off group to 0.20 ± 0.22 (Snellen 20/32) (P = 0.001). When comparing mean logMAR visual acuity at the last follow-up by fovea status, there was a difference between fovea-off and fovea-on groups (P = 0.003) and between fovea-off and fovea-splitting groups (P = 0.013). However, there was no difference between fovea-on and foveasplitting groups (P = 0.827). When comparing the mean logMAR visual acuity at the last follow-up between all groups in a subset of 170 eyes (of 195, 87%) which were pseudophakic, a similar result was found (P = 0.001, P = 0.014, and P = 0.613, respectively).

There was no difference in mean logMAR visual acuity at the last follow-up between eyes that underwent PPV or combined PPV and SB (P = 0.210).

Conclusion:
In our study, the fovea-splitting group showed favorable visual outcomes with equivalent outcomes to the fovea-on group (P = 0.827) and better outcomes than the fovea-off group (P = 0.003). Evaluation of the extent of subretinal fluid in the macula with RRD on clinical examination is challenging and can be incongruent with OCT imaging; thus, OCT provides vital information to potentially guide surgical management and better understand visual prognosis.

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Surgery Symposium 4

Clinical Outcomes After Repair of Primary Acute Rhegmatogenous Retinal Detachment With Scleral Buckle

- Sushant Wagley, MD
- James Kohler, MD
- Ameay Naravane, MD
- Peter Tang, MD, PhD
- D. Wilkin Parke, MD
- Edwin Ryan, MD
- Robert Mittra, MD

Objective:
To evaluate patient demographics, clinical presentation, surgical techniques, and outcomes of primary acute rhegmatogenous retinal detachment (RRD) repaired with scleral buckle (SB) alone in a large series

Purpose:
Pars plana vitrectomy (PPV) has dramatically transformed how most primary RRDs are repaired, resulting in a steady decline of use of SB alone. Although many studies have compared clinical outcomes between PPV, SB, or combined procedures, they only provide limited analysis of functional and anatomical outcomes and complications with SB alone. Furthermore, these studies often focus on a certain subset of patients – mostly younger and those without a posterior vitreous detachment (PVD).

Methods:
This single center, retrospective, cross-sectional study analyzed all eyes that underwent RRD repair with primary SB between 2014 and 2021. Patients younger than age of 18, with pseudophakia, having received PPV prior to or concurrent with SB placement, or with follow up less than 30 days were excluded from analysis. Visual outcomes, preoperative retinal findings, surgical technique, clinical outcomes, and complications were analyzed. The primary outcome measure was single surgery anatomical success (SSAS).

Results:
A total of 429 eyes met study criteria for analysis. Mean age was 51.2 years (range: 18-80 years) with a mean follow-up period of 369 days. SSAS with primary SB was 90.9%. While patients 40 and younger had higher SSAS compared to patients over the age of 60 (91.8% vs 89.8%) this was not statistically significance (P=0.876). Overall, final best-corrected visual acuity (BCVA) 20/31 significantly improved (P<0.001) compared to pre-operative measurements - 20/41. Patients who achieved SSAS had significantly better (P<0.001) final BCVA (20/29) compared to those that failed (20/57). Patients without a PVD had a significantly higher (P=0.013) SSAS than those with a PVD (93.5% vs 86.3%). Eyes that did not achieve SSAS presented with worse visual acuity (20/53 vs 20/40, P=0.075) and significantly (P = 0.003) larger clock hours of detachment (4.58 vs 3.78). Of those that did not achieve SSAS, 41.0% developed proliferative vitreoretinopathy, and 74.4% were fully attached after one additional surgery (94.9% underwent PPV). 5.1% of patients underwent pneumatic retinopexy as their second procedure prior to PPV. In those with SSAS, 0.9% of patients eventually developed visually significant ERM requiring surgical intervention. There was only one patient that required removal of SB.

Conclusion:
SB alone is a viable option for repair of primary RRD with a SSAS that is comparable to other techniques with similar or better clinical outcomes and minimal complications.

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Surgery Symposium 4

Outcomes of Pars Plana Vitrectomy Alone vs Combined Scleral Buckling Plus Pars Plana Vitrectomy for Primary Retinal Detachment

- Luis Haddock, MD
- Jose Echegaray, MD

Objective:
Does combined scleral buckling-vitrectomy achieve better anatomic outcomes than vitrectomy alone for primary uncomplicated retinal detachment repair and do visual gains correlate with successful reattachment with a single operation?

Purpose:
To compare the outcomes of primary uncomplicated rhegmatogenous retinal detachment (RRD) repair using pars plana vitrectomy (PPV) alone versus combined scleral

buckling-vitrectomy (SB-PPV) in a single-institution retrospective observational study.

Methods:
We performed a single-institution, retrospective, observational study of 488 consecutive patients with primary rhegmatogenous retinal detachment (RRD) repaired via pars plana vitrectomy (PPV) alone or scleral buckle-vitrectomy (SB-PPV) and gas tamponade. We excluded patients younger than 18 years and those with advanced proliferative vitreoretinopathy, giant retinal tear, trauma, or secondary forms of RRD. We performed logistic regression and Cox proportional hazard regression analyses to identify potential risk factors associated with a recurrence of the retinal redetachment.

Results:
The mean follow-up interval was 14.3 months. Single-operation anatomic success and final anatomic success were achieved in 425 eyes (87.1%) and 487 eyes (99.8%), respectively. Single-operation anatomic success was achieved in 90 of 111 eyes (81.1%) with PPV alone compared with 345 of 374 eyes (92.2%) with SB-PPV (P 0.0010). Scleral buckling plus PPV showed greater single operation anatomic success (SOAS) than PPV alone in phakic eyes ($P < 0.0001$), but not in eyes with a posterior chamber intraocular lens (PCIOL). Retinal redetachments occurred on average at 1.5 and 9 months after the initial surgery. Significant best-corrected visual acuity improvement was associated with SOAS ($P < 0.0001$).

Conclusion:
Scleral buckling plus PPV resulted in greater SOAS outcomes than PPV alone for primary RRD repair. Phakic eyes achieved greater surgical success with SB PPV, whereas eyes with a PCIOL achieved similar results with both methods. Most retinal redetachments occurred within the initial postoperative 3-month period. Single-operation anatomic success was associated with statistically significant visual improvement

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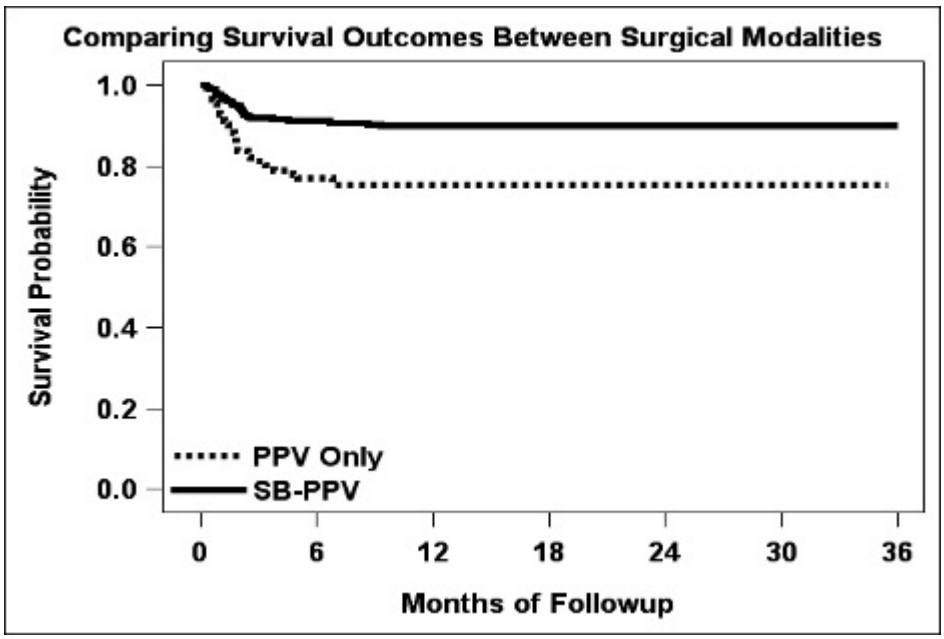

Increased survival probability for repair with SB-PPV

Paired t-test comparing differences between preoperative and final BCVA.

	Preoperative LogMAR BCVA	Final LogMAR BCVA	p-value
All Eyes	1.06 (0.89)	0.52 (0.60)	<0.0001*
Eyes with SOAS	1.04 (0.89)	0.44 (0.52)	<0.0001*
Eyes with Retinal Redetachment	1.19 (0.85)	1.06 (0.78)	0.3233

*p < 0.05; LogMAR = logarithm of the minimum angle of resolution; SOAS = single operation anatomic success; BCVA = best corrected visual acuity.

Paired t Test Comparing Differences between Preoperative and Final VA

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Surgery Symposium 4

Clinical Outcomes of Rhegmatogenous Retinal Detachment Repair in Pseudophakic Eyes With Multifocal Intraocular Lenses

- Abtin Shahlaee, MD
- Rachel Israilevich, BS
- Mirataollah Salabati, MD
- Raziyeh Mahmoudzadeh, MD
- Taku Wakabayashi, MD
- Yoshihiro Yonekawa, MD, FASRS
- Michael Klufas, MD

Objective:
Does presence of multifocal intraocular lens affect the outcome of primary retinal detachment repair?

Purpose:
There have been reports of visualization difficulties during vitrectomy with multifocal intraocular lenses (IOLs). This study compares anatomic and visual acuity (VA) outcomes of rhegmatogenous retinal detachment (RRD) repair in pseudophakic eyes with multifocal versus monofocal IOLs.

Methods:
This was a single-institution, retrospective, case-control study evaluating consecutive pseudophakic eyes with multifocal IOLs undergoing primary RRD repair with pars plana vitrectomy (PPV) or PPV with scleral buckle (PPV+SB) from 1/1/2013 - 9/1/2021. A 1:1 monofocal IOL control group was matched based on age, gender, macula status, primary surgeon, and timing of surgery. Eyes with baseline PVR were excluded. Outcomes included single surgery anatomic success (SSAS) rate at 90 days after surgery, and VA at baseline and final visit after primary RRD repair.

Results:
Seventy-one eyes had multifocal IOLs at primary RRD surgery during the study period and were eligible for analysis. Both the multifocal and control groups included 71 eyes, and mean age was 64.8 ± 8.5 and 64.5 ± 8.8 years, respectively (p=0.85). Primary PPV and PPV+SB was performed on 66 (93%) and 5 (7%) multifocal eyes, respectively, vs. 60 (84.5%) and 11 (15.5%) control eyes (p=0.11). Mean follow-up was 773 ± 588 days in the multifocal group vs. 793 ± 565 days in the control group (p=0.84) (Table 1). Overall SSAS was achieved in 55 (77.5%) multifocal eyes vs. 63 (88.7%) control eyes (p=0.073). Primary PPV and PPV+SB resulted in SSAS in 50 (75.8%) and 5 (100%) multifocal eyes vs. 53 (88.3%) and 10 (90.9%) control eyes (p=0.068, p=1.00, respectively). In surgical failures, the mean number of RRD surgeries was 2.4 ± 0.7 in the multifocal group vs. 2.1 ± 0.4 in the control group (p=0.33). Mean baseline logMAR VA was 0.95 ± 0.89 (20/178) in multifocal eyes vs. 0.95 ± 0.92 (20/178) in control eyes (p=0.84), and at final visit was 0.27 ± 0.34 (20/37) in multifocal eyes vs. 0.28 ± 0.43 (20/38) in control eyes (p=0.83) (Table 2). The most common cause of surgical failure in both groups was post-operative PVR which developed in 8 (53.5%) of multifocal and 5 (71.4%) of control failures (p=0.65).

Conclusion:
In pseudophakic RRDs undergoing primary surgical repair including vitrectomy, there was a trend towards higher SSAS in eyes with monofocal IOLs, but no statistically significant difference in SSAS or PVR development in eyes with multifocal vs. monofocal IOLs. Visual acuity outcomes were similar in both groups and significantly improved compared to baseline.

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	Multifocal IOL N=71	Control N=71	P-value
Mean age (SD) at time of RRD	64.54 (8.8)	64.82 (8.5)	0.848 [a]
Female/ Male	22/49	22/49	1.00 [b]
Family history of RRD (%)	4 (5.6)	6 (8.5)	0.74 [b]
History of RD in fellow eye (%)	9 (12.7)	11 (5.5)	0.81 [b]
Macula status (off/on)	49/22	49/22	1.00 [b]
Baseline logMAR VA (SD), Snellen	0.95 (0.89), 20/178	0.95 (0.92), 20/178	0.84 [c]
Mean (SD) days from diagnosis to RRD surgery	1.3 (2.0)	1.41 (1.7)	0.69 [c]
Type of first RRD surgery **PPV (%)** **PPV-SB (%)**	 66 (93) 5 (7)	 60 (84.5) 11 (15.5)	0.11 [b]
Intraoperative triamcinolone used to stain the vitreous (%)	10 (14)	16 (22.5)	0.29 [b]
Mean (SD) size of RRD (clock hours)	5.1 (2.3)	5.7 (2.4)	0.64 [c]
Tamponade type (%) **Air** **SF6** **C3F8** **Silicone Oil**	 0 (0) 28 (40) 42 (60) 0 (0)	 1 (1.4) 23 (32.4) 41 (57.7) 6 (8.5)	0.06 [b]
Vitrectomy gauge **23** **25**	 58 (81.7) 13 (18.3)	 58 (81.7) 13 (18.3)	1.00 [b]

[a] Independent t-test, [b] Chi-square or Fisher's exact test, [c] Mann–Whitney U test

Baseline characteristics of multifocal vs monofocal IOL eyes with RRD

	Multifocal IOL N=71	Control N=71	P-value
3-month SSAS (%)	56 (78.9)	64 (90.1)	0.064 [*]
Overall SSAS (%)	55 (77.5)	63 (88.7)	0.073 [*]
Overall SSAS (%) - PPV only	50 (75.8) N=66	53 (88.3) N=60	0.068 [*]
Overall SSAS (%) – PPV+ SB	5 (100) N=5	10 (90.9) N=11	1.00 [*]
Final anatomical attachment rate (%)	71 (100)	71(100)	1.00 [*]
Presence of SO at final visit	2 (2.8)	1 (1.4)	1.00 [*]
Mean (SD) total number of RRD surgeries	1.28 (0.68)	1.13 (0.37)	0.10 [**]
Mean (SD) follow-up duration, days	773 (588)	793 (565)	0.84 [**]
Mean (SD) baseline logMAR VA, Snellen	0.95 (0.89), 20/178	0.95 (0.92), 20/178	0.84 [**]
Mean (SD) logMAR VA at 6 months, Snellen	0.33 (0.43), 20/43 P<0.001 (compared to baseline) [***]	0.31 (0.38), 20/41 P<0.001 (compared to baseline) [***]	0.79 [**]
Mean (SD) logMAR VA at final visit, Snellen	0.27 (0.34), 20/37 P<0.001 (compared to baseline) [***]	0.28 (0.43), 20/38 P<0.001 (compared to baseline) [***]	0.83 [**]

[*] Chi-square or Fisher's exact test, [**] Mann–Whitney U test, [***] Wilcoxon signed rank test
SSAS, single surgery anatomical success; SO, silicone oil; RRD, rhegmatogenous retinal detachment; LogMAR, Logarithm of the Minimum Angle of Resolution

Anatomical and visual outcomes of multifocal vs monofocal IOL RRD surgery

7/15/2022 03:52 pm

Surgery Symposium 4

Impact of Foveal Status and Timing of Surgery on Visual Outcome in Rhegmatogenous Retinal Detachment

- Zeeshan Haq, MD
- Robert Mittra, MD
- D. Wilkin Parke, MD
- Yoshihiro Yonekawa, MD, FASRS
- Jason Hsu, MD
- Omesh Gupta, MD, MBA
- George Williams, MD
- Gaurav Shah, MD
- Edwin Ryan, MD

Objective:
How does foveal status and timing of surgery affect final visual acuity (VA) in patients with rhegmatogenous retinal detachment (RRD)?

Purpose:
In terms of maximizing VA outcomes, controversy exists regarding the optimal timing of RRD repair based on foveal status, whether on, off, or split. This study sought to address this issue using a large multicenter retrospective database of RRD outcomes.

Methods:
Retrospective data from the Primary RD Outcomes Study was used for this report. Cases were stratified into fovea-on (fovea not involved), fovea-split (fovea involved but not fully detached), and fovea-off (fovea fully detached) groups. Days to surgery was defined as the time between the preoperative examination and surgery. Exclusion criteria included incomplete data, preoperative vision-limiting comorbidities or proliferative vitreoretinopathy, long delay before surgical intervention (> 7 days for fovea-on or fovea-split cases, > 30 days for fovea-off cases), postoperative follow-up < 90 days, and final postoperative lens status > 2+ grade cataract. Chi-square and ANOVA testing were performed with the use of Stata 17.0 ®.

Results:
1675 cases met study criteria and were included in the final analysis. The 3 groups differed in terms of demographics, preoperative characteristics, timing of surgery, and choice of surgical technique (Tables 1 and 2). Overall, 84.2% of fovea-on and 82.1% fovea-split cases had surgery within 1 day and 95.8% of fovea-off cases had surgery within 1 week. The mean length of postoperative follow up was > 1 year and the single surgery anatomic success rate was > 85% for all 3 groups. The mean final postoperative VA was lowest in the fovea-off group (Snellen equivalent [SE] = 20/56 ± 20/76, $p < 0.001$) and did not differ significantly between the fovea-on and fovea-split groups (SE 20/33 ± 20/49 and 20/32 ± 20/39, $p = 1.000$). The mean final postoperative VA was not significantly different based on days to surgery in the fovea-on or fovea-split groups. Within the fovea-off group, however, the mean final postoperative VA was significantly lower in cases where surgery was performed after 2 or more days when compared to cases performed within 1 day (SE 20/74 ± 20/89 vs 20/46 ± 20/63, $p < 0.001$).

Conclusion:
In this study, more than 90% of fovea-on and fovea-split RRDs and 80% of fovea-off RRDs were repaired within 3 days. Fovea-on and fovea-split RRDs demonstrated comparable visual outcomes which were not affected by length of time to surgery. In contrast, fovea-off RRDs demonstrated worse visual outcomes when surgery was delayed by 2 or more days.

IRB APPROVAL No - exempt

Variable	Fovea-on (n = 709)	Fovea-split (n = 151)	Fovea-off (n = 815)	P-value
Mean age, years	57.5 ± 11.7	57.4 ± 13.5	61.0 ± 13.2	< 0.001
Male sex, % (count)	65.3 (463)	59.6 (90)	65.1% (530)	0.389
Mean preoperative VA, logMAR	0.23 ± 0.45	0.47 ± 0.64	1.72 ± 0.98	< 0.001
Lens status, % (count)				0.012
Phakia	58.5 (415)	57.0 (86)	49.9 (407)	
Pseudophakia	40.9 (290)	43.1 (65)	49.2 (401)	
Aphakia	0.6 (4)	0.0 (0)	0.9 (7)	
Vitreous hemorrhage, % (count)				< 0.001
None	74.4 (526)	93.4 (141)	88.8 (722)	
Mild	12.5 (88)	2.7 (4)	4.3 (35)	
Moderate	3.4 (24)	0.7 (1)	0.7 (6)	
Dense	2.3 (16)	0.0 (0)	1.0 (8)	
Degree not specified	7.5 (53)	3.3 (5)	5.2 (42)	
Mean extent of retinal detachment, clock hours	3.9 ± 1.6	4.8 ± 1.6	6.3 ± 2.4	< 0.001
Retinal detachment configuration, % (count)				< 0.001
Superior	62.3 (430)	55.6 (84)	48.3 (387)	
Inferior	25.4 (175)	33.1 (50)	33.8 (271)	
Equal	12.3 (85)	11.3 (17)	18.0 (144)	
Mean # of breaks	1.7 ± 1.1	1.9 ± 1.4	2.0 ± 1.6	< 0.001
Total # of breaks				0.014
0	3.0 (20)	2.8 (4)	2.6 (20)	
1	48.4 (322)	43.4 (62)	39.5 (300)	
> 1	48.6 (323)	53.9 (77)	57.9 (440)	

Demographic and preoperative characteristics of included patients.

Variable	Fovea-on (n = 709)	Fovea-split (n = 151)	Fovea-off (n = 815)	P-value
Mean days to surgery	1.1 ± 1.2	1.2 ± 1.6	2.2 ± 2.6	< 0.001
Median days to surgery (IQR)	1 (0, 1)	1 (0, 1)	1 (1, 3)	
Days to surgery, % (count)				< 0.001
0 days	28.5 (202)	30.5 (46)	18.4 (150)	
1 day	55.7 (395)	51.7 (78)	38.0 (310)	
2 to 3 days	10.2 (72)	9.9 (15)	23.8 (194)	
4 to 7 days	5.6 (40)	8.0 (12)	15.6 (127)	
> 7 days	-	-	4.2 (34)	
Surgical technique				< 0.001
Scleral buckle	20.2 (143)	19.9 (30)	10.1 (82)	
Pars plana vitrectomy	54.4 (386)	48.3 (73)	53.9 (439)	
Scleral buckle and pars plana vitrectomy	25.4 (180)	31.8 (48)	36.1 (294)	
Mean length of follow up, days	398.6 ± 157.1	391.4 ± 158.4	393.8 ± 160.6	0.795
Single surgery anatomic success, % (count)	89.0 (631)	89.4 (135)	86.1 (702)	0.188
Mean postoperative VA, logMAR	0.22 ± 0.39	0.20 ± 0.29	0.45 ± 0.58	< 0.001
Mean postoperative VA by days to surgery, logMAR				
< 1 day	0.20 ± 0.32	0.20 ± 0.32	0.33 ± 0.47	0.007
1 day	0.22 ± 0.41	0.17 ± 0.23	0.38 ± 0.52	< 0.001
2 to 3 days	0.24 ± 0.43	0.17 ± 0.19	0.53 ± 0.67*	< 0.001
4 to 7 days	0.26 ± 0.41	0.38 ± 0.53	0.60 ± 0.63*	0.005
> 7 days	-	-	0.68 ± 0.62*	

Outcomes data for included patients.