Retina Roundup

January 2024

1.Guo H, Yu J, He T, Chen S, Sun Z, Zhang J, Sun Z, Yang W, Yao B, Yang X, Liu Y. Early use of intravitreal triamcinolone to inhibit traumatic proliferative vitreoretinopathy: a randomised clinical trial. British Journal of Ophthalmology. 2023 Nov 28.

Early use of intravitreal triamcinolone to inhibit traumatic proliferative vitreoretinopathy: a randomised clinical trial

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Aims: To evaluate the efficacy and safety of intravitreal triamcinolone acetonide (TA) injection at the end of emergency surgery for open globe injury (OGI) to suppress traumatic proliferative vitreoretinopathy (TPVR).

Methods: A single-centre, participant-masked, prospective, randomised controlled clinical trial. A total of 68 globe rupture patients with zone III were randomised to the control group (n=34) or the TA group (n=34) in 1:1 allocation ratio. Patients were treated with 0.1 mL TA in the TA group and 0.1 mL balanced salt solution in the control group at the end of emergency surgery. The primary outcome was the assessment of TPVR during vitrectomy 10±3 days later. Secondary outcomes included visual acuity (VA), retinal attachment rate, macular attachment rate, proliferative vitreoretinopathy (PVR) recurrent rate, side effects 6 months after vitrectomy.

Results: During vitrectomy, the TPVR grade of the control group was significantly more severe than the TA group (p=0.028). The TPVR score was significantly better in the TA group (9.30±0.82) than in the control group (6.44±1.06) (p=0.036). The final VA improved in 23 eyes (92%) in the TA group and in 14 eyes (63.64%) in the control group (p=0.008). The retinal attachment rates were 88% and 63.64% in the TA and control group, respectively (p=0.049). The two groups showed no significant difference in macular repositioning and PVR recurrent rate (p=0.215, 0.191). Temporary intraocular pressure elevation occurred in one eye in the TA group after emergency surgery.

Conclusions: Early intravitreal TA injection for OGI effectively reduces TPVR, increases surgical success and improves visual prognosis.

https://doi.org/10.1136/bjo-2023-324318

2.Treacy MP, Conway MP, Al Hammoud M, Duignan ES, Ahearne M, Ezra E. Direct exchange of Perfluoro-carbon liquid for silicone oil–a surgical technique to control pressure and avoid retinal slippage. RETINA. 2022 Feb 21.

Direct Exchange of PerfluoroCarbon Liquid for Silicone Oil: A Surgical Technique to Control Pressure and Avoid Retinal Slippage

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Background: Perfluorocarbon heavy liquid (PFCL) is used in vitreoretinal surgery to flatten the unsupported detached retina before insertion of silicone oil in cases of giant retinal tear or relaxing retinectomy. Direct exchange of PFCL for silicone oil is recommended to reduce retinal slippage when compared with fluid-air exchange, but it is commonly regarded as a difficult procedure. We describe our technique for direct PFCL-silicone oil exchange using a 20-gauge drainage cannula, reliably avoiding the complications of retinal slippage and high intraoperative intraocular pressure.

Methods: We present a consecutive case series of patients undergoing PFCL-oil exchange and explain, using Poiseuille's equation for laminar fluid flow through a cannula, the rationale for using a 20-gauge drainage cannula rather than smaller gauges to avoid high intraocular pressure.

Results: Twenty-six patients underwent PFCL-oil exchange from February 1, 2019, to September 30, 2019. There was no intraoperative retinal slippage or pressure-related complications. Postoperatively 20 patients underwent oil removal. Six suffered retinal redetachment, and 14 remained attached. The vision postoil removal ranged from 6/6 to hand movements.

Conclusion: We are confident that the PFCL-oil exchange technique described here is reliable and safe. The use of a 20-gauge drainage cannula is recommended regardless of vitrectomy gauge.

DOI: 10.1097/IAE.0000000000003422

3.Acar N, Celiker P. Intravitreal Chopping of Dropped Nucleus with a Nitinol Intraocular Foreign Body Forceps: An Alternative Technique for the Management of Retained Nucleus Fragments. RETINA. 2022 May 12:10-97.

INTRAVITREAL CHOPPING OF DROPPED NUCLEUS WITH A NITINOL INTRAOCULAR FOREIGN BODY FORCEPS: AN ALTERNATIVE TECHNIQUE FOR THE MANAGEMENT OF RETAINED NUCLEUS FRAGMENTS

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Purpose: To evaluate the efficiency and safety of using an intraocular foreign body forceps with two nitinol loops at its tip to capture and chop dropped nucleus (DN) during vitrectomy as an alternative method and to evaluate the outcomes and complications of this surgical technique.

Methods: The eyes that underwent 23-gauge vitrectomy with removal of DN using nitinol forceps with a minimum follow-up time of 1 year are included in this study. The efficiency of surgical technique and anatomical and functional results with complications is recorded.

Results: Nine patients with a mean age of 73.11 ± 2.15 years were included in this study. The mean time between DN and vitrectomy was 7.67 ± 3.74 (5-14) days. In all eyes, DN was easily chopped and removed with aspiration. Argon laser photocoagulation was performed in 4 eyes (44.44%) during surgery. All eyes were followed up for a mean time of 21.11 ± 12.36 (12-48) months. The mean preoperative best-corrected visual acuity increased significantly during the postoperative follow-up ($P < 0.001$). No complications related to the cataract surgery or DN removal were observed.

Conclusion: Surgical removal of DN with the help of these forceps with nitinol loops is found to be safe and effective in this study. This method avoids ultrasonographic energy and enables 23-gauge vitrectomy without a fragmatome.

DOI: 10.1097/IAE.0000000000003476

4.Berrones D, Rivera-Cortes M, Monroy-Esquivel L, Becerra-Revollo C, Mayorquin-Ruiz M, Velez-Montoya R. Ultrasound-guided pars plana vitrectomy. RETINA. 2022 Aug 17:10-97.

Ultrasound-Guided Pars Plana Vitrectomy

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Purpose: To assess the feasibility of a novel surgical technique that combines B-scan ultrasound with modern vitrectomy techniques.

Methods: Patients with a clinical diagnosis of infectious keratitis endophthalmitis, which were scheduled for pars plana vitrectomy and ruled out as candidates for transient keratoprosthesis, were enrolled. The ultrasound probe was placed over the eye to use the images to witness the vitreous movement around the cutter and to establish its position in relation to the retinal wall. The procedure was performed in at least four ultrasound projections (longitudinal-9,6, 3, and 12). All patients were followed for three months, and in each visit, the visual acuity and the presence of adverse effects were assessed.

Results: Overall, 12 patients (mean age: 56.2 ± 18.4 years) were enrolled. Visual acuity at baseline was 2.3 ± 0.25 logarithm of the minimum angle of resolution. Sixty-six percent achieved inactivation of endophthalmitis. Two patients had evisceration caused by uncontrolled infection, and two more had retinal detachment during follow-up. Visual acuity at the end of follow-up was 2.1 ± 0.3 logarithm of the minimum angle of resolution (P = 0.5).

Conclusion: Ultrasound-guided vitrectomy is a feasible surgical technique. More studies are needed to assess its safety profile and optimize outcomes.

DOI: 10.1097/IAE.0000000000003600

5.Komatsu H, Usui Y, Tsubota K, Fujii R, Yamaguchi T, Maruyama K, Wakita R, Asakage M, Hamada K, Yamakawa N, Nezu N. Vitreous Humor Proteomic Profile in Patients With Vitreoretinal Lymphoma. Investigative Ophthalmology & Visual Science. 2023 Dec 1;64(15):2-.

Vitreous Humor Proteomic Profile in Patients With Vitreoretinal Lymphoma

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Purpose: Vitreoretinal lymphoma is a high-grade malignant non-Hodgkin lymphoma with poor prognosis. The objective of this study was to elucidate the proteome profile of the vitreous in patients with vitreoretinal lymphoma (VRL), aiming to advance understanding of the pathophysiology of VRL.

Methods: Comprehensive proteomic analyses of vitreous humor using liquid chromatography with tandem mass spectrometry were performed for 10 patients with VRL, 10 control patients with idiopathic epiretinal membrane or macular hole, and 10 patients with ocular sarcoidosis. Differentially expressed proteins (DEPs) were identified by comparing VRL with controls and sarcoidosis, and functional pathway analysis was performed. Finally, vitreous concentrations of representative DEPs that were significantly upregulated in proteomics study were measured by ELISA using a separate cohort.

Results: In total, 1594 proteins were identified in the vitreous humor of VRL, control, and sarcoidosis samples. Also, 282 DEPs were detected in VRL, 249 upregulated and 33 downregulated, compared with controls. Enrichment pathway analysis showed alterations in proteasome-related pathways. Compared to controls and sarcoidosis, 14 DEPs in VRL showed significant upregulation. In the validation study, ELISA confirmed significantly higher vitreous concentrations of PSAT1, YWHAG, and 20S/26S proteasome complex in VRL compared with controls and sarcoidosis. Among the upregulated DEPs, vitreous PITHD1 and NCSTN concentrations correlated positively with vitreous IL-10 concentrations.

Conclusions: This study highlights aberrations in protein expression pattern in the vitreous of patients with VRL. The DEPs identified in this study may play pivotal roles in VRL pathogenesis, providing insights to enhance understanding of VRL pathophysiology and contribute to the development of VRL biomarkers.

doi:https://doi.org/10.1167/iovs.64.15.2