RETINA ROUNDUP

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Impact of Obstructive Sleep Apnea on Diabetic Retinopathy Progression and Systemic Complications

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Abstract

Purpose: Evaluate the risk of diabetic retinopathy progression and systemic vascular events, including death, in patients with non-proliferative diabetic retinopathy (NPDR) with obstructive sleep apnea (OSA).

Design: Retrospective cohort study.

Methods: Electronic chart query using TriNetX (Cambridge, MA, USA), an electronic health records network comprising data from over 124 million patients. Patients with NPDR with and without OSA were identified. Patients were excluded if they had history of proliferative disease (PDR), diabetic macular edema (DME), or prior ocular intervention (intravitreal injection, laser, or pars plana vitrectomy). Propensity score matching was performed to control for baseline demographics and comorbidities. Rate of progressing to vision threatening complications (VTCs), need for ocular intervention, and systemic events was measured at 1, 3, and 5 years.

Results: 11,931 patients in each group were analyzed after propensity score matching. There was elevated risk of PDR in the OSA cohort at 1 (RR: 1.34, P<0.001), 3 (RR: 1.31, P<0.001), and 5 years (RR: 1.28, P<0.001). There was elevated risk of DME in the OSA group at all time points: 1 (RR: 1.31, P<0.001), 3 (RR: 1.19, P<0.001), and 5 years (RR: 1.18, P<0.001). With respect to ocular interventions, there was an increased risk of intravitreal injection in OSA patients at 1 (RR: 1.59, P<0.001), 3 (RR: 1.58, P<0.001), and 5 years (RR: 1.54, P<0.001), and similar trends were noted with laser photocoagulation, but not vitrectomy. Regarding systemic events, NPDR patients with OSA had a greater risk of stroke (1 year RR: 1.80, P<0.001; 3 year RR: 1.56, P<0.001; 5 year RR: 1.49, P<0.001), myocardial infarction (1 year RR: 1.51, P<0.001; 3 year RR: 1.46, P<0.001; 5 year RR: 1.43, P<0.001), and death (1 year RR: 1.31, P<0.001; 3 year RR: 1.19, P<0.001; 5 year RR: 1.15, P<0.001).

Conclusions: There is an increased rate of DR progression to VTCs, need for ocular intervention, and systemic complications, including death, for patients with OSA. We emphasize the need for improved screening measures of patients with NPDR and potential OSA.

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2. Retina. 2024 Sep 1;44(9):1572-1579.

LONG-TERM VISUAL OUTCOMES AND OPTICAL COHERENCE TOMOGRAPHY BIOMARKERS IN EYES WITH MACULAR EDEMA SECONDARY TO RETINAL VEIN OCCLUSION FOLLOWING ANTI-VASCULAR ENDOTHELIAL GROWTH FACTOR THERAPY

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Abstract

Purpose: To evaluate the structural characteristics and long-term visual outcomes in eyes impacted by macular edema as a consequence of retinal vein occlusion that has undergone effective treatment with anti-vascular endothelial growth factor therapy.

Methods: Inclusion criteria comprised 42 eyes of 41 patients, subjected to long-term follow-up, displaying resolved macular edema after a minimum of 5 years since the commencement of anti-vascular endothelial growth factor therapy. During the final visit, two experienced observers evaluated several qualitative parameters using spectral-domain optical coherence tomography, such as the integrity of the external limiting membrane, the state of the ellipsoid zone and retinal pigment epithelium, and the presence of disorganization of the retinal inner layers. In addition, a quantitative evaluation of the inner and outer retinal thicknesses was conducted for the purpose of topographical analysis.

Results: The most prominent qualitative correlation identified with best-corrected visual acuity during the final visit was connected to the presence of disorganization of the retinal inner layers (P = 0.004) and the integrity of the external limiting membrane (P = 0.015). In relation to quantitative aspects, a noteworthy correlation was noted between the visual acuity during the last visit and the parafoveal thickness in both the inner (P = 0.003) and outer retina (P = 0.018).

Conclusion: In eyes where macular edema resulting from retinal vein occlusion has been successfully resolved with anti-vascular endothelial growth factor therapy, changes in the status of the external limiting membrane and the presence of disorganization of the retinal inner layers serve as valuable optical coherence tomography biomarkers, indicating prolonged visual outcomes.

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3. *Retina* ():10.1097/IAE.0000000000004201, July 05, 2024.

Complex macular hole closure by temporal internal limiting membrane flap without endotamponade

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Abstract

Purpose: To evaluate the safety, efficacy and imaging features of a novel surgical technique without endotamponade in repairing complex macular hole (MH).

Methods: Retrospective review of consecutive cases with complex MH underwent pars plana vitrectomy (PPV) with temporal internal limiting membrane (ILM) flap, which was stabilized using perfluorocarbon liquid (PFCL) and viscoelastics. At conclusion of surgery, PFCL was removed and no endotamponade agent would be used. Complex MH was defined as a basal linear diameter (BLD) >/= 400µm and/or associated with high myopia (HM). Visual acuity (VA), pattern of MH closure on optical coherence tomography (OCT), formation of epi-retinal membrane (ERM) and operative complications, were reported.

Results: Twenty-four eyes were included and the mean BLD was 988.3µm. MH closure was achieved in 24 (100%), of which 8 (33%) achieved type 1A closure. The mean post-operative logMAR VA improved from 0.93 at baseline to 0.74, 0.51, 0.55 and 0.52 at 1-month, 3-month, 6-month and last follow up, respectively. Foveal gliosis was observed in 3 (12.5%) eyes and 10 (41.7%) developed nasal ERM. One eye developed vitreous hemorrhage which resolved spontaneously.

Conclusion: This novel surgical technique which requires no endotamponade is effective in achieving complex MH closure. A substantial proportion of patients developed ERM and its clinical significance requires further investigation.

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4. *Retina* 44(8):p 1371-1378, August 2024.

PREDNISOLONE EYE DROPS AS A POTENTIAL TREATMENT IN NONNEOVASCULAR PACHYCHOROID-RELATED DISEASES

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Abstract

Purpose: To investigate the functional and structural outcomes after treatment with prednisolone eye drops in the following pachychoroid-related diseases: chronic central serous chorioretinopathy, pachychoroid pigment epitheliopathy, and peripapillary pachychoroid syndrome.

Methods: In this retrospective study, 54 eyes of 48 patients with pachychoroid-related disease were treated with prednisolone acetate 1% eye drops 3 times a day. Change in macular volume and retinal central subfield thickness on optical coherence tomography was measured. In addition, the foveal or complete resolution of fluid and the change in visual acuity were studied.

Results: The follow-up visit was at a mean of 41.2 ± 14.5 days. In the 44 eyes with chronic central serous chorioretinopathy, a significant reduction in retinal central subfield thickness ($P < 0.001$) and macular volume ($P < 0.001$) was observed. Foveal intra- or subretinal fluid resolved completely in 22% of the eyes. In the 8 peripapillary pachychoroid syndrome eyes, a reduction in the nasal retinal thickness was observed ($P = 0.025$). One of the 2 pachychoroid pigment epitheliopathy eyes showed structural improvement. No significant change in visual acuity was observed in any of the pachychoroid spectrum diseases.

Conclusion: In patients with chronic central serous chorioretinopathy, peripapillary pachychoroid syndrome, and pachychoroid pigment epitheliopathy, anatomical improvement was observed after therapy with prednisolone eye drops. Visual acuity did not change significantly.

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5. Mandviwala et al. International Journal of Retina and Vitreous (2024) 10:49 https://doi.org/10.1186/s40942-024-00565-1

The forbidden touch: mechanical clearing of gas-induced crystalline lens feathering during vitrectomy surgery

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Abstract

Background and objective

Lens feathering due to intraocular gas may cause significant challenges with intraoperative visualization during posterior segment surgery. Herein, we describe an intraoperative technique for improving posterior segment visualization impacted by lens feathering.

Methods: New technique to improve visualization in vitrectomy from gas-induced cataract.

Results: The light pipe is used to gently massage posterior subcapsular lens vacuoles to improve the surgical view intraoperatively.

Conclusion: We report an effective and efficient technique to improve lens feathering during vitreoretinal surgery without need for cataract extraction.

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6. Daneshvar et al. International Journal of Retina and Vitreous (2024) 10:52 https://doi.org/10.1186/s40942-024-00571-3

Vitamin D deficiency in patients with retinal vein occlusion: a systematic review and meta-analysis

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- Mohsen Pourazizi

Abstract

Background

This review aims to substantiate the correlation between vitamin D and retinal vein occlusion (RVO) within the medical literature.

Method: A systematic review and meta-analysis were conducted in PubMed, SCOPUS, Web of Science, and Embase until December 10th, 2023. A meticulous literature search was undertaken to identify and analyze all observational-analytical papers reporting vitamin D levels in RVO patients. The principal outcome measures centered on the comparative assessment of vitamin D levels between patients with RVO (cases) and those devoid of RVO (controls). The protocol was registered in PROSPERO (code: CRD42024499853).

Results: A total of six relevant studies consisting of 589 participants were included in this meta-analysis. The results indicated a significant association between vitamin D deficiency and increased risk of RVO (Odds ratio = 14.51; 95% CI: [1.71, 122.59], $P = 0.014$); and patients with RVO exhibited a significant decrease in serum vitamin D levels by 1.91ng/mL (95% CI: [-2.29, -1.54], $P < 0.001$). Moreover, there was no significant difference observed in vitamin D levels between central RVO (CRVO) and branch RVO (BRVO) subtypes ($P = 0.63$).

Conclusion: RVO patients have more vitamin D deficiency than healthy controls. These results contribute to the growing body of evidence highlighting the intricate role of vitamin D supplementation as both a prophylactic and a treatment strategy in RVO.

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