

Pneumatic Retinopexy for Early Rhegmatogenous Retinal Detachment

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Purpose: The purpose of this study was to evaluate the success rate of pneumatic retinopexy in the patients of early rhegmatogenous retinal detachment.

Material & Methods: The study was performed at Ophthalmology Department of Gujranwala Medical College/ Teaching Hospital. All the Patients were admitted from outpatient department. Retinal examination with confirmation of all retinal pathology was done by using indirect Ophthalmoscope and three mirror indirect lens. Topical anesthesia or a retrobulbar block was used for patient comfort. Laser photocoagulation was applied in attached areas of retina. Intraocular gas was injected. SF₆ was drawn into tuberculin syringe to provide tamponade to the detached retina. Intraocular pressure was assessed by checking the pulsations at optic disc and by checking the light perception. Antibiotic steroid ointment was applied and eye was patched. Postoperatively Argon laser was reinforced close to the break in all the cases to seal the break. Patients were followed up for six months. Anatomical reattachment of the retina was our primary outcome.

Results: 15 patients of early rhegmatogenous detachment were included in this study, 9 were male and 6 were females. All the patients had single retinal break at superior quadrant. After pneumatic retinopexy 10 patients had attached retina till their last follow up of six months. The success rate of pneumatic retinopexy was 66%. Rest of the five patient required further surgery.

Conclusion: In selected cases of early rhegmatogenous retinal detachment pneumatic retinopexy is an effective and less expensive procedure that avoids most of the complications that usually occur with other retinal reattachment procedures.

Key Words: Pancreatic Retinopathy, Retinal Detachment, Intraocular Gas.

Rhegmatogenous retinal detachment is a full-thickness defect in the sensory retina, caused by vitreous traction. The term rhegmatogenous is derived from the Greek word rhegma, which means a discontinuity or a break. A rhegmatogenous retinal detachment occurs when a break in the retina leads to accumulation of fluid between neurosensory retina and the retinal pigment epithelium. It is the most common retinal emergency causing loss of vision, with an incidence of 1 in 10,000 person per year.¹

Pneumatic retinopexy, scleral buckling, and pars plana vitrectomy are the most accepted surgical

interventions for eyes having Rhegmatogenous retinal detachment^{1,2}. Pneumatic retinopexy was first introduced by Hilton and Grizzard in 1986 as an Outpatient procedure to treat rhegmatogenous retinal detachment³. It is indicated in patients with single break having subclinical retinal detachment in the superior quadrant of eye. It supplemented the preexisting surgical techniques used to treat the rhegmatogenous detachments including scleral buckling and parsplana vitrectomy. It is an effective, less invasive treatment option for retinal detachment in selected cases^{4,5}.

Pneumatic retinopexy is technically an easy

procedure with very few complications like proliferative vitreo retinopathy, new break formation, glaucoma and cataract⁶. During pneumatic retinopexy a gas is injected into the vitreous cavity and head is positioned so that the gas bubble floats to the detached area and presses it against the detachment. Then a freezing probe (cryopexy) or laser beam (photocoagulation) is used to seal the tear in the retina.

The size and location of the tear in the retina will determine whether pneumatic retinopexy can be helpful or not. Pneumatic retinopexy can be useful if there is a single break or small tear that caused the detachment and there is fresh retinal detachment and break is in the superior portion of the retina.

Pneumatic retinopexy reattaches the retina in most of the selected cases. There are more chances of good vision after the surgery if the macula was attached before surgery. If macula is affected, chances of good vision after the surgery is still possible but are less. Generally patient experiences less pain, and there are chances of quicker recovery in most of the cases and he patient feels more comfortable in home environment.

The purpose of this study was to assess the success rate of pneumatic retinopexy in some selected patients presenting with fresh rhegmatogenous retinal detachment with break in the superior part of the retina.

MATERIAL AND METHODS

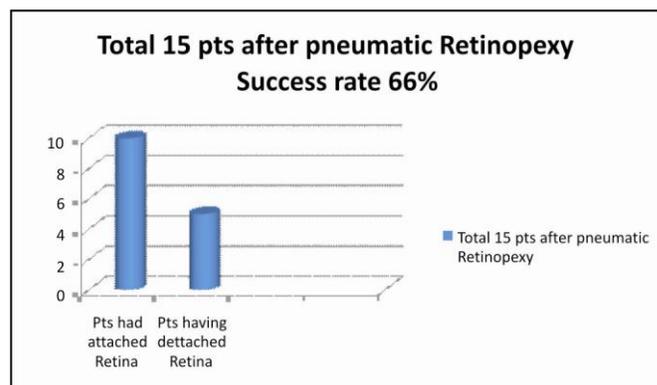
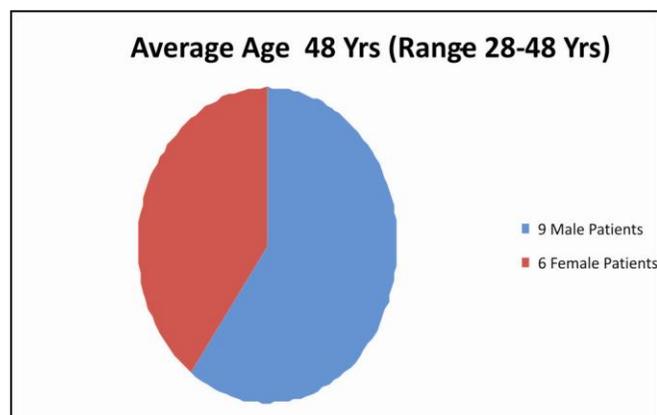
An interventional case series was performed on 15 patients from June 2014 to September 2015 at Gujranwala Medical College / Teaching Hospital. All the patients were admitted from outpatient department. Patients with early retinal detachment with superior retinal break between 10 - 2 'o' clock, patients having minimal or no media opacity, and the patients who were able to maintain positioning for 5-8 days after the procedure were included in the study. The exclusion criteria were Proliferative vitreoretinopathy (PVR), extensive lattice degeneration or traction, severe glaucoma, and the patients who have to travel to altitude soon after the surgery.

After taking informed consent and complete examination, patients were admitted in the ward. Retinal examination with confirmation of all retinal pathology was done by using indirect Ophthalmoscope and three mirror indirect lens. Topical anesthesia or a retrobulbar block was used for

patients comfort. Laser photocoagulation was done on attached areas of retina. 0.35 to 0.60 ml intraocular gas was injected. SF₆ was drawn into 1 cc syringe to provide tamponade to the retina. Intraocular pressure was assessed by checking the pulsation at optic disc by checking the light perception. Anterior chamber paracentesis was done if intraocular pressure was raised after injecting gas. Antibiotic steroid ointment was applied and eye was patched. After injection of sulfur hexafluoride and 6 hours face down positioning, the head position was changed so that the gas bubble could efficiently tamponade the retinal break. Postoperatively Argon laser was reinforced close to the break to seal it⁷. Patients were examined daily for one week postoperatively while they were in ward. Follow up visits were done after one week, three weeks and then monthly up to six months.

RESULTS

A total of 15 pneumatic retinopexies were performed to treat rhegmatogenous retinal detachment between June 2014 and September 2015 were identified. The average patient age was 48 years (range 28 - 68). There were 9 right eyes and 6 left eyes. 9 (60%) of the



patients were male and 6 (40%) were female. Twelve (80%) cases were phakic, 4 (26%) were pseudophakic. Ten (66%) eyes had retinal detachment with subretinal fluid involving the fovea. Out of 15 patients of rhegmatogenous retinal detachment 10 had attached retina till their last follow up of six months. The success rate of pneumatic retinopexy was 66%. Rest of the patients required further surgery.

DISCUSSION

The rate of retinal reattachment with pneumatic retinopexy varies from 60% to 91% depending upon patient's selection. It is less costly to perform pneumatic retinopexy than scleral buckling and pars plana vitrectomy and it avoids many of the complications associated with these procedures.⁸

Single operation success rate is slightly lower than operating room procedure. One survey of the literature showed a initial success rate of 75.5%, with a final success rate of 97.4%, as opposed to the initial success rate of pars plana vitrectomy and scleral buckling which are in the range of 85-88%.⁹ Generally studies have reported higher success rate of pneumatic retinopexy in phakic eyes, likely due to missed or new tears in pseudophakics and aphakics.

Complications may include proliferative vitreoretinopathy (PVR), new break formation. Aniseikonia may also occur after pneumatic retinopathy.¹⁰ A study was done from 2000 to 2012 which showed that the success rate of pneumatic retinopexy was 63%.¹¹ A study was done in 2013 which showed that the success rate of pneumatic retinopexy was 69.6% and it showed that causes of failure include pseudophakia, a large retinal break, missed breaks or new breaks and proliferative Vitreo retinopathy PVR.¹² Success rate in our study was 66% which is almost similar to the studies which were done previously.

Our study showed a 26% of new or missed retinal breaks. It is most likely that most of these breaks were new breaks because good preoperative examination of the retina with no additional break was a prerequisite for pneumatic retinopexy. May be the gas bubble caused movement of the vitreous and there was formation of additional retinal breaks, making this high complication rate worrying.

Our study showed that pneumatic retinopexy is technically an easy and useful minimally invasive technique for the treatment of subclinical

rhegmatogenous retinal detachment with single break in the superior quadrant. In our study sample size was small so further multicentre studies are recommended.

CONCLUSION

In selected cases of early rhegmatogenous retinal detachment pneumatic retinopexy is an effective and minimally invasive procedure that prevents most of the complications that are usually associated with other retinal detachment surgeries.

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