Predicting Silicone Oil-related Visual Loss: A BOSU Study

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Introduction

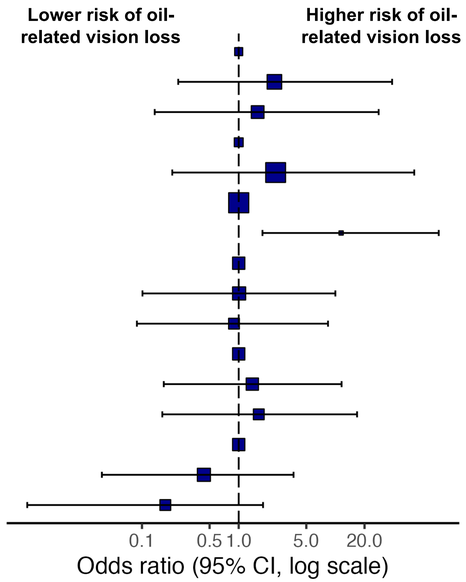
- Silicone oil-related visual loss (SORVL) is an uncommon but important complication of silicone oil tamponade for primary retinal detachment.
- Its incidence and predictors remain elusive.
- We aimed to identify these factors in a British Ophthalmological Surveillance Unit (BOSU) study.

Methods

- We undertook a two-year prospective, nationwide observation of SORVL cases identified through the BOSU monthly reporting system. Data collection was stopped after one year due to the COVID pandemic.
- We included adults who:
  - underwent primary pars plana vitrectomy with silicone oil endotamponade for rhegmatogenous retinal detachment (RRD),
  - experienced unexplained vision loss of ≥2 Snellen lines at the time of oil removal or worsen of BCVA to less than 6/60 Snellen with oil in situ.
- We used baseline and 8-month questionnaires to identify factors associated with SORVL and compared them to a control group of 50 patients.
- We estimated comparable uneventful procedures in the UK over the data collection period using Hospital Episode Statistics and the BEAVRS VR outcomes database.

Foveal sparing increases silicone oil related visual loss risk at least two-fold: **artifact or genuine risk?**

Age (years)	<50	-
	50 to 70	2.34 (0.24-38.56, p=0.493)
	≥70	1.57 (0.14-27.99, p=0.730)
Sex	F	-
	M	2.41 (0.21-65.32, p=0.517)
Macula status	Off	-
	On	11.46 (1.76-116.96, p=0.017)
IOP (mmHg)	<20	-
	20 to 30	1.01 (0.10-9.98, p=0.993)
	≥30	0.89 (0.09-8.38, p=0.920)
Duration of oil (months)	≤4	-
	4 to 6	1.38 (0.17-11.58, p=0.756)
	>6	1.61 (0.16-16.74, p=0.675)
BCVA before ROSO (logMAR)	<0.6	-
	0.6 to 0.9	0.44 (0.04-3.69, p=0.463)
	≥0.9	0.17 (0.01-1.79, p=0.191)



♦ Age, sex, IOP, perfluorocarbon liquid use, duration of oil, and baseline visual acuity were ***not*** significantly associated with risk of silicone oil-related visual loss.

♦ Insufficient data exists to establish a link between silicone oil type and risk of silicone oil-related visual loss.

Results

- 14 cases of SORVL were identified, all occurring at the time of oil removal.
- The estimated national incidence of SORVL in patients with RRD treated with silicone oil was 2.7%.
- Patients had a median Snellen BCVA of 6/19 before and 6/60 after SORVL.
- Patients were predominantly male, with a median age of 62 years.
- Risk of SORVL was associated with macula-on RRD status (*P*=0.025).
- Our study was underpowered to detect any significant associations with other factors.

Conclusions

- SORVL is an uncommon but severe complication of retinal detachment surgery, with a 2.7% national incidence.
- It remains unclear whether SORVL is a patient- or product-related problem.
- Future research should focus on identifying the components of silicone oil most likely to cause retinal toxicity.

References

- Newsom RS, et al. Sudden visual loss after removal of silicone oil. Retina. 2004;24:871-7.
- Cazabon S, et al. Visual loss following removal of intraocular silicone oil. Br J Ophthalmol. 2005;89:799-802.
- Moya R, et al. The incidence of unexplained visual loss following removal of silicone oil. Eye. 2015;29:1477-82.
- Scheerlinck LM, et al. Incidence, risk factors, and clinical characteristics of unexplained visual loss after intraocular silicone oil for macula-on retinal detachment. Retina. 2016;36:342-50.

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