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Spherical Refractive Correction After Silicon Oil Infusion In Retinal Detachment Surgery Patients

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Abstract

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Introduction

Clinical usage of silicon oil in treating retinal detachment was 1st introduced by Paul cibis in 1960.

Silicone is made up of repeating units of siloxane that is it consist of silicon and oxygen molecule.

Silicon oil is of two types heavier than water contains polymethylsiloxane and semiflurinated alkanes and lighter than water(i.e. conventional SOs)contains polydimethylsiloxane.

Properties Of Silicon Oil:

1. Silicon Oil provides retinal tamponade, acting as a vitreous substitute.
2. Specific gravity of lighter silicon oil is 0.97.
3. Silicon oil bubble size and shape determines the effectiveness of bubble
4. To achieve a good tamponade effect in RD it is important to fill 100% by silicon oil.
5. When interfacial tension is above 6 mN/M, the oil bubble remains intact
6. Silicon oil used are: 1000cst, 2000cst, 5000cst
7. Indications are:
    1. RD with PVR
    2. Giant Retinal Tears
    3. Severe PDR
    4. Viral retinitis
    5. RD a/w choroidal coloboma
    6. Endopthalmitis

Aims And Objectives:

1. To study spherical refractive correction due to SOI (1000cst) in retinal detachment patients.
2. Comparison of spherical correction in different case scenarios(phakic vs pseudophakic; myopic vs hypermetropic).
3. To study visual outcome (in logMAR) in RD patients according to various PVR types

Materials And Methods:

1. It is a Retrospective study
2. Study duration - 1 year(january 2018- january 2019).
3. Source of data – From hospital records
4. Outcome: BCVA measured at 6 weeks of follow up.
5. 44 RD petients who underwent silicon oil infusion surgery were taken; grouped into phakic vs pseudophakic , myopic vs hypermetropic and PVR group B,C,D.
6. Preoperative vision (logMAR)were taken and postop vision (UCVA & BCVA)(logMAR)taken
7. BCVA were done by using spherical refraction were taken
8. Spherical refraction was compared amongst grouped patients.

Inclusion Criteria

All patients underwent silicon oil infusion surgery of either sex and above 10 years of age with attached retina

Exclusion Criteria

1. Less than 10 years of age
2. Pre-existing corneal opacity
3. Macular degeneration
4. Glaucoma, uveitis patients
5. Simultaneous IOL + SOI surgeries
6. Optic atrophy
7. Scleral buckling surgeries

Results

Pseudophakic	Phakic	Myopic + Pseudophakic	Myopic + Phakic	Hypermetropic + Pseudophakic	Hypermetropic+ + Phakic
29	15	21	10	08	05

SR NO	AGE GROUP	SAMPLE SIZE
1	10-20	01
2	20-30	03
3	30-40	03
4	40-50	11
5	50-60	12
6	60-70	11
7	70-80	03

FEMALE	MALE
15	29

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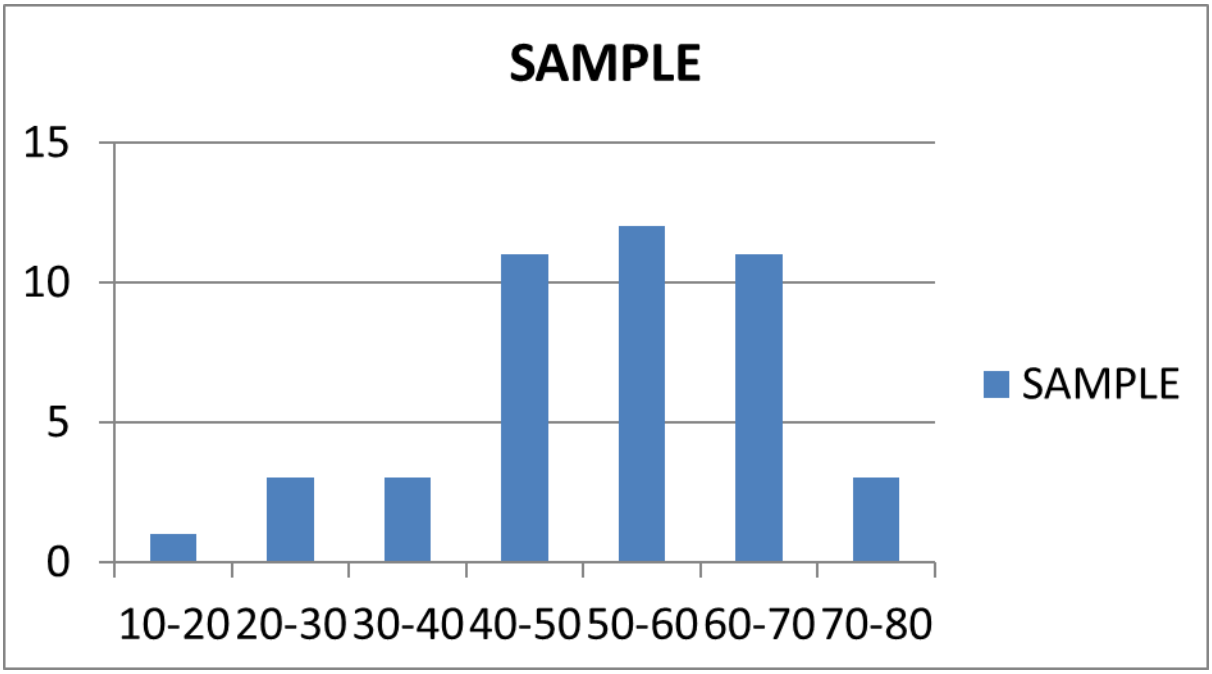

VISION (logMAR) (AVERAGE)	Phakic		Pseudophakic	
	LogMAR	Snellen	LogMAR	Snellen
Preop vision	3.07	HM	3.15	HM
Postop UCVA	1.07	6/60	1.48	3/60
Postop BCVA	0.6	6/24	0.5	6/18
Average spherical refraction (dioptre)	+7.7 D		+4.7 D	

VISION (LogMAR)	MYOPIC		HYPERMETROPIC	
	LogMAR	Snellen	LogMAR	Snellen
Preop vision	3.37	HM	3.57	HM
Postop UCVA	1.5	3/60	1.7	CF
Postop BCVA	0.7	6/36	0.6	6/24

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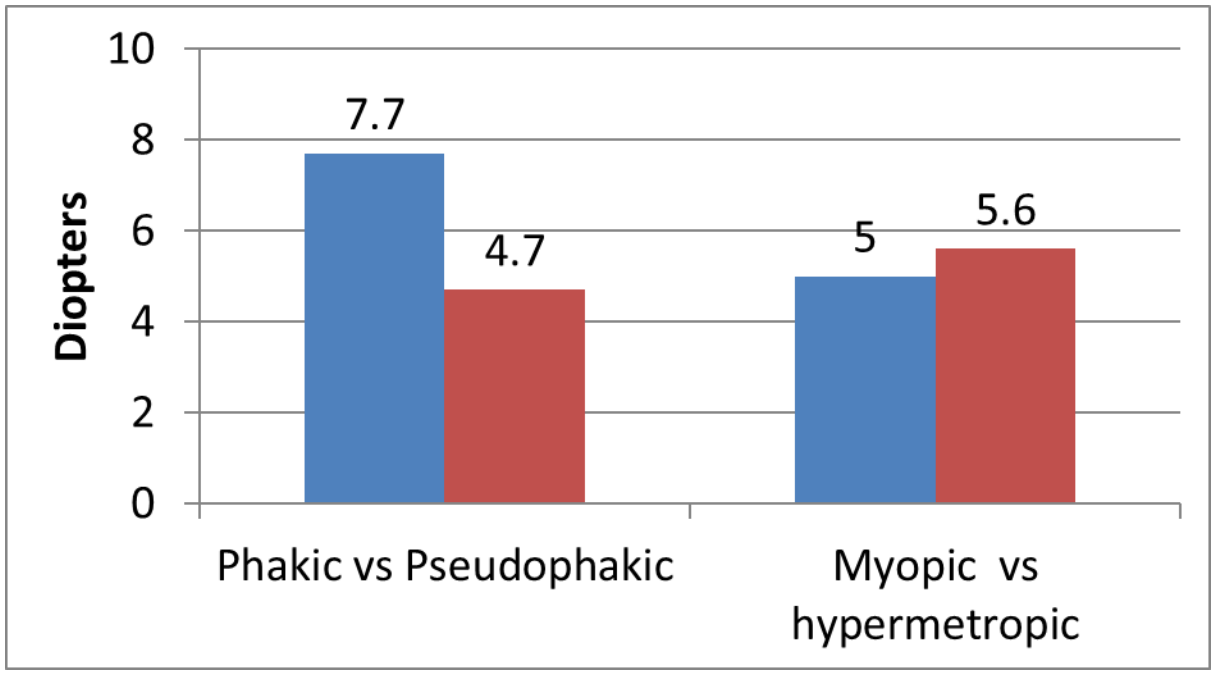
Average spherical refraction	+5D		+5.6D	



VISION (logMAR)	Grp. B		Grp. C		Grp. D	
	LogMAR	Snellen	LogMAR	Snellen	LogMAR	Snellen
Preop vision	2.84	HM	3.21	HM	3	HM
Postop UCVA	1.16	3/60	1.62	CF	2	CF
BCVA	0.31	6/12	0.68	6/24	0.92	6/60

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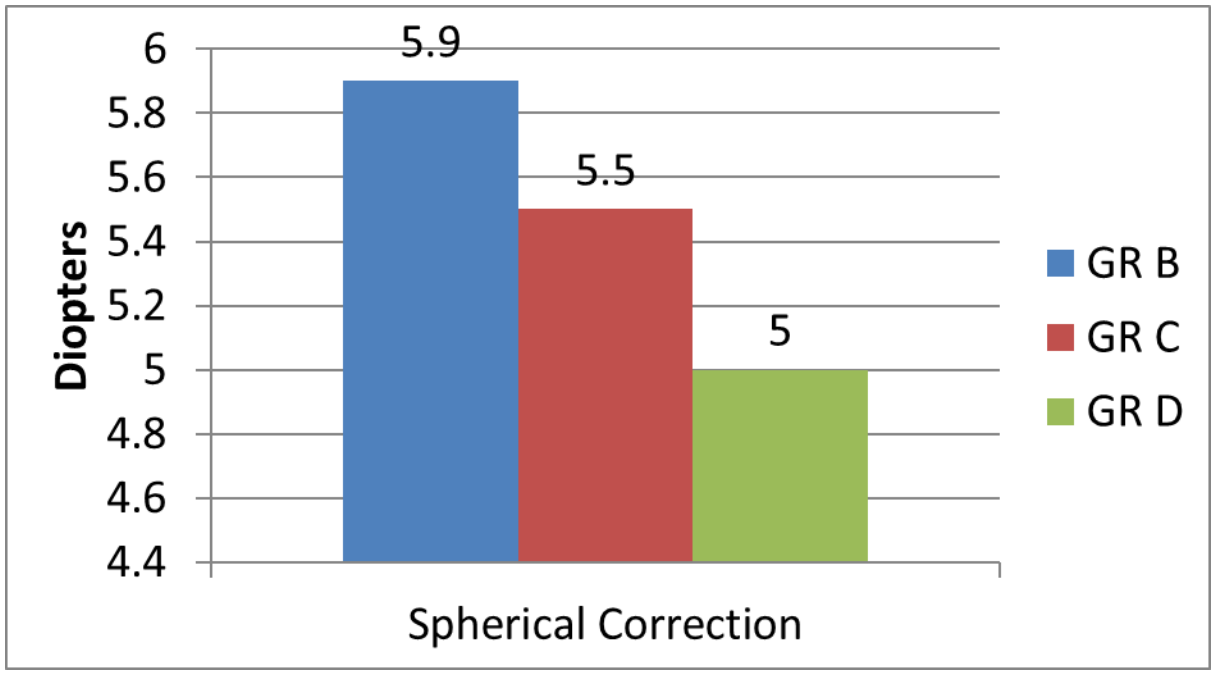
Average spherical refraction	+5.9D		+5.5D		+5D	



Sr. no	study	conclusion	Comparison to my study
1	Smith	+5.57d hyperopic shift in phakic group	+7.7d hyperopic shift in phakic group
2	Steffanson	+5-7d hyperopic changes in phakic group	+7.7d hyperopic shift in phakic group
3	Mohammad	In phakic and pseudophakic +4.38d and +4.40d hyperopic shift respectively	+7.7d hyperopic shift in phakic group and +4.7d in pseudophakic
4	Pillai	+6d hyperopic shift in phakic group	+7.7d hyperopic shift in phakic group

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Conclusion :

1. The phakic eyes become more hyperopic than pseudophakic eyes after silicon oil infusion.
2. Hypermetropic eyes become more hyperopic than myopic after silicon oil infusion.
3. And in PVR group all classes(B,C,D)have similar spherical correction.

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