THE **RETINA** PARTNERS

Encino Santa Monica Valencia Thousand Oaks Century City

(877) 3-RETINA

Case of the Month – January 2019

Presented by David Lazar, MD

A 57-year-old myopic female was referred by her ophthalmologist to evaluate a 4-week history of peripheral vision changes in her left eye. Her ophthalmologist detected a temporal retinal detachment and she as referred for consultation and treatment. The vision on the day of examination at The Retina Partners was $20/30^{+2}$ OD and $20/30^{-2}$ OS. A quadrantic, macula-involving (fovea sparing) rhegmatogenous retinal detachment was confirmed with a single break at 2:00. Her SD-OCT's from that visit are shown below:

A

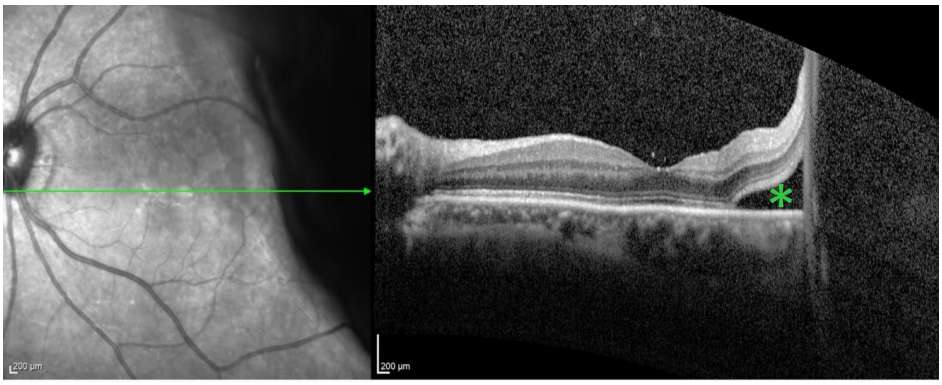
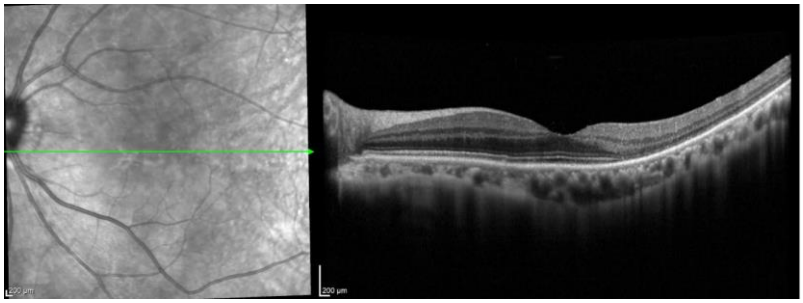


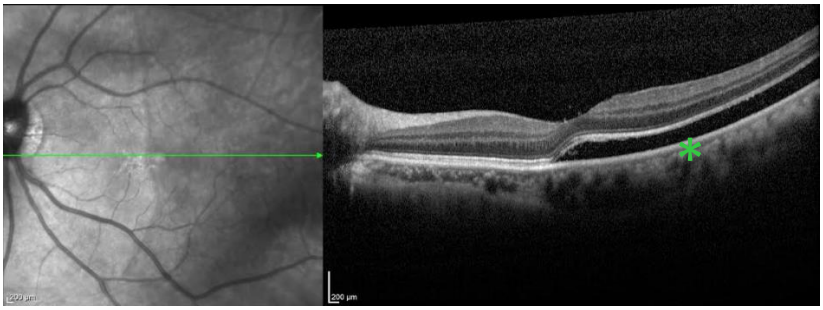
Figure 1 (5/30/17): A. OCT macula of the left eye shows subretinal fluid (green asterisk) extending to within 1250 microns of the central foveal depression.

Clinical Course:

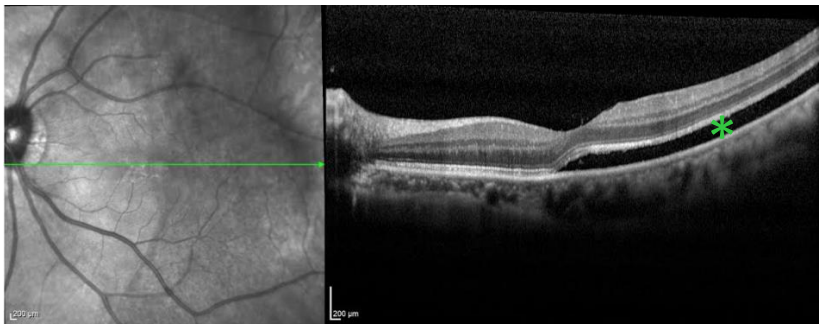
Different treatment strategies were discussed and included pneumatic retinopexy, scleral buckle, and pars plana vitrectomy. As this patient was phakic, had one tear in the superior hemisphere, and no additional retinal pathology, a staged pneumatic retinopexy was performed with injection of 0.4cc of pure SF_6. The patient returned 1 day later and laser retinopexy was performed with excellent laser absorption confirming resolution of the subretinal fluid from under the retinal break. Over the ensuing months, the patient was monitored closely with serial OCT's (shown below) and dilated exams. A total of 8 exams were performed in the post operative period in order to monitor continued decrease of subretinal fluid as well as formation of new retinal breaks. 12 total exams were performed until the subretinal fluid had noted to be completely resolved (11/20/18).



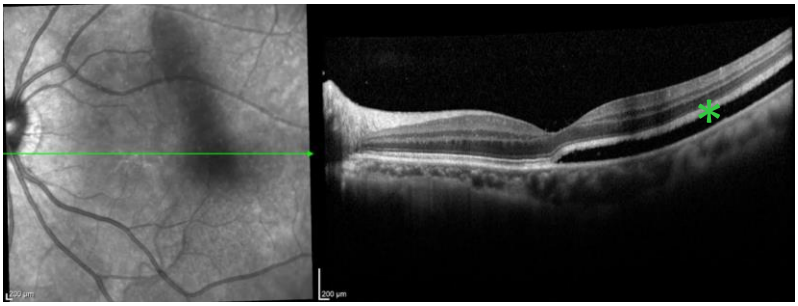
6/2/17 VA OS: 20/40



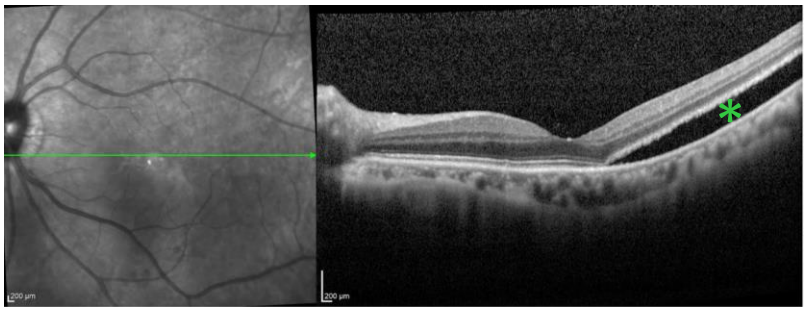
6/6/17 VA OS: 20/40



7/6/17 VA OS: 20/40-2



11/16/17 VA OS: 20/30-1



11/20/18 VA OS: 20/25-2

Figure 2: Serial SD-OCT's after successful pneumatic retinopexy closed the causative peripheral break (5/30/17). Thick subretinal fluid is slowly reabsorbed (green asterisks) over time with approximation of the macula and improved visual acuity.

Discussion:

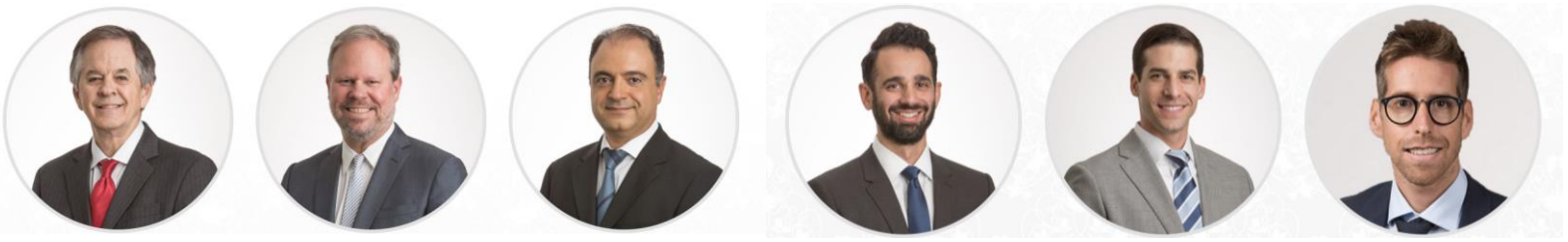
Pneumatic retinopexy was introduced in the late 1900's by Hilton and Grizzard as the only procedure to repair rhegmatogenous retinal detachments in an office setting. Pneumatic retinopexy is an elegant procedure which is an extremely useful treatment option for the repair of retinal detachment. Although the procedure itself is simple, the post-operative care can be challenging, especially when subretinal fluid persists.

Persistent subretinal fluid is a well-known phenomenon which tends to occur more frequently in the setting of chronic retinal detachment repaired with non-vitrectomy methods (i.e. scleral buckling and pneumatic retinopexy). Both of these procedures repair retinal detachments by sealing the causative retinal breaks, but neither employs complete subretinal fluid drainage. In fact, in the case of pneumatic retinopexy and non-drainage scleral buckles, no subretinal fluid is drained at all. Therefore, these procedures rely on the retinal pigment epithelium to evacuate the remaining subretinal fluid once the retinal break is closed. When more subretinal fluid is left behind, it tends to persist for longer periods of time. Additionally, several mechanisms which contribute to a delay in subretinal fluid reabsorption have been proposed. In chronic retinal detachments, subretinal fluid is more viscous and contains a higher cellular and protein content, and thus creates a higher subretinal oncotic pressure. This slows fluid resorption by acting against the RPE pump. Retinal pigment epithelial dysfunction in the case of heavy cryotherapy, or in the setting of choroidal ischemia, have also been proposed as possible mechanisms of delayed subretinal fluid resorption. In our case, it was felt that the patient likely had an asymptomatic chronic retinal detachment before developing an acute posterior vitreous detachment with progression of the detachment. The delayed fluid resorption was thought secondary to the presumed chronic component.

Differentiating persistent subretinal fluid from a failing pneumatic retinopexy can be difficult for the treating physician and patient alike. The accurate identification of a failing procedure with prompt surgical intervention is essential to ensure an optimal outcome, but on the other hand, proceeding to surgery for persistent subretinal fluid when all retinal breaks have been successfully closed can lead to needless intervention and expose the patient to unnecessary risk. In this case, subretinal fluid was displaced by the gas bubble and actually shallowly detached the fovea temporarily. However, a high degree of confidence was maintained by the treating physician that all retinal breaks were completely treated. By post-operative month number 1, there was a clear decrease in subretinal fluid height as seen on OCT above (7/6/17). Close observation was continued, and slowly the subretinal fluid completely resolved. By post-operative month 17, all fluid had resorbed with excellent visual acuity results. Through detailed examination, accurate documentation, serial imaging and patience, the surgeon was able to accurately differentiate persistent subretinal fluid from a failing pneumatic retinopexy, therefore achieving an excellent outcome with a single procedure.

Take Home Points

- Pneumatic retinopexy is an excellent procedure to repair retinal detachments, but close post-operative monitoring is necessary to ensure success.
- Pneumatic retinopexy relies on the retinal pigment epithelium to resorb subretinal fluid. This process may be delayed and lead to persistent subretinal fluid.
- Serial imaging with detailed and repeated examination is essential for differentiating persistent subretinal fluid from new or incompletely treated retinal detachment after pneumatic retinopexy.



Thomas Hanscom Robert Engstrom Hajir Dadgostar Amir Guerami David Lazar Christian Sanfilippo