PNEUMATIC RETINOPEXY FOR RHEGMATOGENOUS RETINAL DETACHMENT

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Purpose: The purpose of this study is to describe the surgical outcomes of treating primary rhegmatogenous retinal detachment (RRD) with pneumatic retinopexy as treatment of choice, and to assess frequency of postoperative redetachment.

Setting: We conducted a hospital-based retrospective, noncomparative case series study at the Department of Ophthalmology, Zhongxing Branch, Taipei City Hospital, Taiwan.

Methods: We included all cases of RRD in which breaks were superior (between clock hours 8 and 4), and not exceeding 2 clock hours in extent. Long-standing RRD, evidence of proliferative vitreoretinopathy (PVR) or inferior breaks, and cases unable to keep appropriate postoperative posture were excluded. Single-operation success was defined as successful retinal attachment following the first attempt at pneumatic retinopexy (PR). Final success was defined as successful attachment, either after single-operation success or after an additional operation.

Results: Of 60 cases of retinal detachment, 5 cases (8.3%) of superior RRD undergoing PR were enrolled between January 2003 and August 2005. Two subjects were female (40%) and 3 were male (60%). The mean age was 44.2±18.1 years. Every case was followed up for 6 months or more. The mean follow-up interval was 90.2 39.0 weeks. The single-operation success rate was 60%, and the final success rate was 100% during our follow up. There were no adverse effects or major postoperative complications noted throughout our follow-up period.

Conclusions: In our study, pneumatic retinopexy was found to be a useful and safe procedure for superior rhegmatogenous retinal detachment surgery in

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carefully selected cases.

Key Words: pneumatic retinopexy, rhegmatogenous retinal detachment, scleral buckling surgery

INTRODUCTION

Pneumatic retinopexy (PR) is a minimally invasive procedure for the repair of superior rhegmatogenous retinal detachment (RRD), a treatment that has become increasingly popular [1]. RRD with superior breaks is not uncommon in Asia: the annual incidence of RRD is 7.98 per 100,000 people in China [3], and the most common site of the retinal break(s) is the superotemporal retina (44.9%), followed by the inferotemporal retina (15.3%) in Singapore [4]. PR uses a bubble of gas, either cryopexy or laser, to push the two layers of retina back together and to keep fluid out. The procedure also requires postoperative prone positioning for optimal healing [2].

Pneumatic retinopexy is controversial because the literature reports a variable initial success rate, sometimes less than conventional scleral buckling surgery [5-7]. Although pneumatic retinopexy is generally a safe surgical procedure, it may be associated with certain adverse outcomes. These most commonly include misplaced gas injection, subretinal gas, vitreous hemorrhage, new retinal breaks, failure to reattach the retina, proliferative vitreoretinopathy, and delayed reabsorption of subretinal fluid [8]. However, data on acceptance and experience of pneumatic retinopexy as the first treatment of choice for primary RRD in Taiwan is limited.

The purpose of our study is to describe the surgical outcomes for primary RRD when pneumatic retinopexy is the treatment of choice, and to assess frequency of postoperative redetachment.

METHODS

Patient Enrollment

We retrospectively reviewed a consecutive series of patients who underwent pneumatic retinopexy as a first procedure of rhegmatogenous retinal detachment (RRD) at the Zhongxing Branch, Taipei City Hospital (Taipei, Taiwan) between January 2003 and August 2005. In this study, we included all cases of RRD in which breaks were superior (between clock hours 8 and 4), and not exceeding 2 clock hours in extent. We excluded cases with long-standing RRD, evidence of proliferative vitreoretinopathy (PVR) or inferior breaks, and cases where patients were not able to maintain appropriate postoperative posture.

Treatment

All surgical procedures in this study were performed by one ophthalmologist, CY Tsai. Preoperative informed consent regarding the safety of both anesthesia and surgery was obtained.

Eyes were prepared with a 5% povidone-iodine solution (Betadine®) after full dilation of pupils with 1% Tropicamide (Mydriacyl®). Retrobulbar anesthesia was carefully done with a small amount of 2% lidocaine. Trans-scleral cryopexy was applied around the breaks with the guide of indirect ophthalmoscopy. Sulphur hexafluoride (SF6) (0.5-0.6 ml) was injected into the vitreous cavity with a 30-gauge needle penetrating through pars plana at a distance of 4mm from the limbus.

After the injection, anterior chamber paracentesis was performed to soften the eyeball, and the fundus was then visualized to assure no intraocular damage. Patients were instructed to keep in a prone position for one week and to instill 1% prednisolone acetate suspension (Pred-Forte®) & 3% tobramycin sulfate eye drops (Cleo®) in the operated eye 4 times daily for one week.

Data Collection and Outcomes

Single-operation success was defined as successful retinal attachment following the first attempt at pneumatic retinopexy. Final success was defined as successful