

Visual outcome following posterior capsule rupture during phacoemulsification in a tertiary care hospital in Malaysia

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ABSTRACT

Purpose: To analyse the visual outcomes of cases with posterior capsule rupture (PCR) compared to those without PCR following phacoemulsification. The occurrence of posterior capsule rupture during phacoemulsification surgery for cataract can have serious implications in the visual recovery. However, recognition of PCR and proper management can yield a successful visual outcome. This study analysed the visual outcomes of cases with PCR compared to those without PCR.

Methods: This is a case-control study. All patients who underwent cataract surgery from 2011 to 2012 in Hospital Melaka were traced from the National Eye Database (NED) of Malaysia. The visual outcomes were classified as good, borderline and poor as per WHO guidelines. The data was analysed with SPSS version 12 IBM.

Results: Out of 80.4% (2519) of eyes that had undergone phacoemulsification (PHACO) type of surgery, 3.06% (77 cases) had posterior capsule rupture complication. There was no significant difference in the visual outcome of borderline between cases with PCR and cases without PCR (Odds Ratio (OR) 0.989; 95% Confidence Interval (CI) 0.382-2.560). However, cases with PCR were significantly less likely to have good vision compared to those without PCR (OR 0.335; 95% CI 0.157-0.714).

Conclusion: The study reveals that a significant number of patients without PCR had good vision, whereas those with PCR did not get good vision. We would like to suggest meticulous care during phacoemulsification surgery to avoid PCR in order to obtain good visual outcomes.

KEY WORDS:

Phacoemulsification, posterior capsule rupture, cataract, visual outcome

INTRODUCTION

Posterior capsule rupture during phacoemulsification is faced by many ophthalmologists regardless of their experience.¹ Phacoemulsification surgery, even if complicated by posterior capsule rupture (PCR) or zonular-dialysis, is compatible with good visual outcome.² One study also showed that there is no statistically significant difference in visual acuity among cases of PCR when compared with controls.³ However, we

could not find any such study from Asia Pacific region in the literature. We therefore undertook this study to see if patients with posterior capsule rupture during phacoemulsification could obtain good visual outcomes.

MATERIALS AND METHODS

This is a case-control study analysing data from the National Eye Database (NED) of patients, who underwent cataract surgery from January 2011 to December 2012 in a tertiary hospital in Malaysia, which is also a teaching hospital. The preoperative best corrected visual acuities were noted. All refractions were performed by hospital based optometrists. Demographic and surgical details were obtained from the folders of the patients. Informed consents were taken and pupils were dilated with Tropicamide 1% and Phenylephrine 10% eye drops. In most of the cases topical anaesthesia was administered. Local or General anaesthesia was used for the surgery. Incisions included sclera tunnel, corneal and limbal. Hydrodissection/Hydrodelineation were performed. The cataracts were phacoemulsified using various machines. Intraocular lenses were implanted; either posterior chamber lenses in the bag/sulcus, anterior chamber lenses or sclera fixated lenses. The occurrences of posterior capsule rupture with or without vitreous loss were noted. The postoperative best corrected visual acuities were noted. Patients were followed up and the best corrected visual acuity at six weeks was recorded. If the visual acuity was worse than 6/12, refraction was repeated up to 12 weeks postoperatively or at the point where it was decided that no further refraction was necessary. The patients who underwent phacoemulsification in 2011 and 2012 have been included. Patients with traumatic cataracts, polar cataracts, subluxated lenses, those who underwent combined surgery, presence of pseudoexfoliation and myopias of >6 dioptres were excluded from the study. The postoperative visual status of each patient was classified using the World Health Organization (WHO) category of Visual Impairment and Blindness.⁴ SPSS software was used for data analysis. The main aim was to assess the visual outcomes of patients with PCR during phacoemulsification. Visual outcomes were categorised as excellent, good or poor. Multi-nominal logistic regression analysis was used to calculate Odds Ratio (OR) and its 95% confidence interval. This study has NMRR research ID17389 and had granted permission by Medical Research & Ethics Committee.

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Table I: Phacoemulsification cataract surgery type number profile

Variable(s)	N (%)
Cataract surgery patient 2011	1642 (52.4)
Cataract surgery patient 2012	1490 (47.6)
Total cataract surgery patient	3132
Phacoemulsification 2011	1315 (80.1)
Phacoemulsification 2012	1204 (80.8)
Total PHACO	2519
PCR during 2011	37 (2.8)
PCR during 2012	40 (3.3)
Total PCR	77 (3.1)

Table II: The Visual Outcome relationship between Cases with and without PCR

	Cases with PCR n=77 (3.1%)	Cases without PCR n=2442 (96.9%)	Odds Ratio (95% CI)
Poor (<6/60)	6 (8.4%)	73 (91.6%)	1
Borderline (6/24-6/60)	9 (8.3%)	102 (91.7%)	0.989 (0.382-2.560)
Good (6/6-6/18)	62 (3%)	2267 (97%)	0.335 (0.157-0.714)

95%CI: 95% Confidence Interval

RESULTS

From 2011 to 2012, 3132 eyes underwent cataract surgery. Posterior capsule rupture (PCR) occurred in 3.06% (77 cases) out of the 80.4% (2519) of cases that underwent phacoemulsification. PCR occurred in 2.8% of cases in 2011 and 3.3% of cases in 2012 during phacoemulsification shown in Table I.

Table II shows the relationship of visual acuities between cases and controls, which were categorised as poor, borderline and good. Cases with PCR were less likely to have borderline and poor visual acuities, when compared with cases without PCR, but this was not significant. On the other hand, cases without PCR had good vision compared to those with PCR, and this was significant with 95%CI (0.157-0.714).

Table II shows the visual acuities between cases and controls, which were categorised as poor, borderline and good. Cases with PCR were less likely to have borderline visual acuity when compared to the cases without PCR, but this was not significant. Cases with PCR were significantly less likely to have good vision compared to those without PCR (Odds Ratio 0.335; 95% Confidence interval (CI) 0.157-0.714).

DISCUSSION

Many patients are not attaining the outcomes available with modern surgery, which can only be achieved with a commitment to ongoing surgical audit.⁵ It was reported that the relative risk of having a final visual acuity worse than 6/18 is 3.7 times more in cases with posterior capsule tear when compared with cases without it.⁶ Alexander *et al.* confirmed detrimental effect of PCR in their study where it remained as a significant risk factors for poor visual outcome (<6/12).⁷ Phacoemulsification surgery, even if complicated by posterior capsule rupture or zonular-dialysis, is compatible

with good visual outcome. In our study, large number of cases with PCR attained good visual outcome. However, in comparison with cases that did not have PCR, a greater percentage of cases without PCR had a good visual outcome, and this was statistically significant. We therefore suggest that surgery be done carefully and meticulously to avoid PCR.

CONCLUSION

The study reveals that the visual outcome for good vision has been statistically significant when there was no PCR in comparison to those who had PCR. Therefore meticulous care during phacoemulsification surgery should be taken to prevent PCR, to obtain good visual outcomes, which is the aim of cataract surgeries.

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