RETINA ROUNDUP

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1) Br J Ophthalmol . 2022 Oct;106(10):1373-1379.
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Risk model for intraoperative complication during cataract surgery based on data from 900000 eyes: previous intravitreal injection is a risk factor

Poya Hård af Segerstad

Purpose: The aim of this study was to develop a risk model for intraoperative complication (IC) during cataract surgery, defined as posterior capsule rupture and/or zonular dehiscence, and to include previous intravitreal therapy (pIVT) in the model.

Methods: This retrospective register-based study covered patients reported to the Swedish National Cataract Register (SNCR) between 1 January 2010 and 30 June 2018. Odds ratios (ORs) were used to quantify association strength of each variable with IC. Data from the SNCR were cross referenced with the Swedish Macula Register to include data on pIVT. Variables statistically significant in the univariate analyses ($p<0.05$) were included in a multivariate logistic regression model.

Results: The inclusion criteria were met by 907 499 eyes. The overall rate of IC was 0.86%. Variables significantly associated with IC were best corrected visual acuity ≥1.0 LogMAR (OR (adjusted): 1.75, $p<0.001$), age ≥90 years (OR: 1.25, $p<0.001$), male sex (OR: 1.09, $p<0.01$), pseudoexfoliation (OR: 1.33, $p<0.001$), glaucoma (OR: 1.11, $p<0.05$), diabetic retinopathy (OR: 1.35, $p<0.001$), pIVT (OR: 1.45, $p<0.05$), surgeon's experience <600 surgeries (OR: 2.77, $p<0.001$), use of rhexis hooks (OR: 6.14, $p<0.001$), blue staining (OR: 1.87, $p<0.001$) and mechanical pupil dilation (OR: 1.52, $p<0.001$).

Conclusion: The risk model can be used in the preoperative setting to predict the probability of IC, to facilitate planning of surgery and improving patient communication. Patients who have undergone intravitreal therapy prior to cataract surgery have an increased risk of IC during cataract surgery.

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2) Ophthalmology Retina 2022 Oct;6(10):893-898.
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Idiopathic Vitreomacular Traction Managed with Initial Observation: Clinical Course and Outcomes

Veshesh Patel, Lauren Kiryakoza, Viet Chau, Annika Patel, Nicolas A Yannuzzi, Harry W Flynn Jr, Jayanth Sridhar

Purpose: To review the clinical course and outcomes of patients with idiopathic vitreomacular traction (VMT) managed initially by observation.

Design: Retrospective chart review including patients with idiopathic VMT based on clinical symptoms and findings on OCT between January 1, 2015, and February 15, 2021.

Subjects: The study included 436 eyes of 317 patients with a mean age of 72.2 years ± 8.9 at initial visit and mean follow-up time of 34 months ± 19.2.

Methods: Vitreomacular traction severity grade was ascribed to each patient using previously published grading criteria. Grade 1 denoted incomplete cortical vitreous separation with attachment at the fovea and visible distortion of the foveal surface. Grade 2 included intraretinal cysts or clefts along with grade 1 findings. Grade 3 included subfoveal fluid along with grade 2 traits.

Main outcome measures: The rate of spontaneous release, grade at baseline compared with grade at final follow-up, and outcomes of interventions, if performed

Results: At baseline, mean best corrected visual acuity (BCVA) was 20/40. Baseline OCT demonstrated grade 1 VMT in 212 eyes (48.6%), grade 2 VMT in 172 eyes (39.4%), and grade 3 VMT in 52 eyes (11.9%). Among eyes that were initially grade 1, 25.0% had spontaneous release of VMT (median, 290.0 days; mean, 404.5 days ± 323.9), 50.9% remained stable, and 10.4% worsened. Among eyes that were initially grade 2, 14.5% had spontaneous release of VMT (median, 570.0 days; mean, 692.9 days ± 477.5), 55.2% remained stable, 4.7% improved, and 2.3% worsened. Among eyes that were initially grade 3, 5.8% had spontaneous release of VMT (median, 790.0 days; mean, 839.3 days ± 246.7), 28.8% remained stable, and 5.8% improved. Of the 436 eyes, macular hole development occurred in 42 eyes (9.6%). Pars plana vitrectomy was performed in 94 of 436 eyes (21.6%) with mean BCVA before pars plana vitrectomy of 20/78 and final follow-up BCVA of 20/55.

Conclusion: This study demonstrates the generally stable clinical course of VMT when managed initially by observation. Stable VMT grade was the most frequent outcome, and eyes with grade 1 VMT were more likely to undergo spontaneous release than eyes with grade 2 or 3.
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3) Retina. 2022 Oct 1;42(10):1859-1866.
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Combination of Vitrectomy and Intentional Macular Detachment is associated with a faster Edematous regression than vitrectomy alone in the treatment of Refractory Diabetic Macular Edema

Ying Yan, Li Zhu , Miao Zeng , Zhijian Huang, Qin Ding, Yang Liu, Chengyuan Gao, Doudou Yu , Xiao Chen

Purpose : To compare clinical outcomes in eyes with refractory diabetic macular edema managed by vitrectomy combined with and without intentional macular detachment (IMD).

Methods:
This is a retrospective cohort study.Forty-one eyes with diabetic macular edema that were previously poorly responsive to at least 5 monthly anti-vascular endothelial growth factor and at least twice switch therapy previously were included in this study. All eyes underwent pars plana vitrectomy with internal limiting membrane peeling, 21 of which were combined with an IMD procedure (assigned to an IMD group) and 20 of which did not have IMD performed (nMD group). Macular morphologic and visual acuity changes were analyzed from baseline through the endpoint (24 weeks) postprocedure, and were compared between groups.

Results: All patients completed at least six months of follow-up, with a mean of 29.7 weeks (24-56 weeks). The mean central retinal thickness reduction was greater in the IMD group than that in the nMD group at 1 week (P = 0.001), 2 weeks (P = 0.008), and 4 weeks (P = 0.004), but there was no statistically significant difference at 12 weeks (P = 0.051) or 24 weeks (P = 0.056). There were no significant differences in the mean changes of best-corrected visual acuity from baseline to the 24 weeks endpoint in either group (P = 0.83).

Conclusion: Vitrectomy can release macular edema in the eyes with refractory diabetic macular edema. Combined with IMD technical, patients seemed to achieve a faster central retinal thickness decrease but neither the final morphologic outcome nor the visual acuity was affected.
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4) JACC Heart Fail. 2022 Nov;10(11):785-791.
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Retinal Microvasculature: A Potential Window Into Heart Failure Prevention

Thanat Chaikijurajai, Justis P Ehlers, W H Wilson Tang

Endothelial dysfunction and microvascular disease have been shown to play an important role in the development and progression of heart failure (HF). Retinal imaging provides a unique opportunity to noninvasively assess vascular structure and function, vessel features, and microcirculation within the retina. Accumulating evidence suggests that retinal vessel caliber, microvascular features, and vascular characteristics extracted from various imaging modalities are associated with alterations in left ventricular structure and function in stage B HF, as well as incident development of symptomatic HF in the general population. Moreover, dynamic retinal vessel analysis has been shown to differentiate HF patients based on their phenotypes. Given the increasing availability of rapid image acquisition devices (eg, nonmydriatic widefield systems and smartphone-based retinal cameras) and the integration of artificial intelligence–based interrogation/assessment techniques, retinal imaging is a promising non-invasive tool, in conjunction with cardiac imaging and biomarkers, to prevent HF and risk stratify those at risk of developing HF. This review focuses on the current evidence on retinal microvasculature changes, and potential clinical relevance and promising utility of retinal imaging in HF.

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5) Am J Ophthalmol. 2022 Nov;243:1-9.
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Intermittent Fasting Is Associated With a Decreased Risk of Age-Related Macular Degeneration

Eun Young Choi, Min Kim, Christopher Seungkyu Lee, Suk Ho Byeon, Sung Soo Kim, Minyoung Lee

Purpose: To investigate the association between intermittent fasting and age-related macular degeneration (AMD) in the general older adult population.

Design: A cross-sectional study using a population-based, government-led survey data, Korean National Health and Nutrition Examination Survey (KNHANES).

Methods: A total of 4504 individuals aged ≥55 years with comprehensive data including meal frequency and fundus photography were selected using the KNHANES 2015-2018 database. Participants were divided into 2 groups based on breakfast frequency per week; intermittent fasting (nearly 0 time/week) and nonfasting (5-7 times/week) groups. Multiple logistic regression analysis was performed to determine the risk factors for AMD identified by fundus photography.

Results: AMD was identified in 25.1% of total participants. The intermittent fasting group had a decreased risk of AMD compared with the nonfasting group (adjusted odds ratio [aOR] 0.413, 95% CI 0.203-0.841), especially in individuals with a younger age (<70 years, aOR 0.357, 95% CI 0.153-0.833), obesity (aOR 0.663, 95% CI 0.424-1.037), and urban residence (aOR 0.437, 95% CI 0.248-0.769). Increased age (aOR 1.058, 95% CI 1.041-1.076) and serum high-density lipoprotein levels (aOR 1.011, 95% CI 1.002-1.021) were also independent risk factors for AMD.

Conclusions: Using the population-based survey data, we demonstrated that intermittent fasting by skipping breakfast was significantly associated with a reduced risk of AMD in a representative older adult population, especially in individuals with age <70 years, obesity, and urban residence.

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6) Jpn J Ophthalmol. 2022 Nov 8.
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Two-year clinical outcomes of triple therapy with photodynamic therapy, anti-vascular endothelial growth factor agent, and triamcinolone acetonide for neovascular age-related macular degeneration

Ryo Ando, Kiriko Hirooka, Michiyuki Saito, Satoru Kase, Kousuke Noda, Susumu Ishida

Purpose: To analyze the 2-year treatment outcomes of triple therapy with standard-fluence photodynamic therapy (PDT), intravitreal injection of ranibizumab (IVR)/aflibercept (IVA), and sub-tenon injection of triamcinolone acetonide (STTA) for neovascular age-related macular degeneration (nAMD) in Japanese patients.

Study Design: A retrospective, clinical case-series study.

Methods: Forty-four eyes of 44 patients with treatment-naïve nAMD followed for more than 24 months were evaluated. Initial treatment was given with triple therapy and retreatment with IVR/IVA as a pro re nata regimen. Best-corrected visual acuity (BCVA), central retinal thickness (CRT), the number of treatments, and intraocular pressure elevation were analyzed.

Results: The mean age was 73.3 ± 10.0 years. The mean BCVA significantly improved from 0.61 ± 0.30 at baseline to 0.50 ± 0.46 at 24 months ($p = 0.034$). CRT significantly improved from 373 ± 162 μm at baseline to 200 ± 107 μm at 24 months ($p < 0.001$). The number of treatments given during the 2-year treatment period was 2.7 ± 1.8. No retreatments were necessary in 18 of 44 eyes (40.9%), with no significant difference between IVR (46.4%) or IVA (31.3%) used during the 2-year follow-up of triple therapy ($p = 0.51$). Four eyes (9.1%) temporarily required glaucoma eye drop treatments.

Conclusion: In nAMD patients, induction treatment with triple therapy resulted in approximately 40% of the patients requiring no retreatment for 2 years. The type of anti-VEGF agents used made no difference in the results.

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7) Front Endocrinol (Lausanne). 2022 Oct 21;13:938659.
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Optical coherence tomography of the retina combined with color Doppler ultrasound of the tibial nerve in the diagnosis of diabetic peripheral neuropathy

Weimiao Chen, Xiaohong Wu, Shilin Li, Yan Zhang, Yinqiong Huang, Yong Zhuang, Xuefeng Bai, Xiaoyu Chen, Xiahong Lin

Objective: To investigate the value of the retinal nerve fiber layer (RNFL) thickness in the optic disc and the cross-sectional area (CSA) of lower limb nerves in the diagnosis of diabetic peripheral neuropathy (DPN) separately and in combination.

Methods: A total of 140 patients with type 2 diabetes were enrolled, including 51 patients with DPN (DPN group) and 89 patients without DPN (NDPN group). Clinical data and biochemical parameters were collected. Electromyography/evoked potential instrument was performed for nerve conduction study. Optical coherence tomography was performed to measure the RNFL thickness of the optic disc. Color Doppler ultrasound was performed to measure CSA of lower limb nerves.

Results: The RNFL thickness was lower and the CSA of the tibial nerve (TN) in the DPN group was larger than that in the NDPN group. The album/urine creatinine ratio, diabetic retinopathy, and CSA of TN at 3 cm were positively correlated with DPN. The RNFL thickness in the superior quadrant of the optic disc was negatively correlated with DPN. For RNFL thickness to diagnose DPN, the area under the curve (AUC) of the superior quadrant was the largest, which was 0.723 (95% confidence interval [CI]: 0.645-0.805), and the best cutoff value was 127.5 μm (70.5% sensitivity, 72.1% specificity). For CSA of TN to diagnose DPN, the AUC of the distance of 5 cm was the largest, which was 0.660 (95% CI: 0.575-0.739), and the best cutoff value was 13.50 mm² (82.0% sensitivity, 41.6% specificity). For the combined index, the AUC was greater than that of the above two indicators, which was 0.755 (95% CI: 0.664-0.846), and the best cutoff value was 0.376 (64.3% sensitivity, 83.0% specificity).

Conclusions: Patients with DPN have a reduction of the RNFL thickness and an increase in the CSA of TN, and these two changes are related to DPN. The RNFL thickness of the optic disc and the CSA of TN can be used as diagnostic indicators of DPN, and the combination of the two indicators has a higher diagnostic value.

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