

Safety and efficacy of Densiron®68 for challenging retinal detachments



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Background

- Silicone oil is used as an endotamponade in the management of retinal detachments (RDs), especially those complicated by advanced proliferative vitreoretinopathy (PVR), giant retinal tears (GRT) or those secondary to trauma.¹
- The Silicone Study demonstrated significantly better anatomic and visual outcomes with conventional silicone oil versus sulfur hexafluoride (SF6) in RDs with PVR, but also significantly greater intraocular pressure (IOP) elevation.²
- Densiron®68, a heavy silicone oil, offers promising anatomic and functional outcomes in complicated RDs.³⁻⁸ However, some studies have reported higher rates of complications, including emulsification, IOP elevation or glaucoma, inflammatory reaction, cataract formation, and retinal fibrosis.³⁻¹⁵
- Given the paucity of literature, it is difficult to establish the safety and efficacy of Densiron®68 relative to gas tamponades in complicated RDs.





Purpose

Our study investigates both the short and long-term safety and efficacy of Densiron®68 in the management of complicated RDs.

Methods

- Retrospective, comparative case series of RDs that underwent pars plana vitrectomy (PPV) with Densiron®68, SF6, or perfluoropropane (C3F8) by a single vitreoretinal surgeon at Toronto Western Hospital between January 2017 and November 2020.
- Primary outcomes were anatomic success (re-attachment of the retina); change in logMAR visual acuity (VA) from baseline to last follow-up; and complication rates.

Results

		Densiron®68 (n=121) ¹	SF6 or C3F8 (n=81)	P-value
 Baseline Parameters	Age, years	63.0 ± 14.5	62.0 ± 12.0	0.4277
	Previous retinal detachment	77 (63.6%)	10 (12.4%)	<0.0001*
	Pre-operative logMAR VA; median (IQR)	1.3 (0.3-2.3)	1 (0.1-2.3)	0.2656
	Pre-operative lens status, phakic	68 (56.2%)	34 (41.9%)	0.0435*
 Surgical Parameters	Scleral buckle	17 (14.1%)	14 (17.3%)	0.5319
	Phaco-vitrectomy	6 (4.9%)	3 (3.7%)	0.7432
	Extent of retinal detachment	6.9 ± 3.0	5.5 ± 2.2	0.0038*
	Inferior retinal detachment	79 (83.2%)	31 (40.8%)	<0.0001*
	Total number of breaks	2.7 ± 2.4	3.1 ± 1.9	0.0416
 Post-operative Success	Inferior breaks	1.9 ± 1.5	0.5 ± 0.5	<0.0001*
	Post-operative logMAR VA; median (IQR)	0.7 (0-2.3)	0.3 (0-1)	<0.0001*
	Median change in logMAR VA from baseline	-0.6 (p<0.001*)	-0.7 (p<0.001*)	
	Post-operative lens status, phakic	23 (20.9%)	26 (32.1%)	0.0801
 Post-operative Complications	Final anatomic success	90.9%	98.8	0.0261*
	Persistent subretinal fluid	30 (25.4%)	9 (11.3%)	0.0174*
	Epiretinal membrane	10 (8.5%)	11 (13.9%)	0.2456
	Cystoid macular edema	6 (5.1%)	6 (7.6%)	0.5487
	Elevated intraocular pressure (IOP, >20)	12 (10.3%)	8 (10%)	1
	New cataract	12 (10.2%)	25 (30.9%)	0.0003*

¹ Densiron®68 was removed after a median period of 70 (IQR: 48.5-105.5) days.

* indicates significance (p<0.05)

Discussion

- There was greater anatomic success in the gas group than the Densiron®68 group. However, the gas group included significantly fewer eyes with a prior history of RD and inferior RDs than the Densiron®68 group. The change in logMAR VA from baseline were similar in both groups.
- There was a significant improvement in VA from baseline in both the Densiron®68 and gas groups. The change in postoperative VA from baseline was significantly greater in the gas group than Densiron®68 group. This was likely due to a significantly greater anatomic success rate and a significantly lower number of eyes with persistent subretinal fluid in the gas group as compared to the Densiron®68 group.
- The rate of complications in the Densiron®68 group were low, and not significantly greater than the gas group. The rate of cataract formation was significantly lower in the Densiron®68 group than the gas group, despite having a significantly greater number of phakic eyes at baseline.
- Overall, Densiron®68 is a promising endotamponade agent with similar anatomic success and functional improvements as SF6 and C3F8, and low rates of complications.



References
Disclosures