ORIGINAL ARTICLE

Outcome and Complications of Phacoemulsification Combined with Pars Plana Vitrectomy

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ABSTRACT

Aim: To determine the outcomes of phacoemulsification also examine the complications associated to phacoemulsification combined with pars plana vitrectomy.

Study design: Observational study

Place and duration of study: Department of Ophthalmology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital, Sialkot, from 15th July 2020 to 14th January 2021.

Methodology: Twenty patients of both genders whom had undergoing phacovitrectomy were included. Patient's ages were ranging from 20 to 80 years. Patient's detailed medical histories were examined after taking informed consent. Patient's retinal diagnosis, intraocular pressure, visual acuity, intra and post-operative complications were recorded. All the patients had received clear corneal phacoemulsification and 23-gauge pars plana vitrectomy.

Results: There were 15(75%) male patients while 5(25%) female patients with mean age was 54.52±12.45 years. Five patients (25%) had vitreous hemorrhage, 7(35%) patients had rhegmatogenous retinal detachment, 3(15%) patients had intraocular foreign body, 2(10%) had epiretinal membrane, 2(10%) had macular hole and 1(5%) had tractional retinal detachment. Miosis and rupture of posterior capsule were the most common intraoperative complications found in 85% and 10%. Fibrin was found in 3 (15%) cases, posterior synechia was found in 2 (10%) cases.

Conclusion: The phacoemulsification with pars plana vitrectomy is safe and effective treatment modalities in patients with cataract coexist with vitreoretinal disease.

Keywords: Phacoemulsification, Pars plana vitrectomy, Cataract, Complications, Outcomes

INTRODUCTION

The coexistence of cataract and vitreoretinal conditions is not unique.¹ This association is somehow difficult to achieve the optimum result - expected not only in the elderly but in cases of trauma, intraocular foreign body, intraocular inflammation and metabolic disorders.

The cataract first of all coincided with its dark grade visualization of the fundus, a worrying surgery. On the opposite, cataract development is considered to cause vitrectomy. In vitreoretinal surgery, lens contact is a possible risk. Finally, the thickened lens restricts the thorough clearing of the glass foundation, which is especially important in cases of proliferational vitreoretinopathy (PVR). In cases with coexisting cataract and vitreoretinopathies up to now, the simultaneous removal of the lens with vitreoretinal surgery seems to be sufficient. The procedure would presumably lead to intraoperative and postoperative complications such as increased fibrin deposition anterior chamber reaction, posterior synechias and increased intraocular pressure (IOP). To date, various studies have measured the effects of combined phacoemulsification and pars plana vitrectomy (PPV).²⁻¹⁰ The combined method facilitates a quicker recovery and thereby increases cost-effectiveness.¹¹⁻¹³

The purpose of this study was to investigate the results of combined phacoemulsification and PPV (phacovitrectomy) in our patients with coexisting cataract and miscellaneous vitreoretinal disorders.

MATERIALS AND METHODS

This observational study was conducted at Department of Ophthalmology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital, Sialkot, from 15th July 2020 to 14th January 2021. A total of 20 patients of both genders whom had undergoing phacovitrectomy were included. Patient's ages were ranging from 20 to 80 years. Patient's detailed medical history was examined after taking informed consent. Patient's retinal diagnosis, intraocular pressure, visual acuity, intra and post operative complications were recorded. The visual acuity of the Snellen was first reported, then converted to a minimum resolution angle logarithm (MAR log) for statistical analysis. The IOP measurements were carried out with the tonometer for Goldmann applanation.

All patients were assessed before surgery and the first month of surgery and when required. Patients under 1 month of follow-up or cases in which the intraocular lens (IOL) could not be inserted were removed for any purpose. There were also no instances of mixed phacoemulsification and silicone oil removal. In terms of IOP, measurements were grouped in four in terms of <10mmHg, 10–19mmHg, 20–29mmHg and >30mmHg, for practical purposes. All the patients had received clear corneal phacoemulsification and 23-gauge pars plana vitrectomy. All the statistical data was analyzed SPSS-20.

RESULTS

Out of 20 patients 15 (75%) patients were male while 5(25%) patients were females. Mean age of patients was 54.52 ± 12.45 years. There were 11(55%) right and 9(45%) left eyes. According to the vitreoretinal diagnosis, 5(25%) patients had vitreous hemorrhage, 7(35%) patients had rhegmatogenous retinal detachment, 3(15%) patients had intraocular foreign body, 2(10%) had epiretinal membrane, 2 (10%) had macular hole and 1(5%) had tractional retinal detachment. Miosis and rupture of posterior capsule were the most common intraoperative complications found in 85% and 10%. Intraoperative rupture was found in (10%) cases and 1(5%) case had preoperative ruptured lens capsule. 3(15%) patients need for iris hook. Endotemponade was used in 85% cases and in 15% cases no endotemponade use. Clear corneal sutured in 6 (30%) cases, Scleral suture in 15 (75%) patients. According to the postoperative anterior segment reaction, 85% patients had mild, 2(10%) patients had severe and 1(5%) had moderate. Fibrin was found in 3(15%) cases, posterior synechia was found in 2 (10%) cases (Tables 1-3).

Table 1: Demographic details of all the patients

Variable	No.	%
Gender		
Male	15	75.0
Female	5	25.0
Age (years)		
20 – 40	3	15.0
40 –60	15	75.0
61 80	2	10.0
Side		
Left	9	45.0
Right	11	55.0
Vitreoretinal Diagnosis		
Vitreous hemorrhage	5	25.0
Rhegmatogenous retinal detachment	7	35.0
Intraocular foreign body	3	15.0
Epiretinal membrane	2	10.0
Macular hole	2	10.0
Tractional retinal detachment	1	5.0

Table 2: Preoperative, after 1 month and at 12 months finding of IOP

Variable	No.	%
Preoperative (mmHg)		
<10	1	5.0
10 - 20	18	90.0
21 -30	1	5.0
>30	-	-
At 1 month (mmHg)		
<10	1	5.0
10 -20	17	85.0
21 -30	1	5.0
>30	1	5.0
At 12 months (mmHg)		
<10	-	-
10 -20	18	90.0
21 -30	1	5.0
>30	1	5.0

Table 3: Intraoperative and postoperative complications

Complication	No.	%
Lens Capsule		
Intact	17	85.0
Intraoperative rupture	2	10.0
Preoperative rupture	1	5.0
IRIS Hook		
Yes	3	15.0
No	17	85.0
Corneal suture		
Yes	6	30.0
No	14	70.0
Scleral Suture		
Yes	15	75.0
No	5	25.0
Endotemponade		
Yes	17	85.0
No	3	15.0
Posterior Synechia		
Yes	2	10.0
No	18	90.0
Fibrin		
Yes	3	15.0
No	17	85.0
Anterior Segment Reaction		
Mild	17	85.0
Moderate	1	5.0
Severe	2	10.0

DISCUSSION

Cataracts with vitreoretinal disorders may lead to surgery. A number of advantages regarding phacovitrectomy have been published. It enables better visualization of the fundus by having direct media. The removal of the vitreous base is especially necessary in RRD cases and PVR cases. The removal of the crystalline lens therefore helps to enhance the visualization and shaving of the vitreous baseline. 14 In addition, a thickened, crystalline lens will end easily with a vitreoretinal instrument intraoperative lens; combo surgery prevents this condition. Finally, the progression of cataracts is a well-known PPV complication. In the 2-year cycle following the PPV, cataract progression was reported to be 80 percent.^{15,16} There were 15 (75%) male patients while 5 (25%) female patients with mean age 54.52 ± 12.45 years. These results showed similarity to some other studies conducted regarding cataract surgery in which male patients population was high as compared to females 65 to 80%^{17,18}.

In present study, we found 5(25%) patients had vitreous hemorrhage, 7(35%) patients had rhegmatogenous retinal detachment, 3(15%) patients had intraocular foreign body, 2(10%) had epiretinal membrane, 2(10%) had macular hole and 1 (5%) had tractional retinal detachment. Most of the patients in our study had rhegmatogenous retinal detachment. A study conducted in turkey regarding combine surgery reported 33.3% cases had rhegmatogenous retinal detachment¹⁹. In our study, the most common intraoperative complication was miosis found in 85% cases. These results showed a bit similarity to other study in which 92.9% cases had miosis¹⁹. We found intraoperative rupture in 2 cases. Iris hook need in 3 cases. The risk of posterior capsule rupture is expected to be increased; hence, combo surgery requires enhanced

surgical experience. Moreover, risk of posterior synechia formation is increased with phacovitrectomy.¹⁴ In a controlled study, Park et al²⁰ reported that phacovitrectomy cases revealed significantly higher rates of abnormal IOP (60%), intraocular fibrin (30%), and synechia (30%) compared to PPV-alone cases.²¹ In present study posterior synechia was found in 2 (10%) cases. A study conducted by Oh and coworkers⁴ and reported that posterior synechia rate was 6.1%, and the authors concluded that the use of endotamponade and prolonged operation could be the risk factors. Use of iris hooks could potentially be associated with increased inflammation and posterior synechia due to a broken bloodaqueous barrier. However, in this series, we did not find a significant relationship; perhaps, this could be due to relatively small rate of iris hooks use. Intraoperative corneal edema is not an uncommon complication of combined procedures.⁴ The significant corneal edema which would require corneal scraping was not evident in any patient. Perhaps, this is due to the irrigation solution used and the enhanced fluidics of the vitreoretinal surgery machines.

CONCLUSION

The phacoemulsification with pars plana vitrectomy is safe and effective treatment modalities in patients with cataract coexist with vitreoretinal disease. Moreover, we should have to do more work to reduce the complication rate associated to phacovitrectomy.

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