EVALUATION OF CORNEAL ENDOTHELIAL CELL CHANGES AFTER VITREORETINAL SURGERY USING DIFFERENT ENDOTAMPONADES

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Introduction

A pre-operative clinical estimate of EC using specular microscopy can provide data regarding ECD and morphology, thus facilitating assessment of the functional reserve of the endothelium in individual patients. This analysis provides a measure of the general health of the corneal endothelium, which is important before any intraocular surgery and provide a baseline to predict post-operative outcomes of corneal state that influence patients' visual outcomes.
As an intraocular surgery, vitreoretinal surgery is associated with EC changes. During surgery, factors as intraocular irrigation solution and operation time may affect the corneal endothelium. Also, furthermore damage may be related to the used tamponade.

Aim of the work

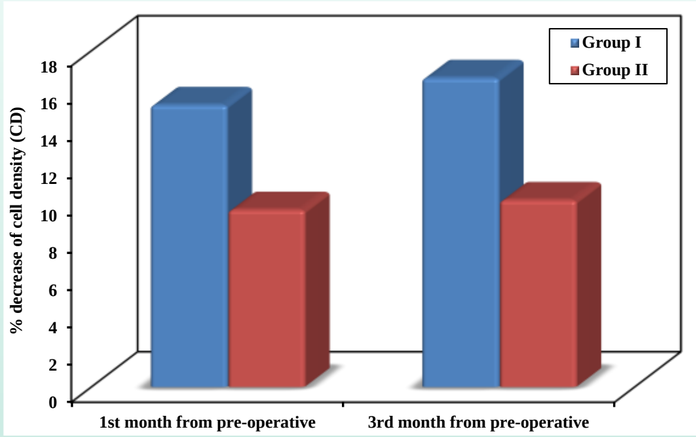
The aim of this study was to evaluate the corneal endothelial cell changes after pars plana vitrectomy operations and to compare the results using different types of tamponades (silicon oil and SF6 gas).

Subjects and Methods

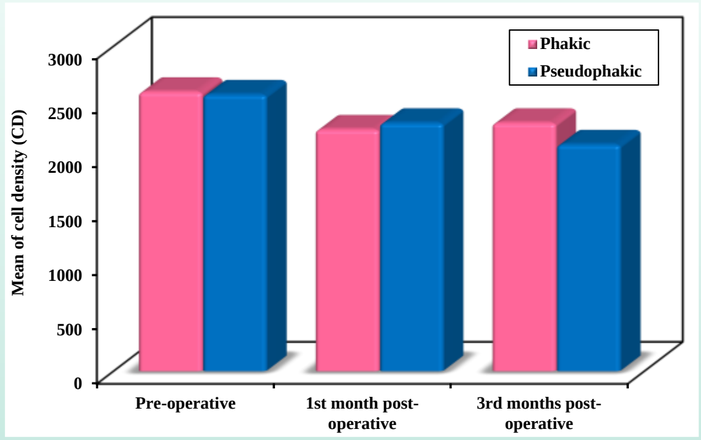
This prospective study consisted of 50 eyes of patients undergoing pars plana vitrectomy surgery. The patients were assigned into two groups according to the retinal tamponade used:
Group **I** were silicon oil filled, and Group **II** were SF6 gas filled.
Central corneal endothelial cell density (ECD), central corneal thickness (CCT), mean cell density (MCD) and mean cell area (MCA), and coefficient of variation (polymegathism) and cell shape (polymorphism) were measured using a non contact specular microscope, preoperative, one month and three month postoperatively.

Results

There was a statistically significant difference between the two groups as regard preoperative mean endothelial cell density by mere coincidance. There was a statistically significant difference between the two groups as regard percent reduction in endothelial cell density over the 3-month follow up period with more reduction in silicone oil group. EC loss over the 3-months follow-up period was statistically significant in phakic and pseudophakic patients with more reduction in pseudophakic group.



Comparison between the two studied groups according to % decrease cell density (ECD) in each period.



Relation between lens status and cell density (ECD) in total sample (n = 50)

Conclusion

Pars plana vitrectomy is associated with corneal endothelial cell changes in the form of EC loss, pleomorphism and polymegathism.
Silicone oil induces more endothelial cell loss, more reduction in hexagonality and more increase in co-efficient of variation than SF6 gas.
Endothelial cell loss in the pseudophakic patients is greater than the phakic patients.