10:35 AM

Early Versus Delayed Vitrectomy For Nondiabetic Vitreous Hemorrhage

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- Kevin J. Blinder, MD

OBJECTIVE To evaluate the visual and anatomic outcome of early versus delayed surgery in non-diabetic vitreous hemorrhage.

PURPOSE To analyze the surgical and visual outcomes in patients who underwent early versus delayed vitrectomy for dense non-diabetic, non-vascular vitreous hemorrhage from undetermined cause.

METHODS A retrospective, consecutive series evaluating all patients with a pre-operative diagnosis of non-diabetic vitreous hemorrhage treated surgically at The Retina Institute over the past 5 years. Vitreous hemorrhage had to be described as dense, with first order vessels not visualized on fundoscopic exam. Exclusion criteria included a diagnosis of diabetes mellitus, retinal vascular disease, any prior intraocular surgery other than cataract extraction, or any previously diagnosed ocular conditions. A total of 275 patients and 286 eyes were evaluated, with 52 patients and 52 eyes meeting inclusion criteria. Surgical treatment was with standard pars plana vitrectomy.

RESULTS Of the 52 eyes that met inclusion criteria, 32 (61.5%) were found to have at least one retinal break. 16 eyes (30.1%) had a rhegmatogenous retinal detachment. Average age of patients undergoing surgery was 62. All eyes underwent 23 or 27 gauge pars plana vitrectomy by one of the physicians within the practice. Mean time from diagnosis of the vitreous hemorrhage to surgical intervention was 15 days (range 0-78 days). Early vitrectomy was defined as surgical intervention within 10 days of diagnosis, while late vitrectomy was defined as surgical intervention following 10 days. Of eyes that were found to have a retinal detachment 75% were phakic and 25% were pseudophakic.

Final post operative visual acuity in the early surgery cohort was 20/66, while late surgery was 20/89 which did not achieve statistical significance (P=0.67). There was no statistically significant difference in the number of operations nor the use of silicone oil between the 2 groups.

CONCLUSION A significant percentage of patients with retinal detachment were phakic at the time of vitreous hemorrhage (75%) as compared to pseudophakic. Data from the largest series to date indicates that in phakic patients with dense hemorrhage, the risk of retinal detachment is high and should prompt consideration for more urgent surgical intervention.

TAKE HOME MESSAGE Phakic patients with vitreous hemorrhage have a high rate of retinal detachment.

HUMAN RESEARCH This study involves human research.
IRB Approval Status: Approval waived

10:40 AM

Randomized Trial Comparing Pneumatic Retinopexy vs. Vitrectomy in the Management of Primary Rhegmatogenous Retinal Detachment (PIVOT): 1-Year Results

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OBJECTIVE To compare 1-year anatomical and functional outcomes in patients randomized to pneumatic retinopexy versus pars plana vitrectomy for primary rhegmatogenous retinal detachment.

PURPOSE Contemporary practice patterns for the management of rhegmatogenous retinal detachment (RRD) vary markedly. We report results of the first randomized controlled trial to compare outcomes of RRD repair, including anatomical success, functional success, complications, and impact on quality of life, for patients undergoing pneumatic retinopexy (PnR) versus vitrectomy (PPV).

METHODS Prospective randomized controlled trial conducted from August 2012 to May 2017. RRDs irrespective of lens status presenting with a single retinal break, or group of breaks no larger than one clock hour, above the 8 and 4 o'clock meridians were

included. Patients with any retinal breaks at any location in attached retina were included. Macula-on and -off RRDs were assigned to each group by stratified randomization and treated within 24 hours and 72 hours, respectively. The primary outcome measure was 1-year ETDRS visual acuity. Secondary outcomes included primary reattachment rates, subjective visual function (VFQ-25), health related quality of life (SF36) and complication rates.

RESULTS One-hundred seventy-six eyes of 176 patients were enrolled in the study. The last patient was enrolled in May 2016. Upon completion of the last patient 1-year study visit in May 2017, 1-year ETDRS visual acuity data will be compared between the PnR and PPV groups and reported at the 2017 ASRS Meeting. Primary reattachment and complication rates will also be reported for both patient groups. An *a priori* planned sub-group analysis will be performed to determine results stratified by macular status.

CONCLUSION We report the 1-year anatomical and functional outcomes of this randomized controlled trial comparing PnR versus PPV in the management of primary RRD. The results of this study will assist vitreoretinal surgeons in making evidence-based management decisions for their patients with this condition.

TAKE HOME MESSAGE The results of this randomized controlled trial comparing PnR versus PPV in the management of primary rhegmatogenous retinal detachment will assist vitreoretinal surgeons in making evidence-based management decisions for their patients with this condition.

HUMAN RESEARCH This study involves human research.
IRB Approval Status: Approved by institutional review board

10:55 AM

A Novel Contrast Sensitivity Testing Device as a New Measure of Visual Recovery in Retinal Detachment

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- Luis Lesmes, PhD
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OBJECTIVE To demonstrate the utility of computerized contrast testing in assessing visual recovery in retinal detachment.

PURPOSE Patients with fovea involving (mac-off) retinal detachments (RD) have a wide range of visual recovery. Limitations in visual function are not always represented in the post-operative visual acuity, supporting the need for additional visual endpoints. We describe a novel device that uses an efficient testing algorithm to determine a patient's contrast sensitivity after retinal detachment repair.

METHODS This is a prospective, observational, multi-center IRB-approved case series. Patients with mac-off rhegmatogenous retinal detachments were enrolled from December 2016 through January 2017. The Sentio Platform (Adaptive Sensory Technology, San Diego, CA) was used to perform quick contrast sensitivity function (qCSF) testing in each eye of all patients. The qCSF method uses computerized, Bayesian, adaptive testing to track changes in a patient's contrast sensitivity across spatial frequencies to calculate an area under the curve (AUC). Contrast sensitivity was

compared to previous data for age-matched controls, represented by calculating a Z-score (AUC-AgeMean)/AgeStdDev.

RESULTS 10 eyes were tested in 10 patients, with an average age of 59.3 years. Mac-off RDs had undergone primary repair with vitrectomy an average of 155 days prior to testing. 8 eyes were pseudophakic and 2 had non-visually significant cataracts at the time of testing, with a mean best-corrected visual acuity of logMAR 0.3 (20/40). The mean qCSF AUC was 0.84 ± 0.41 compared 1.29 ± 0.19 in age-matched controls. The average Z-score was -2.13, equating to greater than two standard deviations less than the mean for age. Even in the 5 eyes with "good" visual recovery by visual acuity standards (defined as BCVA ≥ 20/30), the average Z-score was -1.08, or greater than 1 standard deviation below the average for age matched controls.

CONCLUSION qCSF testing confirms reduced contrast sensitivity thresholds in patients after mac-off RD repair when compared to age-matched controls. In patients with good VA, qCSF was still able to identify limited visual function. While the technique needs additional exploration in a larger sample size, it may represent a promising visual endpoint with a greater dynamic range for future clinical trials.

TAKE HOME MESSAGE Contrast sensitivity testing with this novel device using an efficient algorithm can provide more complete analysis of visual limitations after retinal detachment repair.

HUMAN RESEARCH This study involves human research.
IRB Approval Status: Approved by institutional review board

11:00 AM

Testosterone Supplementation and Associations With Central Serous Chorioretinopathy

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- David N. Zacks, MD, PhD
- Wei Pan
- Brian L. VanderBeek, MD

OBJECTIVE Testosterone supplementation is associated with the development of central serous chorioretinopathy in men.

PURPOSE The purpose of this study is to determine if testosterone replacement is associated with central serous chorioretinopathy (CSCR).

METHODS Retrospective matched-cohort study using medical claims data from a large, national U.S. insurer. The testosterone cohort was created using all male patients who filled a prescription for testosterone during their time in the plan from 2000-2013. There were 5 matched controls for every eligible case, which were matched on age, sex, race and similar time in plan. The outcome of interest was a new diagnosis of CSCR. Cox proportional hazard regression was used to assess the hazard of CSCR while censoring for end of eligibility or if any of the above exclusion criteria occurred. Other covariates of interest were diabetes mellitus (DM) and hypertension (HTN).

RESULTS The testosterone cohort consisted of 9,238 incident users compared with 46,190 matched controls. Cohorts were similar in age, 54.6 and 54.4 years old in the testosterone and control cohorts, respectively, but the testosterone group had more DM (24.4% versus 11.4%) and HTN (51.4% versus 37.9%). There were 9 (0.10%) cases of CSCR in the testosterone cohort and 22 (0.05%) in the control. After controlling for all

covariates of interest, multivariate analysis revealed that testosterone supplementation significantly increased the hazard for CSCR (HR: 2.97, 95% CI: 1.32-6.71, p=0.009).

CONCLUSION Although the incidence of CSCR is low (0.10%) in users of testosterone, supplementation therapy increases the hazard of CSCR by 2.97.

TAKE HOME MESSAGE Testosterone supplementation in men increases the hazard of central serous chorioretinopathy by 2.97.

HUMAN RESEARCH This study involves human research.
IRB Approval Status: Approved by institutional review board