

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you 'Ophthalmal Focus' which contains latest and interesting news in the field of Ophthalmology.

This issue contains

- Comparison of the optical quality after SMILE and FS-LASIK for high myopia by Optical Quality Analysis System and iTrace analyser
- Retinal oxygen saturation and choroidal volume on postoperative outcome in patients with Epiretinal membrane.
- Bilateral Ampiginuous Choroiditis following Presumed SARS-CoV-2 Infection- A Case Report

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited

Comparison of the optical quality after SMILE and FS-LASIK for high myopia by Optical Quality Analysis System and iTrace analyser

Background: High myopia has widely existed in the general population. Patients with high myopia choose surgery to correct the refractive errors. In the field of corneal refractive surgery, both smallincision lenticule extraction (SMILE) and femtosecond laser assisted laser in situ keratomileusis (FS-LASIK) have been extensively used.

Objective: To evaluate the optical quality objectively in high myopia correction after SMILE and FS-LASIK by simultaneously applying the Optical Quality Analysis System (OQAS) and iTrace analyzer.

Methods: In this retrospective study, clinical data of the right eyes of 100 subjects with high myopia were collected. Group A- 51 eyes underwent small-incision lenticule extraction (SMILE) surgery and group B- 49 eyes underwent FS-LASIK. For optical quality inspection the Optical Quality Analysis System (OQAS) and iTrace analyzer were used. The treatment center was the corneal vertex and no particular adjustments were performed to the manufacturer's nomograms in the SMILE and FS-LASIK surgery. At 1, 6, 12 months after surgery, including the slit-lamp examination, the eyesight test using the standard logarithmic visual acuity chart and snellen visual acuity chart, the manifest refraction, the OQAS examination and iTrace analyser examination was performed.

Results: There were no significant differences between the two groups in terms of age, preoperative and postoperative spherical equivalent (SE) and astigmatism. After SMILE and FS-LASIK, both SE and astigmatism significantly decreased. In both the groups there was no significant differences in SE and astigmatism at each point of time, and no significant differences in SE and astigmatism's variation before and after the operation were found. Until the 12th month in both groups the preoperative uncorrected distant visual acuity (UDVA) had no

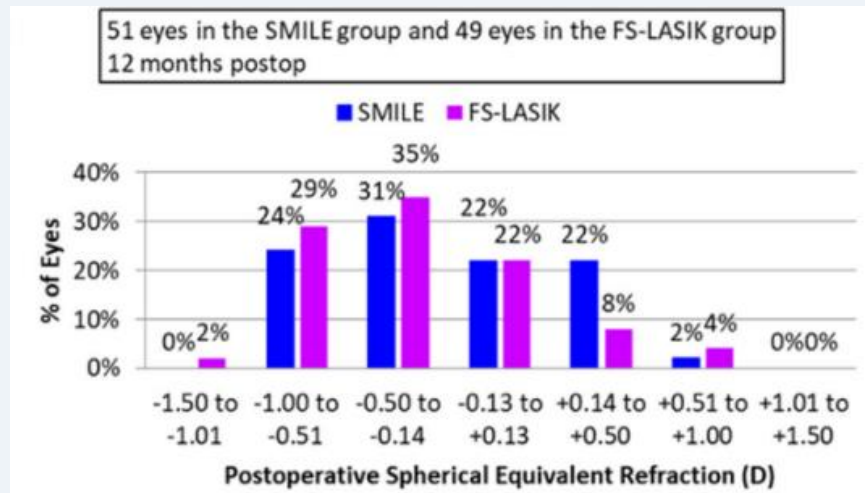
significant difference and increased significantly after operation. SR and MTF cutoff were significantly higher after SMILE than FS-LASIK. OSI was significantly lower after SMILE than FS-LASIK.

In both groups, The total wavefront aberration, total low-order wavefront aberration, defocus and

astigmatism aberration, trefoil aberration reduced significantly. Spherical and coma aberration increased in both the groups.

Conclusion: The data showed that both SMILE and FS-LASIK could improve the visual acuity of the subjects with high myopia. The optical quality descended after SMILE and FS-LASIK. SMILE was superior to FS-LASIK at the correction effect and optical quality for high myopia. The combined application of Optical Quality Analysis System and iTrace analyzer is a valuable complementary measurement in evaluating the optical quality after the refractive surgery.

Reference: Yin Y, Lu Y, Xiang A, Fu Y, Zhao Y, Li Y, Hu T, Du K, Hu S, Fu Q, Wu X. Comparison of the optical quality after SMILE and FS-LASIK for high myopia by OQAS and iTrace analyzer: a one-year retrospective study. BMC ophthalmology. 2021 Aug;21(1):1-0.



Retinal oxygen saturation and choroidal volume on postoperative outcomes in patients with epiretinal membrane

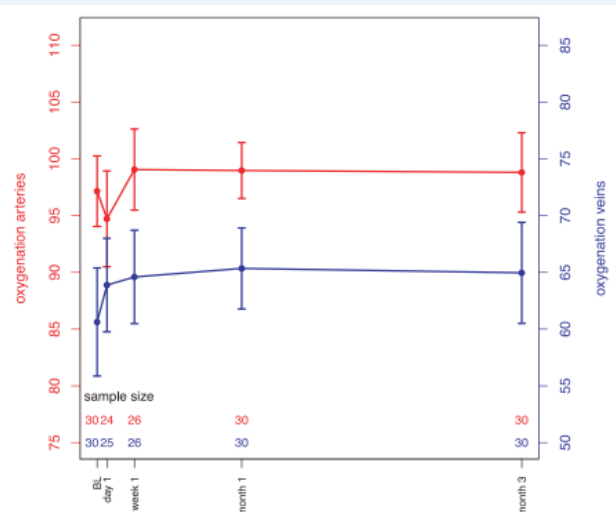
Background: Epiretinal membrane (ERM) is a non-vascular fibrocellular proliferation that develops on the surface of the internal limiting membrane (ILM) which results in wrinkling and distortion. This leads to disturbed visual function such as metamorphopsia and reduced visual acuity.

Objective: To assess the effects of vitrectomy with or without same time cataract surgery and membrane plus internal limiting membrane peeling (MP+ILMP) on retinal oxygenation and choroidal volume and their role on postoperative outcome.

Methods: In this study, 32 subjects underwent vitrectomy with removal of the Epiretinal membrane (ERM) and dye assisted internal limiting membrane (ILM) peeling. In 14 of the included subjects, cataract surgery was performed. At

day 1, day 7, 4 weeks and 12 weeks after surgery using the commercially available

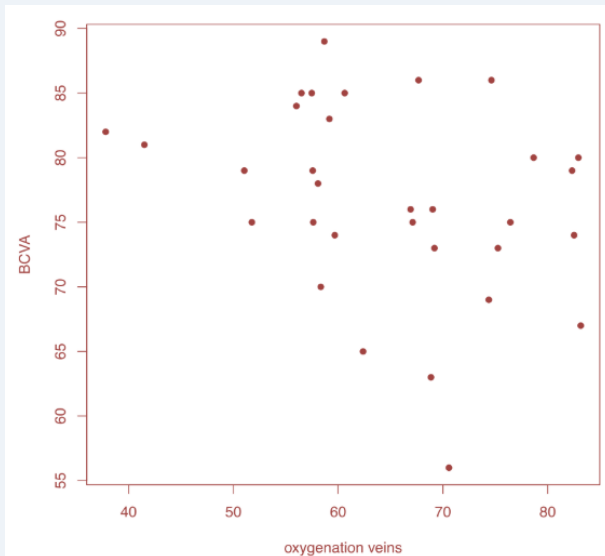
Oxymap T1 the measurements of retinal oxygen saturation and vessel diameters were performed. Best corrected visual acuity (BCVA) using ETDRS charts, central retinal thickness (CRT) and choroidal volume (CV) using a high-resolution OCT were evaluated.



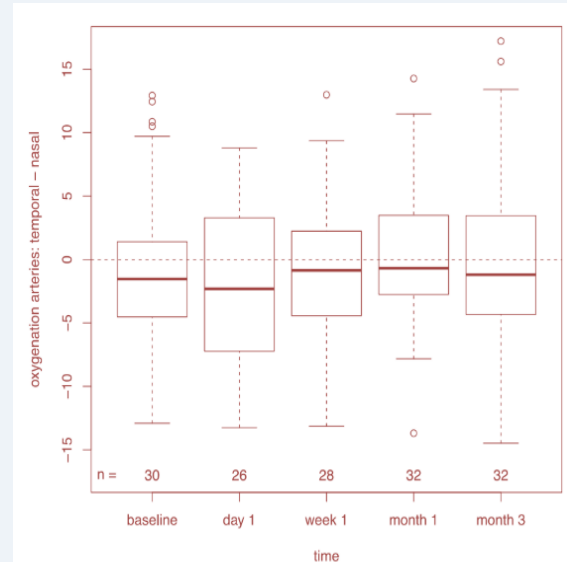
Mean values with 95% confidence limits of oxygenation of the retinal arteries (red) and retinal veins (blue) over time.

Results: Mean BCVA increased from 73 ± 11 letters to 77 ± 7 letters at month 3. Mean CRT decreased from $456 \pm 84 \mu\text{m}$ at baseline to $418 \pm 58 \mu\text{m}$. Oxygenation of retinal veins significantly increased compared to baseline starting at month 1. There was no statistically significant difference in choroidal

volume or oxygenation of retinal vessels between groups, cataract surgery versus vitrectomy alone. There was a significant negative correlation between visual acuity and oxygenation of retinal veins. There was no statistically significant effect of choroidal volume at baseline on postoperative clinical outcomes.



Scatter plot of visual acuity (BCVA) and oxygenation of retinal veins.



Boxplots of the difference of oxygenation of retinal arteries between temporal and nasal

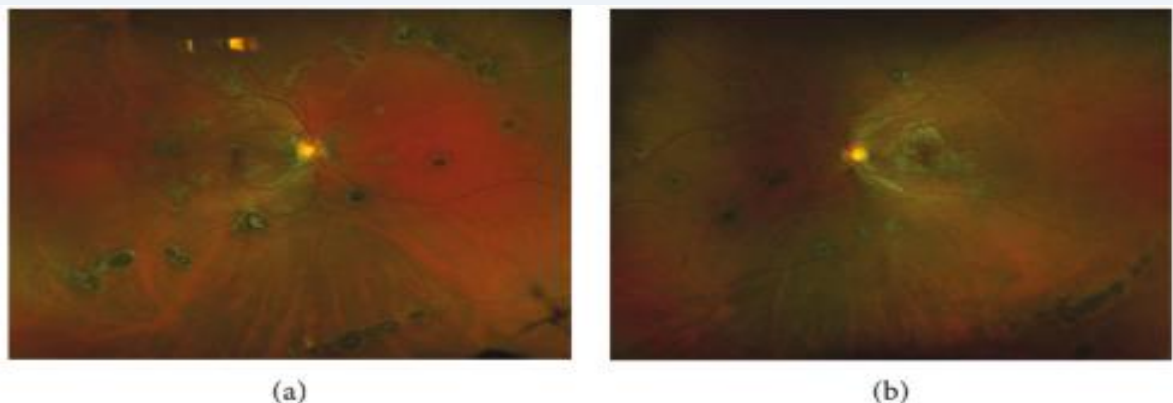
Conclusion: In subjects after vitrectomy for epiretinal membrane, Oxygen saturation may affect the visual acuity outcome but not the central retinal thickness (CRT). On the study outcomes, choroidal thickness had no statistically significant influence. Further studies are required in order to assess if the measurement of retinal oxygenation may be helpful in the decision for surgery.

Reference: Weigert G, Aliyeva L, Maccora K, Schmalek AS, Abela-Formanek C, Georgopoulos M, Schmidt-Erfurth U, Sacu S. Influence of retinal oxygen saturation and choroidal thickness on functional and morphological outcomes in patients with epiretinal membrane. Investigative Ophthalmology & Visual Science. 2021 Aug 22;60(9):5790

Bilateral Ampiginous Choroiditis following Presumed SARS-CoV-2 Infection

Patient description: A 25- year- old woman came with the complaints of distortion and a blind spot near the central vision of her left eye for period of 1 month. One week preceding visual symptom onset the patient developed night sweats, headache which lasted for 3 days and new-onset anosmia which lasted for 2 weeks. Before the onset of her symptoms she had multiple confirmed ill COVID-19 contacts at her workplace.

Best corrected visual acuity was 20/20 and 20/25 in the right and left eyes. After one month of topical difluprednate therapy, Intraocular pressures, previously documented as normal, were 20 mmHg on the right and 24 mmHg on the left. Vitreous examination revealed rare cell and no haze in both eyes. Placoid lesions in the macula and mid-periphery of both eyes was revealed by Dilated fundus examination. Peripheral punched-out scars with Schlaegel lines were observed.



(a) right and (b) left eyes demonstrating placoid lesions in the macula and retinal periphery as well as peripheral punched-out scars in a Schlaegel line configuration.

Fundus imaging showed that hypoautofluorescent lesions in the macula and midperiphery of both eyes with irregular hyperauto-fluorescent borders. On indocyanine green angiography hypofluorescent lesions were observed. Early progressive staining and leakage from the placoid lesions without significant early blockage was demonstrated by Fluorescein angiography. Bilateral outer retinal disruption was observed in Optical coherence tomography. For QuantiFERON-TB gold, HIV, and syphilis antibodies laboratory evaluation was negative.

COVID-19 antibody testing returned positive for IgG. Systemic symptoms had developed 4 months following the initial pandemic lockdown. Due to the resolution of headaches and absence of neurologic symptoms at the time of evaluation neuroimaging was not pursued. The patient was treated with the taper of oral prednisone starting at 60mg. Retinal lesions did not progress, and steroid-sparing therapy with azathioprine (1.5 mg/kg) was initiated. After completing a 3-month oral prednisone taper and continuing azathioprine visual acuity remained 20/20 in both eyes at 10- month follow-up.

Conclusion: Ampiginous choroiditis is an inflammatory chorioretinopathy with unknown pathogenic mechanism that often necessitates early immunomodulatory therapy. This case study revealed that SARS-CoV-2 infection may trigger chorioretinal inflammation in susceptible hosts.

Reference: Tom ES, McKay KM, Saraf SS. Bilateral Ampiginous Choroiditis following Presumed SARS-CoV-2 Infection. Case Reports in Ophthalmological Medicine. 2021 Aug 5;2021.



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