



A comparative study of SICS and phacoemulsification with rigid PMMA and foldable IOL: The preferred technique for high volume cataract surgeries

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Abstract

Purpose: At our district hospital (secondary level centre) cataract surgeries are being done free of cost under National Programme for Control of Blindness and Mukhyamantri Nishulk Dawa Yojna. Therefore we cater a large number of patients from our as well as neighbouring states. Most of them are of low socioeconomic status and uneducated. Due to limited resources and time constraints majority of surgeries are done as SICS whereas fewer as Phacoemulsification. Present study aims to compare the safety and efficacy profile of both the surgeries being done at our centre as each and every eye deserves the best possible treatment.

Keywords: Cataract, NPCB, MNDY, SICS, Phacoemulsification

Methods: We randomly selected 140 patients who were admitted for cataract surgery; after applying inclusion and exclusion criteria. Patients were equally divided and SICS was done for 70 and Phaco for other 70 patients. Both the groups were further divided into two equal groups SICS with rigid PMMA lens and SICS with Foldable lens; Phacoemulsification with rigid PMMA and the other with Foldable lens. All the patients were followed on 1st, 7th and 30th day post operatively.

Result: In our study we observed that 68/70(97.14%) patients with SICS achieved 6/18 or better UCVA 30th day post op as compared to 57/70(81.42%) with Phacoemulsification. 2/70(2.85%) patients among SICS group had post op complication whereas 13/70(18.57%) patients among Phacoemulsification group had that.

Conclusion: Our study was done at secondary referral centre (Govt. District hospital) where we deal with a large number of patients with limited available resources. In our set up we found SICS to be more time efficient with lesser and easily manageable complications.

Keywords: comparative study of SICS, rigid PMMA, volume cataract surgeries

Introduction

Cataract is a major cause of treatable blindness in the world. The majority of the world's 20 million blind live in the developing world. [1]. In our own set up (secondary level referral centre) nearly 50% of OPD patients are of cataract. We perform approximately 3000 cataract surgeries per year; majority of them are done as SICS whereas some cases are done as Phacoemulsification. However the safest, most effective and economical technique of cataract surgery remains debatable [2, 3]. Over the past decade SICS has become an established surgical alternative to Phacoemulsification. Phacoemulsification is the preferred technique in the developed world and tertiary centres of developing world [4, 5, 6, 7, 8, 9]. Phacoemulsification requires a much smaller incision (3.2mm) than SICS but the incision size is dependant on the Phaco machine being used. An ultrasonic probe is used to emulsify the cataractous crystalline lens and the debris are aspirated with high vacuum. In manual SICS the entire crystalline lens is removed through a self-sealing scleral tunnel (5-7 mm) and a rigid PMMA lens is implanted [10]. The present study is an attempt to find the advantages and disadvantages of Phacoemulsification over SICS in our set up.

Materials and Methods

We recruited 140 cataract cases in age group 50 to 70 years of either sex who came to our OPD after obtaining informed consent of patients and ethical committee. Pre-operative investigations were within normal limits for all the patients.

Inclusion Criteria

- Cataract not more than grade 3
- Clear cornea
- No other associated ocular disease

Exclusion Criteria

- Grade 4 mature cataract

- Corneal degeneration
- Corneal opacity

70 cases underwent SICS and 70 Phacoemulsification surgery. Among SICS group 35 cases had 5.5mm superior incision and rigid PMMA lenses were put for them whereas remaining 35 cases had 4mm superior incision and foldable lenses were put for them. Similarly among Phacoemulsification group 35 patients had 3.2mm clear corneal incision and foldable lenses whereas remaining 35 had rigid PMMA lenses through extended clear corneal incision. This grouping was done as per the surgeon’s choice and as per the availability of foldable lenses. All the surgeries were done by one surgeon. Patients who had 4mm SICS incision they had either very soft small soft nucleus or nucleus was removed through ‘intratunnel phacofracture technique’^[11]. All the patients were followed on 1st, 7th and 30th day postoperatively; treatment was given accordingly. On 30th post op day UCVA and QOL score were assessed for all the patients. UCVA was assessed with Snellen’s chart and patient satisfaction post cataract surgery was measured as per QOL score; Pertinent questions about Quality Of Life were asked and their percentage were calculated for each patient.

Observations

UCVA and QOL scores on 30th Day

In SICS group 68/70(97.14%) patients had UCVA 6/12 or better on 30th post op day. 35/35 (100%) patients with 4mm SICS incision and foldable IOL had UCVA 6/9 or better. QOL score was 91 to 100% for 69/70(98.57%) patients remaining 1% had 90% QOL score.

In Phaco group 57/70(81.42%) patients had UCVA 6/12 or better, 35/35 (100%) patients with foldable IOL had UCVA 6/9 or better. 10/70(14.28%) had UCVA 6/24 to 6/18. QOL score for them were 54.54%. For remaining 3 patients who had nucleus drop or IOL drop UCVA was 6/60 or poor; QOL scores were also poor for them.

Time taken for SICS was 5 to 8 minutes whereas it was 10 to 16 minutes for Phacoemulsification.

Table 1

UCVA	SICS with rigid IOL	SICS with foldable IOL	Phaco with rigid IOL	Phaco with foldable IOL
6/12 or better	33/35	35/35	22/35	35/35
6/24 to 6/18	2/35	none	10/35	none
6/60 or poor	none	none	3/35	None

Table 2

QOL score in %	SICS with rigid IOL	SICS with foldable IOL	Phaco with rigid IOL	Phaco with foldable IOL
91 to 100%	35/35	35/35	22/35	35/35
50 to 90%	none	none	10/35	none
<50%	none	none	3/35	none

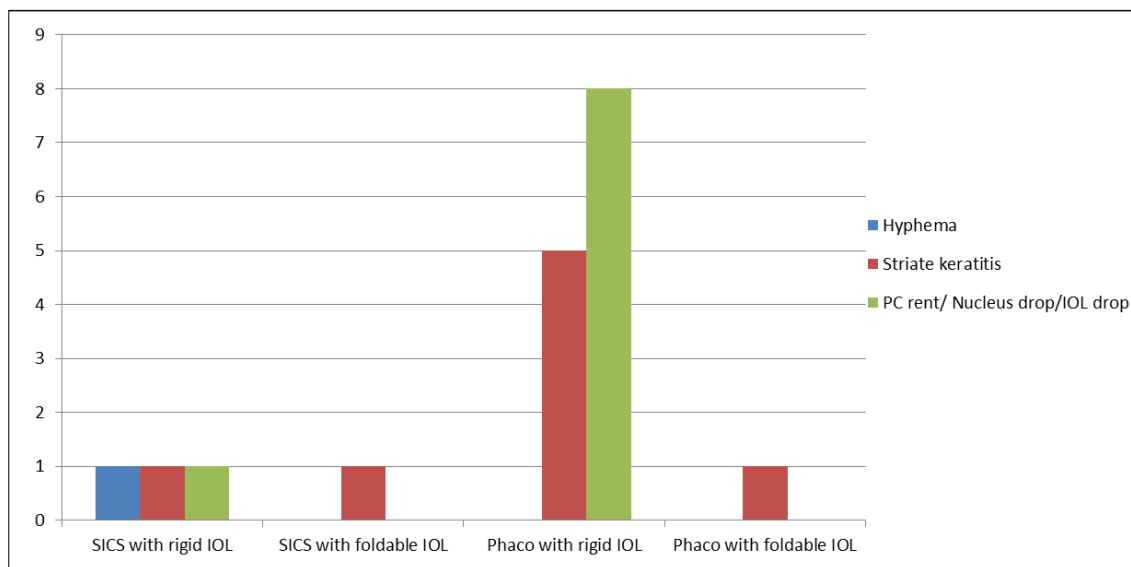


Fig 1: Comparison of complications

Discussion

Cataract remains a major cause of visual impairment in India and free hospital based surgery camps continue to be held to deal with the problem^[12]. Patients opting for free cataract surgeries are mostly elderly and illiterate^[13].

^{14, 15]}. Studies have emphasized the need to improve long term follow up of rural patients with regular monitoring and to not only increase surgical volume but to also improve the qualitative aspects of cataract surgery outcomes [^{16, 17, 18, 19}]. Phacoemulsification and SICS are both good options for high volume cataract surgeries. Rigid IOLs are generally made available for free cataract surgery camps being more cost effective as compared to Foldable IOLs [²⁰]. In our government district hospital set up where from investigations to IOL and medication everything is made available free to the patients; we too are posed with the challenge of dealing with mostly elderly and illiterate patients of low socioeconomic status. We are equipped with lesser resources as compared to tertiary level care centres. Moreover the availability of limited assisting staff and large number of surgeries to be done within a limited period of time makes Phacoemulsification surgery even more challenging for us.

In our study 68/70(97.14%) patients who underwent SICS achieved UCVA of 6/12 or better. 100% (35/35) Patients who had 4 mm SICS incision with foldable IOL achieved 6/9 or better UCVA. 1/70 patient had posterior capsular rent and had 6/18 vision on 30th post op day another 1/70 patient had partial descemet detachment and had 6/24 UCVA. Intratunnel Phacofracture technique is proved to have very small incidence of surgically induced astigmatism [²¹].

Among patients who had Phacoemulsification 57/70(81.42%) achieved UCVA 6/12 or better. 5/70 patients had striate keratitis, 6 PC rent, 1 nucleus drop and 1 IOL drop. This difference can be explained by the longer learning curve for Phacoemulsification and dependency on machine. Haripriya A et al also concluded that SICS may be a safer procedure for cataract surgery in developing world[22]. Similar study done also concluded that Phaco emulsification needs additional cost for the machine (depreciation), replenishment of the parts and annual maintenance contract. Manual SICS is far more economical than Phacoemulsification and its visual results are comparable to that of Phacoemulsification [²³]. Manual SICS was proved to be very suitable technique for high volume, low cost and good result cataract surgery [²⁴].

Conclusion

Our study shows preference of SICS over Phacoemulsification for large volume cataract surgeries because of the certain disadvantages of Phacoemulsification such as dependency on machine, more time consuming, higher risk of complications. It is even more relevant for the patients of low socioeconomic status who cannot afford to manage the high cost of possible complications associated with Phaco and certainly have lesser expectations than affluent patients of higher economic status.

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