SESSION: Update on Retinal Detachment (PPV)
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Moderators: Stratos Gotzaridis, Khaled Sabti

Results of Peripheral Vitrectomy Under Air in Rhegmatogenous Retinal Detachment

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Purpose: To evaluate the safety and efficacy of peripheral vitrectomy under air in rhegmatogenous retinal detachment (RRD).
Patients and Methods: Patients who underwent 23-gauge or 25-gauge pars plana vitrectomy for RRD were included. After removal of core vitreous and drainage of subretinal fluid, peripheral vitreous was removed under air infusion without scleral indentation. Silicone oil or C3F8 gas was used as tamponade.
Results: Forty-five eyes of 67 patients were evaluated retrospectively. Mean LogMAR visual acuity was 1.74 ± 1.53 preoperatively. It improved to 0.28 LogMAR ± 0.32 (P <.001; paired t-test). Initial and final reattachment rates were 91% and 98%, respectively. Scleral indentation was not necessary in any case. Iatrogenic retinal breaks occurred in 7 (10.4%) cases. Macular hole developed in one case after reoperation. Surgery had to be completed with PFCL injection and indentation in 3 cases (4.4%) due to intense fogging under IOL.
Conclusions: Peripheral vitrectomy under air is safe and effective in cases with RRD. Air eliminates the need for scleral indentation, stabilizes the retina, and allows sufficient clarity for vitrectomy.

Keywords: Retinal detachment, vitrectomy under air

Primary pars plana vitrectomy with silicone oil tamponade for rhegmatogenous retinal detachment

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Purpose: To assess the anatomical and functional outcomes of primary pars plana vitrectomy (PPV) with silicone oil (SiO) tamponade for the management of rhegmatogenous retinal detachment (RRD) in our tertiary referral center.
Method: Fifty-nine eyes of 59 patients treated with PPV and SiO tamponade for RRD between January 2020 and September 2022 were included in this retrospective study. Patients' demographic and clinical (follow-up time, the time interval between symptom to surgery, macular status [on or off], proliferative vitreoretinopathy [PVR] grade, the extent of retinal detachment, SiO duration, and pre- and postoperative best-corrected visual acuity [BCVA, logMAR]) characteristics were evaluated. An attached retina six months after SiO removal is considered an anatomical success.
Results: The mean age of the patients was 58.1 ± 11.7 (range, 19-77) years (22 [37.3%] females) with a mean follow-up time of 14.1±7.6 (range, 6-34) months. The mean symptom-to-surgery interval was 20.9±19.3 (range, 3-86) days. Preoperatively, 18 eyes (30.5%) were macula-on, and PVR grades were A, B and C in 15 (25.4%), 29 (49.1%) and 15 (25.4%) eyes, respectively. The primary and overall anatomical success rates were 91% and 100%, respectively, with 5 eyes (9%) requiring secondary surgeries. Preoperative BCVA was significantly increased from 2.03±1.14 to 0.74±0.68 logMAR postoperatively ($p<0.001$).
Macula status, PVR grade, intraoperative 360-degree laser, retinal detachment extent, number of retinal tears and duration of intraocular SiO did not have any significant importance for anatomic and functional success.
Conclusion: Primary PPV with SiO tamponade is successful in obtaining functional and anatomical succes for RRD. The parameters for anatomic success are investigated widely and it is known that PVR grade is highly important but our study did not find this relation. This may be due to the low number of patients, or the advanced PPV technics. However, RRD is still a challenging disease for vitreoretinal surgeons.

Keywords: pars plana vitrectomy, rhegmatogenous retinal detachment, silicone oil

Comparison of Macular Slippage Rates in Patients with Primary Rhegmatogenous Retinal Detachment Undergoing Pars Plana Vitrectomy with Silicone-Oil or Perfluoropropane Gas Tamponade

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Purpose: This retrospective study aimed to compare the rates of macular slippage (MS) in patients with primary rhegmatogenous retinal detachments (RRD) who underwent pars plana vitrectomy (PPV) with either silicone-oil or perfluoropropane (C_3F_8) gas tamponade, and to investigate whether there is a correlation between MS and metamorphopsia.

Methods: Thirty-two patients with macula-off RRD who underwent a single 25-gauge PPV surgery were included in the study. The patients were divided into two groups based on the endotamponade used during surgery: silicone-oil (n=17) or 14% C_3F_8 gas (n=15). Demographic information, preoperative, intraoperative, and postoperative characteristics were collected from medical records. Ophthalmological examinations were conducted, and data on various parameters, including liquid perfluorocarbon (PFCL) use, drainage retinotomy, MS rates, and presence of metamorphopsia, were assessed.

Results: Liquid PFCL was used in all cases, and no patient underwent drainage retinotomy. MS was detected in 8 eyes (53.3%) in the gas tamponade group and 3 eyes (17.6%) in the silicone-oil group, and the difference between the two groups was statistically significant (p=0.001). In both groups, 2 patients with MS suffered from metamorphopsia, but no significant correlation was found between MS and metamorphopsia in the gas group (p=0.59).

Conclusion: The study suggests that MS rates differ significantly between patients who underwent PPV with silicone-oil or C_3F_8 gas tamponade. Furthermore, while MS was observed in both groups, it may not always result in metamorphopsia in most patients after detachment surgery.

Keywords: macular slippage, macula-off retinal detachment, silicone-oil

Lyophilized amniotic membrane for rhegmatogenous retinal detachment

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Purpose: To determine the safety and efficacy of lyophilized amniotic membrane patch as replacement of conventional endotamponades for rhegmatogenous retinal detachment repair surgery

Methods: Prospective case series. Patients older than 18 years-old with primary rhegmatogenous retinal detachment and superior tears within one meridian extension or less and visual acuity of hands movement or better were included. Demographic features, complete ophthalmological assessment including intraocular pressure, best corrected visual acuity and lens status were registered before and after surgery. 25G pars plana vitrectomy was performed in every case; associated with phacoemulsification and intraocular lens implant if needed, according to surgeon criteria. Standard vitrectomy was performed and after air-solution exchange a lyophilized amniotic membrane patch was placed over the causal lesion. Patients were followed-up for at least 3 months after surgery. Patients with inferior causal breaks or grade C inferior proliferative vitreoretinopathy or another visual impairing pathology (glaucoma, uveitis, diabetic retinopathy, etc) were excluded.

Results: 13 eyes of thirteen patients were included, female sex was predominant, 92% had retinal detachment with macular involvement, visual loss was manifested 36.5 ± 63.2 days before surgery. Initial visual acuity ranged from 2.5 to 0.3 logMAR. All cases underwent vitrectomy and 62% of them had phacoemulsification due to the presence of lens opacities. Most common complication during surgery was amniotic membrane loss or insufficient size, and there were no postoperative complications related with a amniotic membrane patch, only one eye has retinal redetachment due to preexistent PVR. Retinal reattachment was achieved in 100% of cases and all patients remained stable, with no significant changes in intraocular pressure, lens transparency, or posterior capsule.

Conclusions: Amniotic membrane constitutes an alternative to long-term tamponades since it allows the sealing of causal lesions,and shows several advantages over conventional tamponades such as potential reduction of proliferative vitreoretinopathy.

Keywords: Retinal detachment, Vitrectomy, Liophilized amniotic membrane

A Novel Technique of Subretinal Fluid Drainage in Eyes With Rhegmatogenous Retinal Detachment

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Purpose: To evaluate safety and efficacy of draining subretinal fluid (SRF) through direct retinal penetration with 33G polytip subretinal cannula in eyes with rhegmatogenous retinal detachment.
Design: Retrospective consecutive interventional clinical study.
Methods: 10 eyes of 10 consecutive patients with primary rhegmatogenous retinal detachment who underwent 25-gauge pars plana vitrectomy with subretinal fluid drainage with 33G subretinal cannula (MedOne) were included in the study. Visual acuity and spectral-domain optical coherence tomography were performed preoperatively and at postoperative visits. Visual acuity, anatomical success, peroperative and postoperative complications were evaluated.
Results: Mean age was 64.4±9.6 years (50-81). Single-operation reattachment rate was 90%. Mean (±SD) logMAR visual acuity at the last follow-up was significantly better ($p<0.001$) than preoperatively (2±1.1 vs 0.3±0.5). There was no intraoperative complication due to application of this technique. ERM developed in 1 eye and RPE atrophy at the drainage site was observed in another eye.
Conclusions: Drainage of SRF with 33G subretinal cannula is associated with good anatomical and functional results and low risk of complications. This drainage technique should be evaluated in the long-term in a larger group for anatomical and functional outcomes.

Keywords: Retinal detachment, subretinal fluid drainage, subretinal cannula

Outcomes of “minimal drainage” vitrectomy for retinal detachment repair

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Standard drainage (SD) pars plana vitrectomy for primary retinal detachment involves draining as much subretinal fluid (SRF) to near complete dryness, either with a retinotomy or perfluorocarbon liquid and full exchange of vitreous fluid for gas. We propose a compromise between SD and pneumatic retinopexy, “minimal drainage” PPV (MD). With MD, SRF is drained from the break during fluid air exchange then retinopexy is done followed by gas exchange. No drainage of vitreous cavity fluid is performed.

We retrospectively analyzed sequential primary RRD surgery undergoing either SD or MD for RRD. Slightly expansile gas concentration was used in the MD, 30% SF6 gas (vs 20% in the SD group or 20% C3F8 gas vs. 14% to account for the under drainage of subretinal fluid. Postoperative positioning instructions were the same for all cases - supine on their back for 2 hours then positioning to support the retinal break at night.

There were 20 eyes in the MD group and 20 in the SD. 6/20 (30%) had mac on RD in the MD and 7/20 (35%) had mac on RD in the SD. In the SD, 14/20 (70%) had drainage retinotomy, and in 10/20 (50%) PFCL was used. C3F8 (vs. SF6 gas) gas was used in 20% of the MD and 50% of the SD group.17/20 (85%) of MD. 14/20 (70)% of SD had primary anatomic success at 3 months (p=.68). Retinal displacement on AF was seen in 20% of MD and 40% SD (p=.19). ELM/Ellipsoid zone continuity for macula off detachments was 79% for MD and 50% for SD (p=0.15).

Minimal drainage of subretinal fluid was at least not inferior to SD in primary re-attachment and retinal displacement rates. This technique provides a simple and efficient option avoiding the need, cost and risks of drainage retinotomy and PFCL use.

Keywords: retinal detachment, pars plana vitrectomy

The impact of short-term postoperative face-up position on unintentional retinal displacement after pars plana vitrectomy for rhegmatogenous retinal detachment

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Purpose: To evaluate the efficacy and safety of strict short term supine position in preventing the occurrence of unintentional retinal displacement after pars plana vitrectomy (PPV) with gas tamponade for rhegmatogenous retinal detachment (RRD).
Methods: A retrospective observational study was conducted in two ophthalmological surgical centers.Twenty five patients with diagnosis of macula off RRD assumed a strict face-up posture for 2 hours immediately after PPV and 20 % sulfur hexafluoride (SF6) tamponade. Fundus autofluorescence (FAF) imaging was subsequently recorded to detect unintentional retinal displacement using ultrawide-field imaging system Optos, Daytona (Optos Inc, Marlborough, MA, USA) at 1 month postoperatively. Unintentional retinal displacement detected by the presence of retinal vessel printings (RVPs) on the fundus autofluorescence (FAF) imaging.
Results: The mean age of these 25 patients was 58,08 years, range of 28 to 78 years. Of the 25 eyes, retinal detachment involved 1 quadrant in 6 eyes, 2 quadrants in 14 eyes, 3 quadrants in 4 eyes and 4 quadrants in 1 eye. Fundus autofluorescence imaging after complete reattachment of the retina, FAF photography demonstrated RVPs in 2 of the 25 eyes.
Conclusion: Our findings suggest that strict face up positioning for 2 hours after PPV with gas tamponade for macula off RRD, was associated with a reduction in the incidence and degree of postoperative unintentional retinal displacement.

Keywords: retinal detachment, retinal displacement, vitrectomy

Photoreceptor Integrity Following Pars Plana Vitrectomy for Primary Rhegmatogenous Retinal Detachment

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Purpose: To investigate the factors affecting the macular photoreceptor integrity following pars plana vitrectomy for macula-off rhegmatogenous retinal detachment.
Methods: Two hundred consecutive patients (200 eyes) with primary macula-off rhegmatogenous retinal detachment underwent 25-gauge pars plana vitrectomy with subretinal fluid drainage through peripheral retinal break(s) (PRB)(n=60), posterior retinotomy (PR) (n=40), or perfluorocarbon liquid (PFCL) (n=100) were retrospectively included in the study. Standard silicone oil (n=100), heavy silicone oil (n=20), and C3F8 gas (n=80) were used as intraocular tamponade. Best corrected visual acuity (BCVA) and spectral-domain optical coherence tomography were performed preoperatively and at 3 and 6 months postoperatively. Disruption of macular photoreceptor integrity (DMPI) was defined as discontinuity of the external limiting membrane, ellipsoid zone and interdigitation zone at 6 months.
Results: Disruption of macular photoreceptor integrity was detected in 56 (28%) eyes. A statistically significant correlation was found between worse visual acuity and DMPI (p=0.0001). Sixty eyes (30,5%) had vision-limiting maculopathies. These were epiretinal membrane (20%), cystoid macular edema (9%), macular holes (1%), and macular neovascularization (0,5%). BCVA significantly better in patients without DMPI and maculopathy (p=0.0001). There was an association between drainage technique and macular PID. PFCL-assisted drainage is associated with DMPI (p=0.03). There was an association epiretinal membrane and DMPI (p= 0.01). There was no an association between type of intraocular taponade and DMPI.
Conclusions: PFCL-assisted drainage is associated with worse visual acuity and greater risk of DMPI compared with PRB or PR. The reason for worse visual acuity in eyes with epiretinal membrane after vitrectomy is outer retinal band discontinuity.

Keywords: Rhegmatogenous retinal detachment, photoreceptor integrity, subretinal fluid drainage

PVR Game

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This presentation demonstrate how to manage ERM and starfolds in cases of PVR. Also how to deal with Subretinal bands and napkins ring.
Different techniques of retinotomy and retinectomy.

Keywords: Retinotomy, napkins ring, Subretinal band

Surgical technique for closed funnel retinal detachment repair

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Purpose:
To describe a surgical technique and tips for management of Retinal detachment with extensive PVR (closed funnel configuration) in children and young adults

Patients and Methods:
Twelve eyes of 12 children and young adults with closed funnel RD were included in this retrospective case series. A similar surgical technique was followed in all cases. The technique consisted of lensectomy, core vitrectomy, epiretinal membrane removal, 360 degrees retinectomy, subretinal membrane removal, perfluro-carbon liquid injection, internal limiting membrane removal, 360 degrees laser barrage and silicon oil injection.

Results:
Analyzing the data showed, 11 of the patients were males, 1 was female. Mean age was 11 years (range 3-23). Causes of RD were traumatic (n:4) and high myopia (n:3). Preoperative best corrected visual acuity (BCVA) ranged from light perception (LP) to hand motion (HM) vision. Postoperative BCVA ranged from counting fingers at 50 cm to 0.2.
Four patients experienced 1 re-detachment which was repaired. All patients ended up with flat retinae after at least 6 months of follow up.

Conclusion:
The proposed surgical technique for closed funnel RD is reproducible and effective. We recommend this attempt for repair of sever complicated forms of RD in order achieve retinal reattachment and to gain at least ambulatory vision for fear of the other eye suffering the same fate.

Keywords: Closed Funnel, PVR, RD