ORIGINAL ARTICLE

Small Incision Cataract Surgery and its associations with astigmatism

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ABSTRACT

Aim: To assess the magnitude of astigmatism after small incision surgery with intra ocular lens implantation.
Methods: This study was done in Islam medical college and teaching hospital Sialkot. Totalnumber of patients included in this study was 50 which include 30 males and 20 females and their mean age was recorded 56.8 years. Exclusion criteria for this study were no systemic and ocular disease except age related cataract.
Results: The common post operative complications were corneal oedema 16% of patients, anterior uveitis 10%, residual lens matter 6%, hyphaema 4% and surgically induced astigmatism was in the range of 0.5-3.0 D (1.45D mean) with good visual results of 6/6-6/9 90% after 6 weeks of follow up.
Conclusion: Suture less small incision cataract surgery (SICS) is cost effective and cheaper technique without expensive phacoemulsification machine which involves difficult tubing sterilization.Sutureless quick healing and rehabilitation with good visual results due to minimal astigmatism as compared to classic cataract extraction by extra capsular method.
Keywords: Cataract, small incision, astigmatism

INTRODUCTION

Age related cataract is the major curable etiology of blindness which can be cured surgically anywhere in the the world[1].A large backlog for cataract blindness can be effectively managed by high quality cataract surgeries in community eye care centers[2].It was frequent practice to do conventional Extra Capsular Cataract extraction with Intraocular lens implantation (ECCE-IOL) as very efficient technique for reestablishment of vision and elevating the standards of life in underdeveloped countries[3]. As in ECCE wound closure requires suturing with its complications like removal of stitches after healing of wound and resultant astigmatism with late vision rehabilitation[4].It is reported that both ECCE and MSICS with posterior chamber lens are effective techniques for management of cataract extraction while MSICS procedure gives early visual rehabilitation than ECCE[5].MSICS is alternative to phacoemulsification which is cost effective and requires no expensive gadgets and its care[6].In manual small incision cataractsurgery, whole nucleus is extracted through sclera corneal tunnel which is selfsealing without stitching of wound[7]. For a trained ECCE surgeon MSICS is easier to adopt and master than phacoemulsification. Visual rehabilitation after MSICS is comparable with Phaco and better than ecce[8].The equipments and other facilities except minor modifications like surgical blades which are required for MSICS are same as for ECCE[9]. The aim of this study is the measurementof magnitude of astigmatism after small incision cataract surgery and to find visual outcome with small incision cataract surgery.

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MATERIALS AND METHODS

This study was performed on 50 eyes of 50 patients having senile cataract. Small incision cataract surgical technique was performed by surgeon within the period of December 2015 to December 2016 at eye department of Islam Medical and Dental College, Sialkot. Preoperative assessment and examination was performed in eye out patientsdepartment of Islam Medical and Dental College which included vision assessment by snellen chart, complete slit lamp examination,tonometry,ophthalmoscopy after mydriasis and biometry. Diabetic patients, psuedoexfoliation, with corneal and other ocular pathologies except senile cataract were excluded.
Surgical technique: With sufficient mydriasis, by tropicamide eye drops and phenylepherine eye drops, a peribulbar injection of 2% xylocain (4-5ml) injected.eye and perioccular region was cleaned with payodine and opsite was applied.eya was opened with the help of wire speculum and bridal suture

passed.Conjunctiva at the upper limbus is reflected towards upper fornix and bleeding checked by cautry. From limbus upto 2mm away, a partial thick, straight scleral incision of 5-6 mm was made. With the help of crescent knife a sclera tunnel was created and extended upto 1mm of clear cornea.To enter into the ant chamber 3.2 blade was used to enter into the anterior chamber and incision was extendedupto 1mm (0.5mm on both sides) after injecting viscoelastic gel into the anterior chamber continuous curvilinear capsulorhexis (CCC) was done with cystitome. After capsulorhexis,hydro-dissection was done and nucleus was prolapsed freely to enter in the anterior chamber.By using viscoelastic gel, the prolapsed nucleus was extracted from the eye with wire vectus.The cortical material was irrigated with two way simco cannula.Visco elastic gel was injected again into the anterior chamber and rigid intra ocular lens (lOL) wasimplanted into the capsular bag of posterior chamber after centration of the iol.Visoelastic material was removed by ringer solution.Conjuctival flaps was opposed to each other by using forceps of bipolar diathermy. Post-operative patients were examined after one day than one week and then 40th day after surgery. All data was recorded on written consentperformae. After six weeks of surgery, complete ophthalmic examination by slit lamp, Autorefractometer and fundoscopy was performed.

RESULTS

There were 50 cataract patients out of which 30 were males (60%) and 20 were females 40% of age between >40 years. Manual SICS was performed in 28 right eyes and 22 left eyes of 50 patients.
Total no of patients 50

Male	30
Female	20
Age >40years	8
>50 Years	15
>60 Years	27
Right Eye	28
Left Eye	22

Post -operative complications: On the first post-operative day after opening the first dressing, all patients were examined on slit lamp. Mild corneal eodema was found in patients10% while moderate eodema was present in 60%. Anterior uveitis was found 6% mild while 4% moderate. In all patients the wound was intact and iris prolase was not found in any patient. small amount of residual lens matter was found in 3 patients and lens matter aspirated. Mild hyphaema was present in two patients which absorbed by itself in few days.

Corneal eodema	**n**
Mild	5(10%)
Moderate	3(6%)
Anterior uveitis	
Mild	3(6%)
Moderate	2(4%)
Iris prolapse	Nil
Residual lens matter	3(6%)
Hyphema(mild)	2(4%)
Iol decentration	Nil

Visual acuity: Post-operative visual acuity was recorded on first post operativeday,thenafter one week and 6 weeks which is presented in table
Post-operative visual acuity

V.A.	**1st day**	**1st week**	**6th week**
6/60	3	2	Nil
6/36	6	4	Nil
6/24	7	3	1
6/18	11	13	2
6/12	13	15	2
6/9	7	8	14
6/6	3	5	31

Astigmatism: Pre-operative astigmatism was estimated by keratometry which was 0.5-1Ds in 12 patients while 1-2 Ds in 5 patients and 2-3 Ds in 3 patients. Astigmatism calculated after surgery at the end of 6 weeks was 0.5-1DSin 18 patients,1-2 Ds in 12 patients and 2-3 Ds in 7 patients.

Preoperative astigmatism diopters	**n**
0.5-1 DS	12
1.1-2	5
2.1-3	3
Total	20
Postoperative	
0.5-1 DS	19
1-2	12
2-3	6
Total	37

DISCUSSION

In developing countries like Pakistan, age related cataract is commonest etiologyof curable of visual problem having large number of backlog of patients which can be operated by difficult procedures of cataract extraction.[10]out of which phacoemulsification is expensive for majority of our population while manual small incision cataract surgery is cost effective and safe procedure for cataract surgery.[11-

[12]Mannual small incision cataract surgery is a good alternative to phacoemulsification, easy to learn and safe method of cataract extraction with low later operative complications[11]. Visual results are encouraging with reference to the guidelines by WHO as in table below

Vision	outcome	BCVA
Good	6/6-6/18	90%+
Borderline	<6/18-6/60	<5%
Poor	<6/60	<5%

After surgery corneal oedema was observed in some patients which was transient, resulting in improved vision[13]. The cause of the cornea; oedema was found due to enlarged hard nucleus extraction through sclera tunnel that is in accordance with the study by Rengaraj et al[3].

Manual small incision cataract surgery is a safe and simple technique for better visual outcome as comparable duration of surgery by ECCE and requires no extra equipment while sutures are not applied[5]. In our study visual outcomes are better due to low incidence of astigmatism by small incision cataract surgery performed manually as compared to conventional extra capsular cataract extraction method.

CONCLUSION

Small incision cataract surgical technique performed manually is an alternative method to phacoemulsification.Though it is not superior to phaco but compare able results for visual improvement are obtained. Small incision cataract surgery has low incidence of post-operative astigmatism and is cost effective methodwithout need of expensive machinery like phaco machine. In this procedure PMMA rigid intra ocular lens are implanted without application of sutures as in ECCE. Healing and rehabilitation is quicker than ECCE. Patients can adopt their daily business earlier for improvement of family economy.

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