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Effect of perfluoropropane (C_3f_8) versus sulfurhexafluoride (sf_6) tamponades on the retinal microvasculature after macular hole surgery

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Purpose: To determine the effects of C_3F_8 and SF_6 gases by using optical coherence tomography angiography (OCTA) in patients with surgically closed idiopathic full-thickness macular holes (FTMH).

Methods: A prospective, comparative study, in which 38 eyes of 38 patients with an idiopathic FTMH were studied. Twenty patients were randomized to the C_3F_8 group and 18 patients to the SF_6 group. All patients underwent pars plana vitrectomy, internal limiting membrane peeling with 14% C_3F_8 or 20% SF_6 gases. The superficial capillary plexus (SCP) and deep capillary plexus (DCP) vessel densities (VD), foveal avascular zone (FAZ) area in SCP, the choriocapillaris flow area; and subfoveal choroidal thickness (SFCT) were examined at preoperative and postoperative first- and third-month controls using OCTA.

Results: When the changes in the FAZ, SFCT, SCP and DCP VDs were compared, no significant differences were found between the groups ($p>0.05$ for all). It was determined that the 1-mm radius flow area increases in the C_3F_8 group at the first and third months after the surgery were significantly higher than in the SF_6 group ($p<0.05$). A significant gain was observed in the BCVA values compared to their preoperative values for both groups; however any differences between the C_3F_8 and SF_6 groups in terms of BCVA were not detected in this study.

Conclusion: This is the first report to compare the effects of C_3F_8 and SF_6 gases on idiopathic FTMH surgery by using OCTA. C_3F_8 and SF_6 gases may have similar effect on the remodeling process of vascular tissues.

Keywords: macular hole; optical coherence tomography angiography; pars plana vitrectomy; retinal microvasculature; vitreoretinal surgery.

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Pigment epithelial detachment thickness and variability impacts visual outcomes in patients with neovascular age-related macular degeneration

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Purpose: To evaluate the impact of pigment epithelial detachment (PED) thickness (i.e. height) and thickness variability on best corrected visual acuity (BCVA) outcomes in patients with neovascular age-related macular degeneration (nAMD) in the Phase 3 HAWK and HARRIER trials.

Methods: Optical coherence tomography images from the pooled brolucizumab 6mg and aflibercept 2mg arms were analysed for the maximum PED thickness across the macula at baseline through to Week 96. BCVA outcomes were compared in patients with different PED thickness and variability cut-off thresholds.

Results: Greater PED thickness at baseline or at Week 12 was associated with lower mean BCVA gain from baseline to Week 96 (baseline PED ≥200 µm: +4.6 letters; <200 µm: +7.0 letters; Week 12 PED ≥100 µm: +5.6 letters; <100 µm: +6.6 letters). Eyes with the largest PED thickness variability from Week 12 through Week 96 gained fewer

letters from baseline at Week 96 (≥33 µm: +3.3 letters; <9 µm: +6.2 letters). Furthermore, increased PED thickness at Week 48 was associated with higher prevalence of intraretinal and subretinal fluid.

Conclusions: In this treatment-agnostic analysis, greater PED thickness and PED thickness variability were associated with poorer visual outcomes in patients with nAMD and greater neovascular activity

3) Outcomes in Retinal Detachment Repair and Laser Prophylaxis for Syndromes with Optically Empty Vitreous

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Purpose: To evaluate and compare surgical outcomes for syndromes with optically empty vitreous (SOEV)- associated rhegmatogenous retinal detachments.

Design: A retrospective, cross-sectional, 2-arm study of a single pediatric vitreoretinal surgeon's patients from a quaternary referral center with SOEV was performed to examine visual and anatomical outcomes of rhegmatogenous retinal detachment and laser prophylaxis. Subjects: Patients identified either through slit-lamp examination (presence of an optically empty or void space in the vitreous gel structure) or genetic testing. Fifty-six eyes of 49 patients were identified in the retinal detachment arm. Sixty eyes of 48 patients were identified in the laser prophylaxis arm.

Methods: Comparison of initial retinal detachment (RD) surgical repair via pars plana vitrectomy (PPV), scleral buckle (SB), or PPV-SB with final anatomical success, best-corrected visual acuity (BCVA), and number of surgical procedures. Secondary analysis was performed looking at eyes failing their initial SB, eyes with a giant retinal tear at presentation, eyes failing RD repair within specific time intervals, and eyes where hyaloid was elevated during initial vitrectomy. An additional study arm examined the outcomes of final BCVA and the presence and timing of developing a retinal tear or RD in eyes who received laser prophylaxis.

Main Outcome Measures: Visual acuity, surgical repair techniques (PPV, SB, PPV-SB), number of surgeries, anatomical retinal reattachment success. Results: Initial SB had statistically significant better final BCVA ($P < 0.01$) and better final anatomical success ($P < 0.01$). No statistical difference in the number of surgeries needed to achieve anatomical success between the initial SB versus initial PPV-SB/PPV. Hyaloidal elevation during the initial vitrectomy was associated with improved final BCVA and higher final anatomical success without the use of silicone oil ($P < 0.01$ and 0.04 respectively). Lastly, eyes that developed RDs after laser prophylaxis had better final BCVA than untreated eyes ($P < 0.05$).

Conclusion: Initial SB yields better overall outcomes in SOEV presenting with rhegmatogenous retinal detachment. Stickler Type-1 patients had similar outcomes compared with other SOEV, suggesting both populations should be treated with similar approaches.

4) Vision Salvage Using Intra-Ophthalmic Arterial Alteplase Combine with Nimodipine in Central Retinal Artery Occlusion (VISION)

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Purpose: To investigate the efficacy and safety of selective intra-ophthalmic arterial combined nimodipine and alteplase infusion in patients with central retinal artery occlusion (CRAO).
Design: Non-randomized, prospective interventional study.
Methods: All patients with CRAO who presented at our institute within 24 hours from CRAO onset from August 2020 to July 2022 were included. Intra-arterial nimodipine and alteplase were given selectively into the ophthalmic artery. Visual acuity was recorded during and after the procedure. Change in best corrected visual acuity (BCVA) 1 month post-treatment, relative to baseline, was set as the primary outcome measure. Significant improvement in vision and adverse events are reported as secondary outcomes.
Patients: Nine patients with non-arteritic CRAO were enrolled.
Results: A total of nine patients with CRAO underwent selective intra-ophthalmic arterial nimodipine and alteplase injection. Overall, BCVA had statistically significantly improved by 0.78 logarithm of the minimum angle of resolution (logMAR) at 1 month compared with baseline (95% confidence interval: (− 1.24, − 0.31), p-value = 0.001). Seven (77.8%) patients had significant visual improvement (≥ 0.3 logMAR) at 1-month post-treatment. There were minor adverse events during administration of the nimodipine, including chemosis and headache, which resolved after the discontinuation of nimodipine. There were also asymptomatic thromboembolic events in 2 patients (22.2%) after the intervention procedure, without any morbidity or mortality.
Conclusion: The use of selective intra-ophthalmic arterial combined nimodipine and alteplase was efficacious in improving BCVA at 1 month for patients with non-arteritic CRAO presenting between 24 hours from onset, with minor adverse events but no serious adverse events.

5) Association between non-steroidal anti-inflammatory drug use and development of age-related macular degeneration-A 10-year retrospective cohort study

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Abstract

Purpose: To analyze the associations between development of age-related macular degeneration (AMD) and regular use of aspirin or non-aspirin non-steroidal anti-inflammatory drugs (NA-NSAIDs).

Methods: We retrospectively recruited individuals who received ≥28-day prescriptions of aspirin or NA-NSAIDs exclusively between 2008 and 2017 in one tertiary center as regular users. Non-regular users were free from regular use of any anti-inflammatory drugs and were matched to regular users in terms of age, sex, and visit date at a ratio of 1-4:1. The aspirin cohort included 36,771 regular users and 110,808 matched non-regular users, while the NA-NSAID cohort included 59,569 regular users and 179,732 matched non-regular users. Stratified multivariate Cox regression analyses with adjustment for systemic confounding factors were performed for the development of AMD and neovascular AMD.

Results: In the aspirin cohort, the adjusted hazard ratios of aspirin use for AMD in the whole cohort, individuals without cardiovascular diseases (CVDs), and those with CVDs were 0.664, 0.618, and 0.702, respectively ($P < 0.0001$ for all), while those of aspirin use for neovascular AMD were 0.486, 0.313, and 0.584 ($P < 0.05$ for all), respectively. In the NA-NSAID cohort, regular use of NA-NSAIDs was associated with a decreased risk of AMD (hazard ratio = 0.823, $P < 0.0001$) and neovascular AMD (hazard ratio = 0.720, $P = 0.040$) only in people without arthritis.

Conclusions: Regular use of aspirin or NA-NSAIDs had protective effects on AMD and neovascular AMD. The effect of aspirin was observed in all patients, while the related macular degeneration; Aspirin;