

ORIGINAL RESEARCH

Intraoperative and Early Postoperative Complications and Visual Outcome of Manual Small Incision Cataract Surgery in Senile Cataract Patients at Rural Set Up

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ABSTRACT

Introduction: Manual Small Incision Cataract Surgery (MSICS) is a proved technique which is safe and, effective. However, intra-operative and immediate postoperative complications do occur with this surgical technique too. We are presenting rates of intraoperative and immediate post operative complications and the best corrected visual acuity (BCVA) in patients with senile cataracts operated with MSICS technique at rural set up.

Material and method: In this hospital based observational, descriptive, three years longitudinal study we studied the intraoperative and immediate post operative complications of MSICS and BCVA in patients with senile cataracts. We recorded intra and postoperative complications. Slit lamp examination findings at postoperative 4th week and postoperative BCVA with Snellen's chart at postoperative 6th week in all 200 study patients, after taking IEC permission and informed written consent in local language from study patients.

Results: Mean age of study patients was 65.26 years. 104 (52%) patients had both nuclear and cortical advanced cataract. In 23(11.5%) intra-operative complications most common was PC (Posterior capsule) rent. 87(43.5%) showed early postoperative complications on 1st post-operative day. Most common complication was mild iritis in 31(15.5%). 6 weeks post-operative follow-up showed good BCVA of 6/6-6/18 with Snellen's chart in 167 (83.5%).

Conclusions: Rural patients seek late ophthalmic check-up and present with advanced cataract and more prone for inherited intra-operative and early post-operative complications which can be well managed medically thus MSICS technique gives good post-operative visual outcome in rural patients.

Keywords: Complications of MSICS, MSICS, Visual outcome of MSICS

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INTRODUCTION

Surgery is the only treatment for cataract which is still a leading cause of avoidable blindness in India. Out of many types of cataract surgeries MSICS is economical, safe, fast, gives better postoperative visual outcome and equally effective as phacoemulsification.^{1,2}

However, intraoperative and immediate postoperative complications do occur with this surgical technique also. In this article we are presenting the rate of intraoperative and immediate post operative complications and also the BCVA in patients with various types of senile cataracts operated with MSICS technique at rural set up. Aim of the study was to study the occurrence of intraoperative and postoperative complications of MSICS, their management, and to study the BCVA in patients operated by MSICS technique at rural tertiary care hospital.

MATERIAL AND METHODS

This Observational, longitudinal, hospital based study was carried out at rural hospital for 2 years from September 2012 to August 2014 after approved by the Institutional Ethics committee and written informed consent was obtained prior to the study from all patients. We included 200 patients with senile cataract, above 50 years of age, fit for local anaesthesia and willing for MSICS with informed written consent in local language. Patients with other non-senile cataract, with any other anterior or posterior segment pathology and patients with mechanical or surgical trauma were excluded.

Methodology

Demographic history data age, sex, and type of cataract, grading of nucleus according to Lens Opacity Classification System III (LOCS III) was noted.^{3,4}

We recorded the events occurring at operative important steps as. Peribulbar anaesthesia, sclerocorneal tunnel, Side port incision, Capsulorrhexis with trypan blue under viscoelastic agent, Hydrodissection, Nucleus delivery by either visco expression or vectis method, Implantation of Rigid Poly Methyl Methacrylate (PMMA) single piece 6 mm Optic intraocular lens in capsular bag. Parameters studied: We recorded the following data from medical records of study patients: 1) Preoperative visual acuity, type of cataract and its grading according to LOCS III grading system with slit lamp examination, 2) Intraoperative and immediate postoperative complications according to OCTET^{5,6} grading system during operations and on 1st postoperative day and 4th week, and 3) BCVA with Snellen's chart was recorded at 6th week in all 200 study patients. Data was tabulated and analyzed.

RESULTS

96(48%) patients were from 60-70 age group and there were 107 females (53.5%) (Table 1). 177(88.5%) patients had preoperative visual acuity less than 6/60. There were 96 (48%) patients of mixed type of cataract (cortical+ nuclear + posterior subcapsular) followed by 59 (29.5%) of cortical type and 45(22.5%) of nuclear cataract. Intra Operative Complications are demonstrated in table 4. In total 200 MSICS cases,

there were 23(11.5%) intra-operative complications. Most common was PC rent in 9(4.5%) cases where 8 were without vitreous loss and 1 with vitreous loss. Tunnel related complications were seen in 7(3.5%) i.e. premature entry in 5(2.5%) cases, button holing of scleral flap in 2(1%) of cases. Descemet's membrane (DM) detachment in 1(0.5%) case, inferior iridodialysis in 2(1%) cases and, endothelial touch was present in 4(2%) cases. According to OCTET grading 13 (6.5%) cases had grade III Intraoperative complications and remaining 10(5%) had grade II complications (Table 3). Out of these 9 PC rents, 6(3%) occurred in nuclear type of cataract while remaining 3 (1.5%) rents occurred in mixed type of cataract. 87(43.5%) early postoperative complications on 1st post-operative day (Table 4). Mild iritis was seen in 31 (15.5%) cases. Corneal edema was noted in 30 (15%) and striate keratopathy in 18 (9%) cases. Subluxation of IOL was seen in 2 (1%) cases, hyphema in 2 (1%) cases, wound leak was 1.5% (3 cases) and iris prolapse in 0.5% (1 case) According to OCTET grading 32(16%) cases had OCTET grade III and 55(22.5%) cases had OCTET grade II early postoperative complications. 167 (83.5%) cases had BCVA of 6/6-6/18 at 6 weeks of post operative follow up and 33 (16.5%) had visual acuity of 6/24-6/60 (Table 5).

DISCUSSION

Our study of 200 MSICS patients showed female preponderance and majority of the patients i.e. 96(48%) were old (from 60-70 age group.) with poor vision of < 6/60. Being rural area, females present late for ophthalmic check up due to painless cataract problem and so true for non working old people.

Intraoperative complications (Table 2)

Cascade of complications can occur in a single case even with skilled hands if it is not noticed timely. In our study, we came across such situations where in a single case 2 or 3 intraoperative complications occurred. However as a study of variable i.e. "Intraoperative complications in MSICS", we have considered all these complications under various headings though the case was same. 23 (11.5%) intra-operative complications were noted in our study which was similar to Chirambo M C,⁷ Yorston D,⁸ Kongsap P,⁹ Gogate P M¹⁰ and Venkatesh R et al.¹¹ Most common was PC rent in 9(4.5%) cases where 8 were without vitreous loss and 1 with vitreous loss where patient was kept aphakic after anterior vitrec-

Age (Years)	Male	Female	Total
50-59	32	36	68
60 -69	39	57	96
70-79	17	11	28
80-89	05	03	08
Total	93	107	200
Mean +/-SD	64.46+/-7.13	63.22+/-8.11	65.26+/-8.04

Table-1: Showing Age and Sex distribution of 200 study case

Intraoperative complications	No. of cases (Out of 200)	(%)	OCTET grading
Button holing	2	1%	II
Premature entry	5	2.5%	II
DM detachment	1	0.5%	II
Iridodialysis	2	1%	II
Endothelial touch	4	2%	III
PC rent (without VL)	8	4%	III
PC rent (with VL)	1	0.5%	III
Total OCTET (II +III)	23 (10+13)	11.5%	

Table-2: Distribution of cases according to intraoperative complications with OCTET grading:

Type of cataract	Premature entry	Button holing	PC rent	PC with VL	Irido-dialysis	DM detachment	ET
Nuclear IMSC	1	0	4	1	0	0	0
Nuclear brown	1	1	1	0	1	0	0
Cortical IMSC	0	0	0	0	0	0	0
Cortical MSC	0	0	0	0	0	1	4
Mixed	3	1	3	0	1	0	0
Total	5	2	8	1	2	1	4

Table-3: Distribution of intraoperative complications according to type of cataract:

Early postoperative complications	No. of cases	(%)	OCTET grading
Mild iritis	31	15.5%	II
Striate keratopathy	18	9%	II
Wound leak	3	1.5%	II
Hyphema	2	1%	II
Iris prolapse	1	0.5%	II
Corneal edema	30	15%	III
Subluxation of IOL	2	1%	III
Total OCTET (II+III)	87	43.5%	

Table-4: Distribution of cases according to early postoperative complications:

BCVA	No. of cases	(%)
6/6-6/18	167	83.5%
6/18-6/60	33	16.5%
<6/60	0	0%
Total	200	100%

Table-5: Distribution of cases according to BCVA after 6 weeks postoperative

omy. In 8(4%) cases, where PC rent was without vitreous loss, PCIOL was implanted gently in sulcus. Out of these 9 PC rents, 6(3%) occurred in nuclear type of cataract while remaining 3(1.5%) rents occurred in mixed type of cataract (Table 3). In our study, there was no PC rent in cortical type of cataract. Higher incidence of PC rent in nuclear type of cataract may be due to larger size of nucleus and relatively thin capsule. Similar results of PC rent were present in other studies. Schroeder B recorded incidence of PC rent of 4.5%, Gogate PM recorded 5.03%, Chirambo MC reported as 3.4% while Lumme P¹² recorded 5.4% in their studies. Tunnel related complications were seen in 7(3.5%). In case of premature entry tunnel was reconstructed at other site after suturing the premature entry point. For button holing tunnel was reconstructed at deeper plane ignoring the superficial buttonholing. Yasir Iqbal et al¹³

noted incidence of premature entry in 3% cases and button holing in 5% cases. We found small inferior iridodialysis in 2(1%) cases which occurred while delivering nucleus by vectis method and it has not affected visual outcome significantly, may be due to small size and inferior locations in both cases. Schroeder B reported iridodialysis in 0.9% of cases, Gogate PM reported in 0.6% cases and Ajit H et al¹⁴ reported in 0.5% of cases. There was Descemet's membrane (DM) detachment in one case (0.5%) similar to the study by Schroeder B who also reported it in 0.5% cases. Ajit H et al reported incidence of DM detachment in 1% while Kongsap P reported it in 1.37%. DM detachment or stripping which was managed by keeping large air bubble in anterior chamber at the end of MSICS, which facilitated the opposition of tunnel.

Endothelial touch was present in 4(2%) cases and all cases were of cortical type of mature cataract. This complication occurred during irrigation aspiration with Simcoe cannula. In cortical type of mature cataract, fluffy cortex mixed

with viscoelastic might have adhered the endothelium and while giving endothelial wash this complication might have occurred. However these cases too had good post-operative visual outcome after resolution of striate keratopathy and edema. Thus 13 (6.5%) cases had grade III Intraoperative complications according to OCTET grading. Remaining 10(5%) had grade II complications. All complications were managed surgically with post-operative support of medical treatment as per necessary.

Early postoperative complications (Table 4)

In present study there were 87 (43.5%) early postoperative complications on 1st post-operative day like corneal edema, mild iritis, striate keratopathy, subluxation of IOL, hyphema and wound leak. However all resolved with medical treatment except 2 cases of subluxated IOLs. Corneal edema was less as compared to Madhu Chanchlani et al¹⁵ where it was 20.9%, Desai P et al¹⁶ showed 9.5% and Rajeshwari et al¹⁷ showed 10%. This large variation could be due to mix up of striate keratopathy and corneal edema. Corneal edema occurred mainly due to tight wound closure with extra air and BSS and post-operative inflammation. All patients were cleared with topical and systemic IOP lowering agents by the end of 7th post-operative day.

In our study mild iritis was most common complication but MadhuChanchlani et al reported the incidence still more as 26.2% while Da-Dong Guo et al¹⁸ reported it as 5.9% and Desai P et al reported it as 5.6%. The use of cycloplegics and frequent topical steroids with oral steroid under oral antibiotic cover might have controlled the severe anterior uveitis and all cases were cleared by 7th post-operative day.

The incidence of striate keratopathy in our study was similar to study by Yasir Iqbal (9.6%). However Madhu Chanchlani et al and Muhammad et al¹⁹ reported higher incidence i.e. in 12% and 13% cases respectively while Karad H T et al²⁰ reported it in only 6.53% cases. All striate keratopathy cases improved within 7th post-operative day with instillation of topical hypertonic saline. Subluxation of IOL was similar to studies done by Schroeder MD. Our both cases required IOL dialing and gained good visual outcome.

We noted hyphema similar to Schroeder MD. Our study patients were treated medically with rest, cycloplegics, higher frequency of topical antibiotic-steroid combination and oral vitamin C. Hyphema cleared in all the patients within the first 7 postoperative days and no surgical intervention was required. The incidence of wound leak was 1.5% (3 cases) and all cases were well managed with suturing of the wound. Incidence of iris prolapse was 0.5% (1case) on 1st postoperative day in this study which was well managed with reposition of iris with suturing of the wound.

Out of 87 cases, 32(16%) cases had OCTET grade III early postoperative complications which needed immediate treatment i.e. 2 subluxated IOLs needed surgical intervention while remaining 15% improved medically and showed good final visual outcome. Grade II postoperative complications

were seen in 55(22.5%) cases and all improved with only medical line of treatment.

Best corrected visual acuity (Table 5)

Out of 200 study cases majority had BCVA of 6/6-6/18 at 6 weeks of post operative follow up and rest had had visual acuity of 6/24-6/60. No patient had visual acuity less than 6/60 similar to Kothari M²¹ study (85% of cases) and Gogate PM (89.8% of cases).

CONCLUSIONS

In proved technique of MSICS, inherited intra-operative and early post-operative complications occur more commonly in mature cataracts because of their typical morphology which is a common situation in rural patients who present late with advanced or mature cataracts. These complications can be well managed medically and rarely need surgical intervention. With MSICS technique good post-operative visual outcome can be achieved in rural patients.

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