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Visual Outcome After Posterior Capsular Rupture During Cataract Surgery: Comparative Study Between Manual Small Incision Cataractsurgery and Phacoemulsification

KEYWORDS: Posterior capsular rupture, visual acuity

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ABSTRACT *Purpose: To determine best corrected visual acuity after posterior capsular rupture (PCR) in manual SICS and phacoemulsification*

Patients and method: Eyes which sustained PCR during phacoemulsification and manual SICS surgery at Alluri Sitaramaraju Academy of Medical sciences, Eluru, Andhra Pradesh between

December 2011 to June 2013 were retrospectively studied. The inclusion criteria were all senile cataract. The exclusion criteria were: (1) age <30 years (2) previous intraocular surgery (3) traumatic cataract (4) congenital cataract; (5) Subluxation of lens and (6) Co-existing corneal pathology.

Results: Surgical distribution was 1107(73.7%) cases manual SICS and 394(26.2%) cases phacoemulsification. The overall BCVA of 6/6-6/18 in patients with SICS was 88% and phacoemulsification were 85.71% eyes.

Conclusion: Both the groups had good visual outcome provided posterior capsular rupture is identified and managed.

INTRODUCTION

Posterior capsular rupture is the most common intra-operative complication of cataract surgery. A posterior capsular rent is reported to occur in 0.5% to 7.5%. Posterior capsular tear is the commonest operative complication of cataract surgery that can affect the postoperative visual acuity. It is reported that the relative risk of having a final visual acuity worse then 6/18 is 3.7 time in cases with PC tear when compare to surgeries without it.[1,2]

MATERIALS AND METHODS

We reviewed the medical records of 101 eyes which had posterior capsular tear during cataract surgery at Alluri Sitaramaraju Academy of Medical sciences hospital, Eluru, Andhra Pradesh, between December 2011 to June 2013. All the surgeries were performed by single surgeon.

Surgeon selected a technique that was most suitable for each case. The inclusion criteria were senile cataract. The exclusion criteria were: (1) age <30 years (2) previous intraocular surgery (3) traumatic cataract (4) congenital cataract; (5) subluxation of lens and (6) co-existing corneal pathology. Documentation of the variables included: age; gender; cataract related symptoms; visual acuity as Snellen fraction values; and the incidence of co-existing vision threatening ocular pathology. General medical problems such as diabetes mellitus (DM), hypertension (HT) and ischaemic heart disease (IHD) were also recorded. Operative data included the types of surgery – manual small incision cataract surgery (SICS) or phacoemulsification and cases with posterior capsular rent, any other intraocular complications and the type of intraocular lens (IOL) implanted was noted. All patients underwent anterior vitrectomy. Patients were counselled about postoperative care, the proper instillation of medication drops and the need for regular follow-up. At the last follow-up (after 6 weeks) uncorrected and best corrected visual acuity was documented. The study was cleared by our institutional review board.

A Mann whitney U test was used to compare the final visual outcome between the two groups.

Statistical analysis of the data was performed using SPSS software.

RESULTS

Of the 1501 operated cases, there were 101(6.6%) posterior capsular rupture. The majority of the patients who underwent cataract surgery were aged 51 years and above (91.08%) (Table 1). 74.2% underwent SICS and 25.8% underwent phacoemulsification surgery (Table 2). 89% of patients had preoperative visual acuity < 6/60 (Table 3). 17% patients had co-existing systemic conditions such as diabetes (0.09%), hypertension (7.9%) and both(2.9%)(Table 4). 63.3% of patients had immature cataract, 24.75% had mature, 3.9% had hypermature cataract(Table 5).

Thirty patients were lost to follow-up. Best corrected visual acuity (BCVA) at 6 weeks followup of seventy one eyes were included for an evaluation. BCVA of 6/6-6/18 in patients with SICS was 88% and phacoemulsification were 85.71% eyes (Table 6).

The total complication rate in this study was 12.9%. Of these, the intraoperative complications like posterior capsular tear and vitreous loss occurred in 6.6% , dropped IOL and iridodialysis were 2.9% and drop nucleus were 4.9%(Table 7). Early postoperative complications were seen in 55cases (45.5%), (Table 8).

P-value between both the groups was 0.896. (Mann Whitney U test)

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TABLE 1: Age frequency

Age (yrs)	Frequency	Percent
<40	1	1.0
41-50	8	7.9
51-60	34	33.7
61-70	49	48.5
>70	9	8.9
Total	101	100.0

TABLE 2: Sex vs type of surgery performed.

TYPE OF SURGERY PERFORMED	SEX		Total
MALE	FEMALE		
SICS	33	42	75
PHACO	13	13	26
Total	46	55	101

TABLE 3: Preoperative visual acuity of cases vs type of surgery performed

Pre operative Best Corrected Visual Acuity SICS		SURG_TYPE		Total
		PHACO		
	6/6-6/18	0	1	1
	6/12-6/60	5	4	9
	<6/60	70	21	91
Total		75	26	101

TABLE 4: Prevalence of co-existing systemic diseases vs type of surgery the patient underwent

PAST HISTORY	SURG_TYPE		Total
	SICS	PHACO	
Diabetis	1	0	1
Hypertension	8	3	11
OTHERS	1	1	2
DM+ HTN	3	0	3
No complication	62	22	84
Total	75	26	101

TABLE 5: Type of cataract vs type of surgery each patient underwent

CATARACT TYPE SICS	SURG_TYPE		Total
	PHACO		
IMMATURE	43	21	64
MATURE	23	2	25
HYPERMATURE	4	0	4
OTHERS	5	3	8
Total	75	26	101

TABLE 6: Best corrected visual acuity six weeks postoperatively in each group

BEST CORRECTED VISUAL ACUITY SICS		SURG_TYPE		Total
		PHACO		
6/6-6/18		44	18	62
6/24-6/60		2	3	5
<6/60		4	0	4
		50	21	71

TABLE 7: Intra operative complications in each group

INTRAOPERATIVE COMPLICATION SICS		SURG_TYPE		Total
		PHACO		
	DROP IOL	2	1	3
	IRIDODIALYSIS	3	0	3
	NUCLEUS DROP	3	2	5
	PREMATURE ENTRY	1	0	2
	NIL	66	23	88
Total		75	26	101

TABLE 8: Postoperative complications in each group

POSTOPERATIVE COMPLICATIONS SICS		SURG_TYPE		Total
		PHACO		
	STRIATE KERATOPATHY (SK)	14	6	20
	DM DETACHMENT	1	0	1
	UVEITIS	7	1	8
	DROPPED IOL	3	1	4
	HYPHEMA	5	0	5
	LENS MATTER	5	3	8
	ENDOPHTHALMITIS	1	0	1
	NIL	32	14	46
	SK WITH DM FOLDS	7	1	8
Total		75	26	101

DISCUSSION:

Our study showed that there was no statistically significant difference in the final visual outcome between both the groups (SICS vs Phacoemulsification) following posterior capsular rupture. {p- value between both the groups was 0.896}

The majority of patients undergoing cataract surgery in this study were elderly. The operative complications in our study were 12.2% were comparable with African and Asian studies (complication rates 8–21%). We were able to keep the complications to the minimum by establishing proper management guidelines. In our study the BCVA of 6/18 and better at six weeks postoperatively was seen in 87.32% compared to other studies which had BCVA of 6/18 and better in 80-90% of cases(Table 9).[3-5]

More than 85% of the operated eyes have a presenting visual acuity of 6/18 or better at 4 weeks or more post operative indicates good outcome[6].

TABLE 9: Comparision of visual acuity outcomes and 6weeks postoperative after posterior capsular rupture.

Author *et al*	Journal	Year	Complication rate	BCVA
Jia Yu Zhang	Clinical experimental ophthalmology	2013	NA	NA
Sanduk Chang	American journal of ophthalmology	2007	NA	88%
Fiona M Chang	Australia annual conference	2002	5.1	86%
Our study		2013	6.66	87.32%

NA: not available, BCVA: best corrected visual acuity.

Limitations of study:

Our study had a sample bias towards Small incision cataract surgery group as the number of patients between two groups were in the ratio of 3:1. A non parametric test was used to calculate the p-value. Moreover, drop out cases in each group were high.

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CONCLUSIONS:
There was good visual outcome in both the groups provided posterior capsular rupture is identified and managed adequately.

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