

External Drainage of Subretinal Fluid During Rhegmatogenous Retinal Detachment Repair

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Summary

- Rhegmatogenous retinal detachment repair with external drainage of subretinal fluid utilizing a 28-gauge External Drainage and Depression device is both efficacious and safe
- The single operation success rate was high at 97%
- Complication rates were low with no cases of retinal incarceration and only 2 cases (2%) of subretinal hemorrhage at the drainage site (<2DD and clinically insignificant)
- ERM developed in 6 patients (7%), 3 of which were mild



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Introduction

- During pars plana vitrectomy for rhegmatogenous retinal detachment repair, subretinal fluid is typically drained from an internal approach
- External drainage is classically used for scleral buckling through a scleral cut down
- External needle drainage under direct visualization was first described by Charles in 1985¹

234

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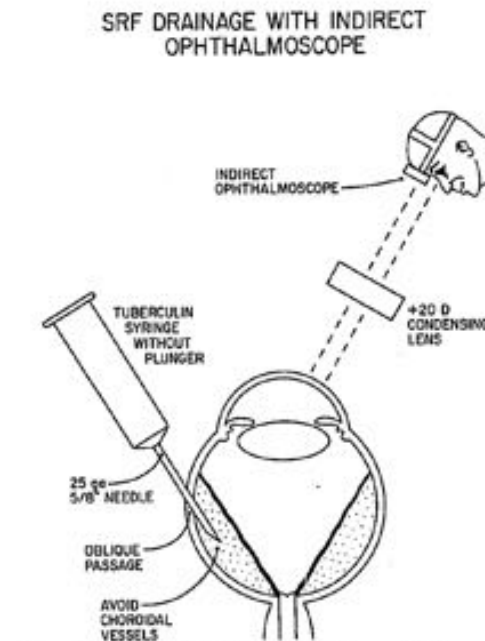


Fig. 1. Subretinal fluid drainage with indirect ophthalmoscope.

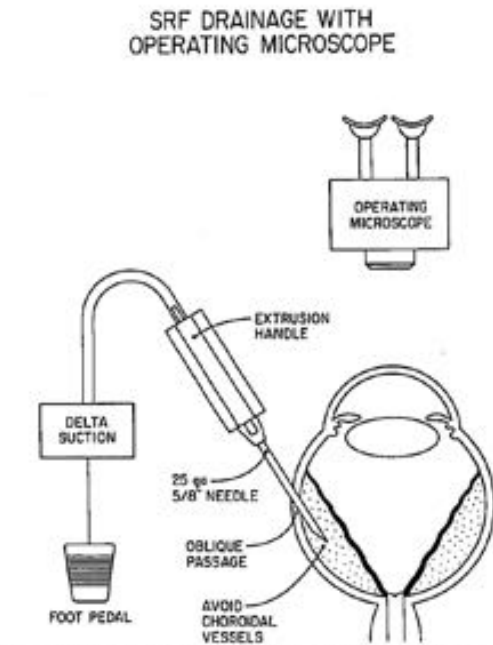


Fig. 2. Subretinal fluid drainage with operating microscope.



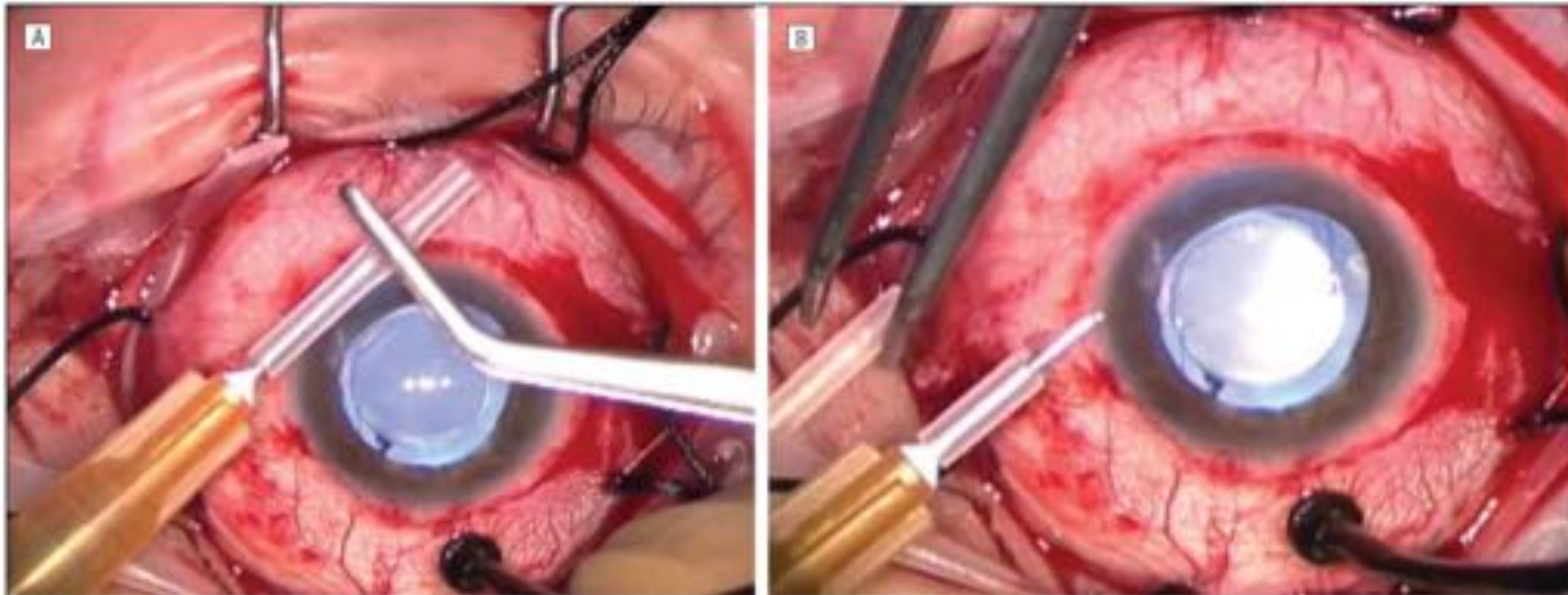
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Introduction

- A modified version of this using a “guarded needle” fashioned from a 26-gauge needle with a 270 scleral buckle sleeve to prevent over-penetration was proposed by Kitchens in 2011²



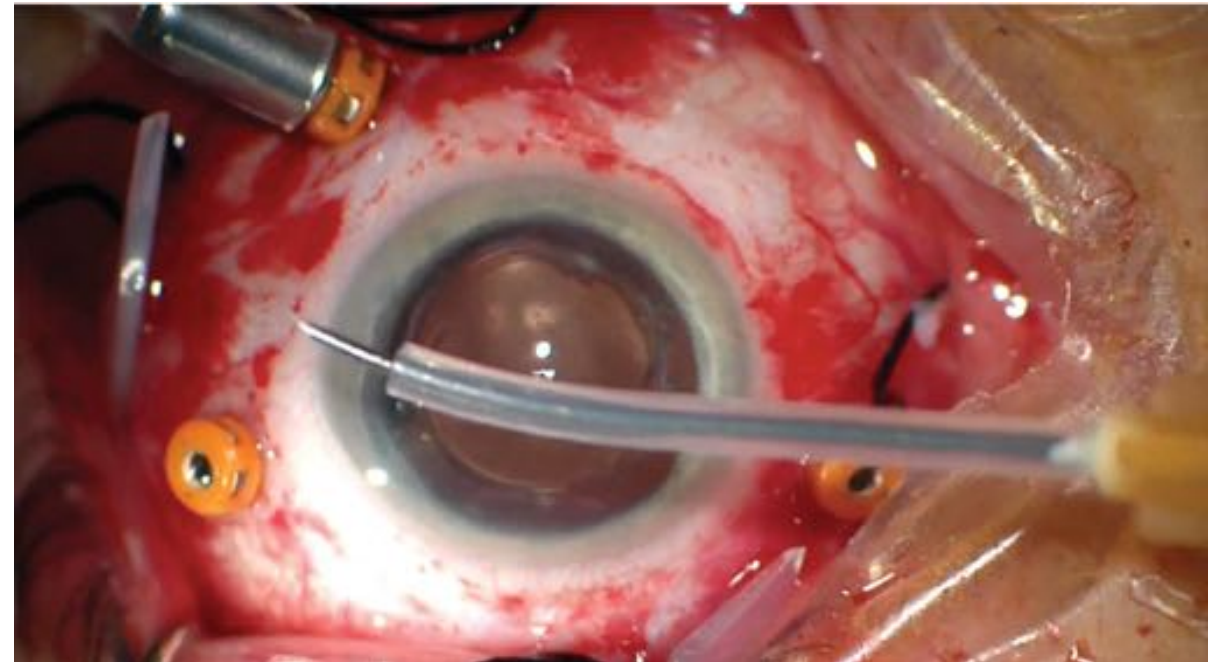
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Introduction

- Recently Su et al. reported on a 6 cases of external drainage of subretinal fluid during PPV using a commercially available guarded needle³
- Their series demonstrated the potential safety of this procedure as there were no cases of subretinal or choroidal hemorrhage and no retinal incarceration
- The authors suggest this method may be beneficial in very bullous detachments and theorize that externally draining subretinal fluid which contains liberated RPE cells and inflammatory milieu, may reduce the risk of PVR by not allowing it to contact the vitreous cavity



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Introduction

- Purpose:
 - To describe the safety and efficacy of rhegmatogenous retinal detachment (RRD) repair with external drainage of subretinal fluid (SRF) utilizing a 28 gauge External Drainage and Depression device (EDD, #VS0290, Vortex Surgical®, Chesterfield, MO)



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Introduction

- Dimensions:
 - 1.3 inch depressor length
 - 0.086 inch depressor diameter
 - 28-gauge retractable needle
 - 2.4 mm exposed needle
 - 2 inches extension tubing

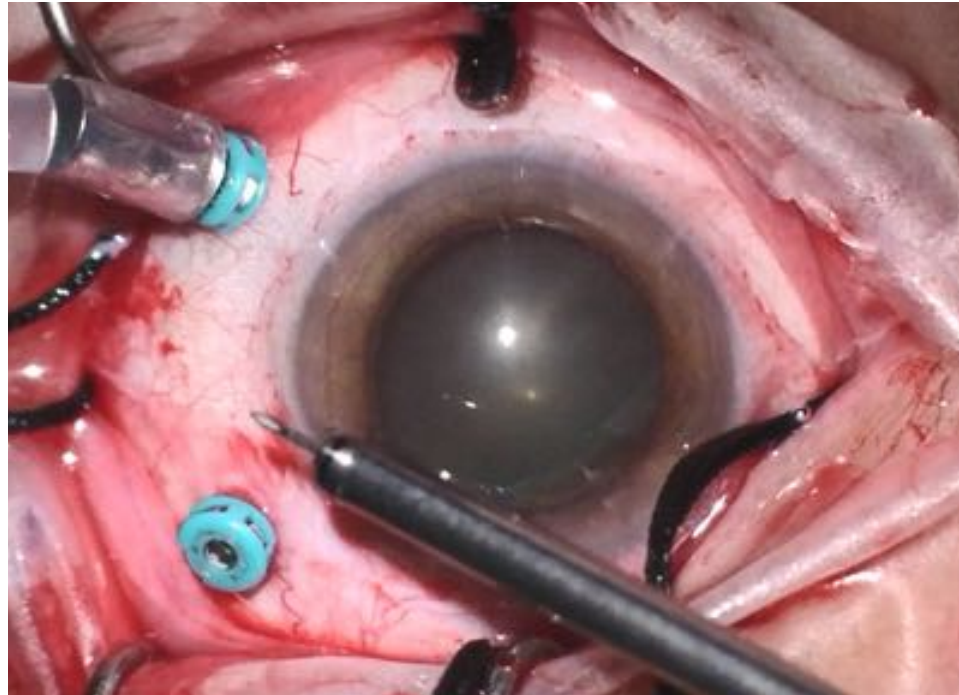


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PPV + SB



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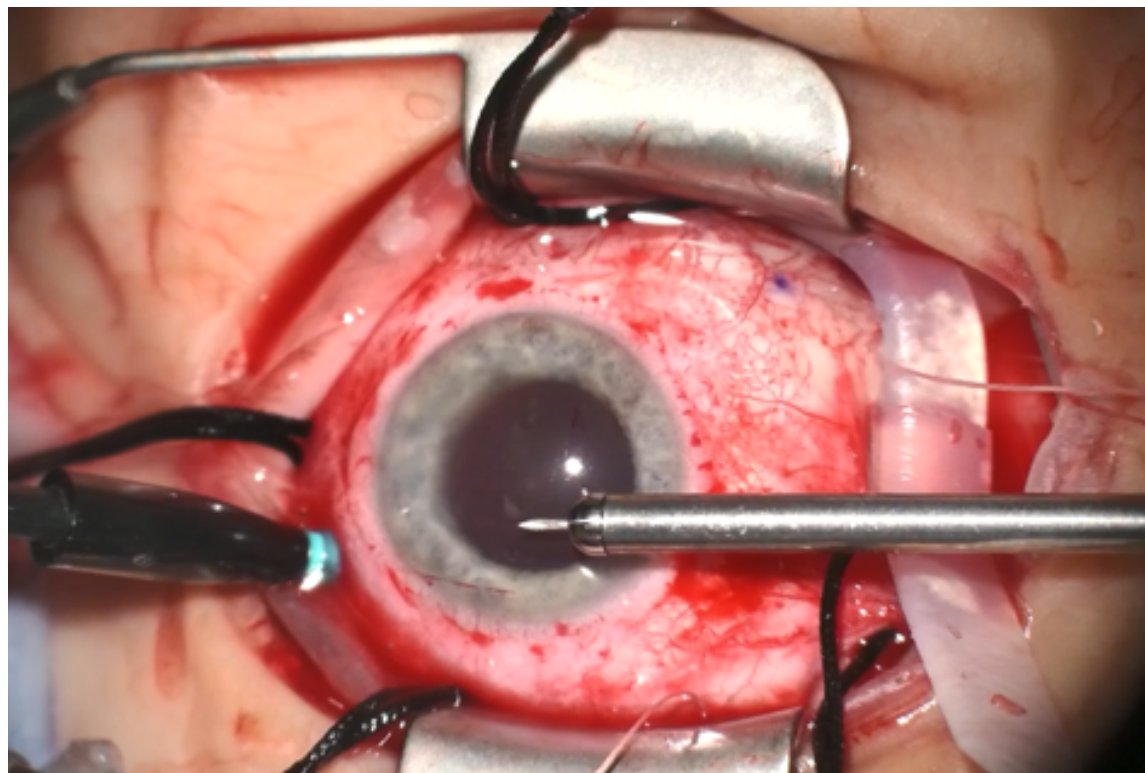


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Scleral Buckle

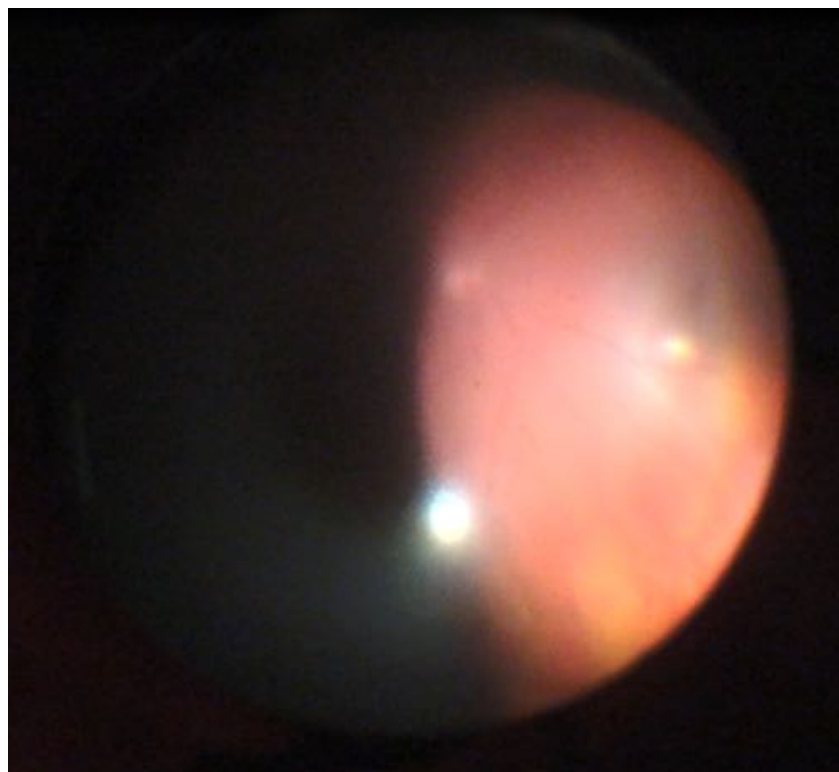


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Scleral Buckle



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Methods

- Retrospective consecutive case series
- All patients undergoing SB, PPV, or SB/PPV utilizing the EDD
- 4 surgeons at 2 vitreoretinal practice
- August 2018 – March 2020
- Data: Demographics, details of the RRD, surgical procedure, complications, development of proliferative vitreoretinopathy (PVR) and single operation success rate (SOSR)
- Cases with PVR at presentation were not excluded



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Baseline Characteristics

	N = 83
Female	27 (33%)
Right eye	37 (45%)
Mean age (yrs)	63.5
Duration of symptoms, days, mean (median)	18 (14)
Macula involving	48 (58%)
Macula sparing	26 (31%)
Macula splitting	9 (11%)
PVD	77 (93%)
Vitreous hemorrhage	4 (5%)
ERM	15 (17%)
PVR grade B or C	23 (28%)



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Surgery Details

	N = 83
SB	3 (4%)
PPV	27 (33%)
SB/PPV	53 (64%)
SF6	23 (28%)
C3F8	59 (71%)
Silicone Oil	1 (1%)
Drainage retinotomy	29 (35%)
Perfluorocarbon liquid	0
Retinectomy	0



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Outcomes

	N = 83
Average followup, days	136 (range 1-552)
> 1 month followup	74 (90%)
SOSR	72/74 (97%)
Subretinal hemorrhage at drain	2 (2%)
Retinal incarceration at drain	0
ERM formation	6 (7%)



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Outcomes

- 2 patients developed subretinal hemorrhage at the drainage site, both < 2 disc diameters and clinically insignificant
- No cases of retinal incarceration at the drainage site
- 6 patients developed ERM, 3 of which were mild
- 2 patients developed recurrent PVR detachments
 - First patient – failed initial laser barricade, initial surgery presented with macula involving RD with a single breaks and grade B PVR, underwent PPV with C3F8 gas tamponade, and required posterior drainage retinotomy
 - Second patient – initially presented with a macula involving RD with vitreous hemorrhage, two breaks and no PVR, the patient was symptomatic for 21 days. They underwent PPV with C3F8 gas tamponade



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Conclusions

- Utilization of a device for external drainage of SRF during RRD repair demonstrated a favorable safety profile
- The single operation success rate was high at 97%
- Further comparative studies are warranted to investigate the role of external drainage in RRD repair



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References

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