



Retina Roundup

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COMPARISON OF AIR VERSUS PERFLUOROPROPANE INTRAOCULAR TAMPONADE COMBINED WITH VITRECTOMY FOR THE TREATMENT OF MACULAR HOLE IN HIGH MYOPIA

Zhang K, Yang X, Wang Z, Yu Y, Liu L, Qi B, Wu X, Wang X, Liu W.

Purpose: To compare the efficacy of air and perfluoropropane (C3F8) with pars plana vitrectomy (PPV) in highly myopic macular holes (HMMHs) and explore the factors related to surgical prognosis.

Methods: A retrospective comparison of a consecutive series of HMMHs undergone vitrectomy and internal limiting membrane peeling. According to tamponade type, they were divided into air group and C3F8 group, which were further divided into subgroups based on hole diameter or axial length (AXL). Anatomical and functional outcomes were compared between tamponades. Related factors of initial closure rate and postoperative best-corrected visual acuity (BCVA) were analyzed by logistic regression.

Results: The baseline characteristics in air group (n = 63) and C3F8 group (n = 37) were similar except the age of air was older (P = 0.019). The mean follow-up period was 17.16 ± 17.97 months. After surgery, the initial closure rate of air group was 85.7% and that of C3F8 group was 83.7% (P = 0.780). And the initial closure rate showed no difference between tamponades in the same subgroup classified by hole diameter or AXL (all P > 0.05). Postoperative BCVA improved significantly in both groups (P < 0.001), but no difference between them (P = 0.793). Logistic regression showed that age, minimum linear diameter, and AXL were risk factors of initial closure rate, and preoperative BCVA was the only factor associated with postoperative BCVA (all P < 0.05).

Conclusion: With a long-term follow-up of HMMH, we found air had a similar tamponade effect anatomically and functionally compared with C3F8. Air may also be a good choice for patients with HMMH.

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CHARACTERISTICS OF AGE-RELATED MACULAR DEGENERATION SHOWING A POOR RESPONSE TO THREE LOADING DOSES OF ANTI-VASCULAR ENDOTHELIAL GROWTH FACTOR

Song YY, Jun JH, Kim JT, Lee SC, Lee MW.

Purpose: To analyse the clinical features of refractory age-related macular degeneration patients associated with the response to three consecutive loading doses of anti-vascular endothelial growth factor.

Methods: A retrospective chart review was performed on typical exudative age-related macular degeneration patients treated by three consecutive anti-vascular endothelial growth factor injections. The patients were divided into a group without residual fluid on optical coherence tomography images (Group 1) and a group with residual fluid (Group 2). We analysed qualitative and quantitative morphologic features of optical coherence tomography and optical coherence tomography angiography. We performed univariate and multivariate logistic regression analyses to identify factors associated with the treatment response.

Results: We enrolled a total of 90 patients (Group 1: n = 60, Group 2: n = 30). Under optical coherence tomography, the choroidal thickness differed significantly between groups 1 and 2 (246.60 ± 67.67 vs. 286.90 ± 40.92 μ m, $P = 0.001$). Under optical coherence tomography angiography, the presence of branching (48.3% vs. 73.3%, $P = 0.024$), loops (31.7% vs. 66.7%, $P = 0.002$), and a peripheral arcade (40.0% vs. 76.7%, $P = 0.001$) differed significantly. Logistic regression analysis showed that the initial CT ($B = 0.012$; $P = 0.007$), presence of loops ($B = 1.289$; $P = 0.015$), and peripheral arcade ($B = 1.483$; $P = 0.008$) significantly affected the anti-vascular endothelial growth factor treatment response.

Conclusion: A thicker choroid and the presence of loops and a peripheral arcade were significantly associated with a poorer response to three loading anti-vascular endothelial growth factor injections in typical exudative age-related macular degeneration patients.

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CHOROIDAL VASCULAR ALTERATIONS IN AGE-RELATED MACULAR DEGENERATION AND POLYPOIDAL CHOROIDAL VASCULOPATHY

Cheung CMG, Wong MYZ, Teo KYC.

Purpose: To evaluate morphologic alterations in choroidal veins in eyes with typical neovascular age-related macular degeneration (nAMD) and polypoidal choroidal vasculopathy (PCV).

Methods: A retrospective review of baseline indocyanine green angiography in eyes with typical nAMD and PCV. We evaluated Haller layer veins in the early-phase indocyanine green angiography (before 2 minutes) for 1) macular anastomosis, 2) dilated Haller veins, and 3) focal variation in vessel caliber by at least 50% from the narrowest to largest diameters.

Results: We included 70 patients with gradable indocyanine green angiography for the prespecified features in the study eye (36 typical nAMD and 34 PCV) and 59 fellow eyes. The median subfoveal choroidal thickness was 167 μm versus 219 μm , $P = 0.08$, in the presenting eyes in typical nAMD and PCV, respectively. Macular anastomosis was common in both typical nAMD and PCV (presenting eyes 58.3% vs. 58.8%, $P = 0.97$; fellow eyes 65.5% vs. 63.3%, $P = 0.86$). Dilated Haller veins were numerically less common in typical nAMD than PCV (presenting eyes 52.8% vs. 67.6%, $P = 0.21$; fellow eyes 65.5% vs. 70.0%, $P = 0.71$), while vascular caliber variation was numerically more common in typical nAMD than PCV (presenting eyes 72.2% vs. 63.8%, $P = 0.45$; fellow eyes 69.0% vs. 56.7%, $P = 0.33$). The presence of all three features was more common in the presenting eyes with PCV compared with typical nAMD (35.3% vs. 13.9%, $P = 0.03$). In a multivariable analysis, every increase of 100 μm of CT conferred a 2.75 risk of having all three features present.

Conclusion: Choroidal vascular remodeling is common in both tAMD and PCV but may be driven by different stimuli.

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EMBEDDING TECHNIQUE VERSUS CONVENTIONAL INTERNAL LIMITING MEMBRANE PEELING FOR LAMELLAR MACULAR HOLES WITH EPIRETINAL PROLIFERATION

Kanai M, Sakimoto S, Takahashi S, Nishida K, Maruyama K, Sato S, Sakaguchi H, Nishida K.

Purpose: To examine the outcomes of pars plana vitrectomy (PPV) with lamellar hole-associated epiretinal proliferation (LHEP) embedding and conventional internal limiting membrane (ILM) peeling for lamellar macular holes (LMHs) with LHEP.

Design: Retrospective observational study.

Subjects: Forty eyes of 39 consecutive patients with LMHs and LHEP who underwent 3-port PPV with a minimum follow-up of 3 months.

Methods: We compared the results of eyes that underwent PPV with LHEP embedding and ILM peeling (group E) with those of eyes that underwent PPV with ILM peeling only (group I) from September 2010 to September 2021. We confirmed whether the LHEP was embedded using postoperative OCT in all the cases.

Main outcome measures: Postoperative best-corrected visual acuity (BCVA) and the development of macular holes (MHs) were assessed.

Results: The mean patient age was 73.3 years. The mean follow-up duration was 23.1 months. There were 23 and 17 eyes in groups E and I, respectively. Preoperative BCVA ($P = 0.774$) and central retinal thickness (CRT) ($P = 0.800$) did not differ significantly between the 2 groups. The final BCVA in group E was better than that in group I ($P = 0.059$). The final CRT in group E was thicker than that in group I ($P < 0.001$). Postoperatively, a significant improvement in BCVA was observed in group E at 3 months ($P = 0.001$) and at the final visit ($P < 0.001$). None of the eyes in group E developed postoperative MHs, whereas 5 eyes in group I developed postoperative MHs.

Conclusions: Pars plana vitrectomy using the LHEP embedding technique improved visual acuity significantly and yielded better anatomic outcomes than those with PPV using conventional ILM peeling; MH formation did not occur. Embedding LHEP is more effective than conventional surgical procedures for LMHs.

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OBJECTIVE QUANTIFICATION OF POSTERIOR SEGMENT INFLAMMATION: MEASURING VITREOUS CELLS AND HAZE USING OPTICAL COHERENCE TOMOGRAPHY

Zicarelli F, Ometto G, Montesano G, Motta S, De Simone L, Cimino L, Staurenghi G, Agarwal A, Pichi F, Invernizzi A.

Purpose: To objectively grade posterior segment inflammation by measuring vitreous cells and haze on optical coherence tomography (OCT) scans and to compare OCT-based results with clinical grading.

Design: Evaluation of a diagnostic test.

Methods: OCT scans of patients with uveitis were collected at 3 timepoints: with active (T0), clinically improving (T1), and resolved (T2) inflammation. At each visit, visual acuity and clinical grading of the vitreous haze (National Eye Institute [NEI] scale) were assessed. The density of vitreous cells was calculated on each OCT scan manually and automatically through a bespoke algorithm. Vitreous haze was indirectly measured on OCT scans by calculating the vitreous/retinal pigmented epithelium (VIT/RPE)-relative intensity manually and automatically. The variation of OCT-derived measurements over time was assessed. OCT-derived measurements were compared with clinical grading.

Results: A total of 222 scans from 74 eyes were analyzed. Both vitreous cell density and VIT/RPE-relative intensity significantly decreased over time. Cell density correlated with the clinical grading with a significant increase at each grade of the NEI scale. By contrast, the VIT/RPE-relative intensity was positively correlated with the clinical grade overall but there was no significant difference when comparing contiguous grades of the NEI scale. Infectious uveitis had a higher cell density. The intraclass correlation coefficient between manual and automatic assessment was 0.83 for cell density and 0.423 for the VIT/RPE-relative intensity.

Conclusions: Posterior segment inflammation could be objectively graded through OCT scans. Vitreous cell density was assessed manually and automatically with good agreement and correlated better with NEI clinical grading compared with VIT/RPE-relative intensity.

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