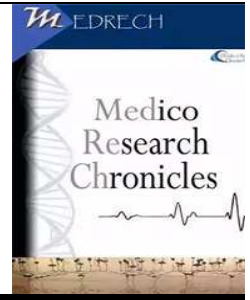




MEDICO RESEARCH CHRONICLES

ISSN NO. 2394-3971

DOI No. 10.26838/MEDRECH.2021.8.6.569

Contents available at www.medrech.com

STUDY OF INTRAOPERATIVE CHALLENGES AND EARLY SURGICAL OUTCOME OF PHACOEMULSIFICATION THROUGH TEMPORAL INCISION IN PATIENTS WITH SENILE CATARACT AT RURAL TERTIARY CARE HOSPITAL.

Aditya Abhaydeep Arage¹, Shubhangi Nigwekar^{*2}, Gauri Badhe³, Paraali Shah¹, Rucha Kacha¹, Rohit Aphale¹.

1. Junior Resident, Department of ophthalmology, Rural Medical College, PIMS-DU, Loni BK

2. Professor, Department of ophthalmology, Rural Medical College, PIMS-DU, Loni BK

3. Assistant Professor, Department of ophthalmology, Rural Medical College, PIMS-DU, Loni

ARTICLE INFO

ABSTRACT

ORIGINAL RESEARCH ARTICLE

Article History

Received: October 2021

Accepted: November 2021

Key words Temporal phacoemulsification, complications of temporal phacoemulsification, surgical outcome of temporal phacoemulsification

Corresponding author

Dr. S. Nigwekar*

Introduction: Temporal phacoemulsification (Phaco) gives a better surgical outcome in senile cataracts as it nullifies, “against the rule astigmatism” which is common in elderly patients. It is a well-established, effective and safe technique. We conducted this study to verify the surgical outcome of temporal phacoemulsification at a rural tertiary care hospital (RTCH).

Aims and Objectives: To study the intra operative and early post-operative complications, post-operative UCVA (Uncorrected Visual Acuity) and BCVA (Best Corrected Visual Acuity) in patients with senile cataract who underwent temporal phacoemulsification.

Materials and Methods: In this prospective, hospital based observational study, we studied intraoperative and postoperative data of 42 patients, above 50 years of age, who underwent temporal phacoemulsification for senile cataract from August 2019 to May 2020 after obtaining institutional ethical committee approval and written informed consent from all patients. All patients underwent minimum 6 weeks of postoperative follow up.

Results: Out of 42 patients, 57.14% were females and the most common age group was 61-70 years. Intraoperative bleeding was seen in 19.04% patients and post-operative mild corneal stromal haze and mild uveitis was seen in 4.76% and 7.14% patients on postoperative day 1(POD 1) respectively. Reduction in preoperative “against the rule astigmatism” was seen in 68% patients. All patients had an UCVA of >6/12 and a BCVA of 6/6 at last follow up.

Conclusion: Temporal phacoemulsification gives a good UCVA and faster visual rehabilitation in patients with senile cataract.

2021, www.medrech.com

INTRODUCTION:

Phacoemulsification is an established technique, to deal with the most common preventable cause of blindness i.e. cataract, which occurs due to the opacification of the crystalline lens or its capsule.

Phacoemulsification is currently deemed the most popular method worldwide, due to multiple advantages. It involves construction of a small self-sealing, sutureless incision, producing nil or very small astigmatism postoperatively, gives a very good postoperative visual outcome and provides early rehabilitation, thereby compensating for its higher cost.

Temporal phacoemulsification also nullifies “against the rule astigmatism” which is commonly seen in older individuals, thereby giving a good visual outcome postoperatively.

Intraoperative bleeding, post-operative corneal stromal haze, uveitis, glaucoma, and residual refractive error are the manageable challenges associated with temporal phacoemulsification. Early detection and timely medical management of these challenges give a good prognosis.

We conducted this study to verify the surgical outcome of temporal phacoemulsification in patients with senile cataracts at RTCH.

AIMS/OBJECTIVES:

To study the intraoperative challenges, early postoperative complications, and postoperative UCVA (Uncorrected visual acuity) and BCVA (Best-corrected visual acuity) in patients with senile cataract, undergoing phacoemulsification through a temporal incision at RTCH.

MATERIALS AND METHODS

In this observational, prospective, hospital-based study, after obtaining institutional ethical committee approval and written informed consent from all patients, we studied 42 adult patients, who underwent temporal phacoemulsification and completed a

minimum of 6 weeks follow up, from August 2019 to May 2020

We studied patients above 50 years of age with senile cataracts of grade I-III who underwent temporal phacoemulsification and completed a minimum of 6 weeks of follow-up and we excluded patients with other ocular pathologies, systemic pathologies, and patients with a follow up lesser than 6 weeks.

We studied:

Preoperative data: which included age and gender.

intraoperative data which included intraoperative bleeding

post-operative data which included post-operative uveitis, corneal haze, astigmatism, UCVA and BCVA at 6 weeks

Surgical technique: All surgeries were done by trained surgeons. We used local- peribulbar anesthesia with 1% lignocaine with adrenaline. Routine 4 quadrant phacoemulsification technique was used and the steps were as follows:

1. 2.8 mm incision temporally either clear corneal or scleral with 15 number blade.
2. Tunnel construction with a crescent knife and keratome, and 2 side ports with a lance blade.
3. 5.5mm continuous curvilinear capsulorrhexis followed by hydrodeliniation plus hydro dissection.
4. With phaco probe, nucleus trenching into 4 quadrants.
5. Emulsification of nuclear quadrants.
6. Foldable acrylic posterior chamber intraocular lens implantation in the capsular bag.
7. Small air bubble injection and formation of the anterior chamber.
8. Hydration of both side ports.
9. 0.5cc subconjunctival injection (dexamethasone +gentamycin) in the inferior conjunctival fornix.
10. Patch bandage

Postoperatively, antibiotics with steroid combination drops were instilled 6 times a day

and cycloplegic eye drops were instilled twice a day. Patient follow-up was carried out on days 1, 8 and 42 (6 weeks).

RESULTS

Total study cases were 42. There were 24 females (57.14%) in our study population. 61-70 years was the most common age group consisting of 18 patients (42.85%).

Intraoperative bleeding was seen in 8 patients (19.04%). Post-operative mild stromal corneal haze and uveitis were seen in 2 patients (4.76%) and 3 patients (7.14%) respectively, on postoperative day 1. Reduction of pre-operative “against the rule astigmatism” was seen in 29 patients (69.04%). All patients had UCVA greater than 6/12 and BCVA were 6/6.

Table 1: Age and gender distribution of study population (n=42)

Sr No.	Age	Males	Females	Total
1	41-50 years	2	2	4
2	51-60 years	2	4	6
3	61-70 years	10	8	18
4	71-80 years	4	8	12
5	>80 years	0	2	2
Total		18	24	42

Table 2: Showing post-operative complications in 42 study patients

POC (post-operative complications)	No. of Pts- %
Corneal stromal haze	02 (4.76%)
Uveitis	03 (7.14%)
Astigmatism	03 (7.14%)

Table 3: UCVA and BCVA in 42 study patients at last follow up

UCVA	Number of patients	BCVA	No. of Pts- %
6/9-6/12	20 (47.61%)	6/6 - 6/9	31 (73.80%)
6/12-6/18	10 (23.80%)	6/9 - 6/12	8 (19.04%)
6/18- 6/24	12 (28.57%)	6/12 - 6/18	3 (7.14%)



Figure 1: Pre-operative picture



Figure 2: Post-operative picture

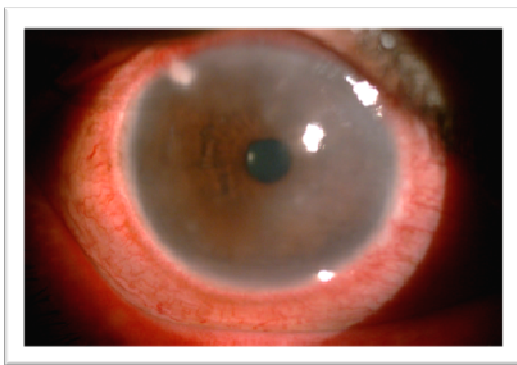


Figure 3: Post operative anterior uveitis with corneal haze

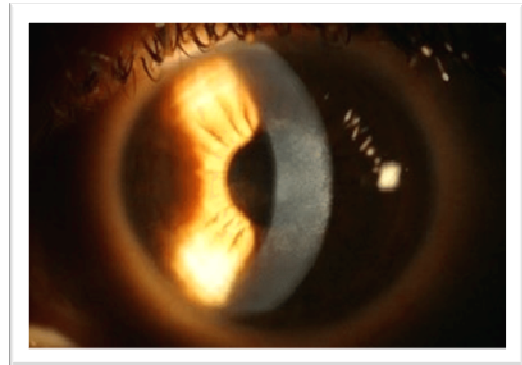


Figure 4: Post-operative corneal haze

DISCUSSION

In phaco surgery, we take a smaller incision to reduce the surgically induced astigmatism. Nowadays, cataract is a refractive surgery and our aim is to give a UCVA of 6/6 in a quiet eye.

In our study, out of a total of 42 cases, 24 patients were females (57.14%). Similar results were seen by P. K. Nirmalan *et al*¹. Being a rural area, females perform outdoor work and farming. This leads to exposure to heat and ultraviolet radiation which may be the factors involved in the occurrence of cataract.

61-70 years was the most common age group in our study, which maybe because of the cumulative effect of ultraviolet exposure. Raina B *et al*² and Malik VK *et al*³ reported similar results.

In our study, we used a temporal incision in all cases. The temporal limbal area is mesodermal in origin, and highly vascular. In our study, there were 21 cases with clear corneal incisions and 21 cases with sclerocorneal incisions. In the scleral incision technique, the incision was taken 2mm behind the limbus, whereas in the corneal incision technique, the incision was taken just anterior to the limbus.

The most common intraoperative complication was bleeding seen predominantly in cases with sclerocorneal incisions. Similar results were noted by Al Mahmood AM⁴ and Fine IH *et al*⁵. Clear corneal incisions bypass this complication as there is minimal conjunctival handling.

We studied all patients on postoperative day 1, postoperative day 8, and 6 weeks postoperatively.

The most common complication was post-operative uveitis followed by post-operative corneal stromal haze. Andrzej *et al*⁶ also reported similar results in their study Mild stromal corneal haze was seen in 4.76% of patients. Endothelial damage due to instrumentation and increased temperature from the phaco tip, tissue handling, and longer operative time are the common reasons for corneal stromal haze as reported by Similar results were seen by Abrar Ali *et al*⁷.

We found mild post-operative uveitis in 7.14% of patients. This could be due to handling, instrumentation, breakdown of blood-aqueous barrier, IOL material, and individual tissue response as shown by Oliver F *et al*⁸.

Out of a total of 42 patients, there were 37 (88.09%) patients who had preoperative “against the rule astigmatism”. Reduction of pre-operative “against the rule astigmatism” was seen in all 37 patients (88.09%). Nikose AS *et al*⁹ and Roman S *et al*¹⁰ also reported similar reduction in pre-operative “against the rule astigmatism” and a shift towards “with the rule astigmatism”⁷.

In our study, the majority of patients (47.61%) had an UCVA of more than 6/12. Gade S *et al*¹¹. reported similar results in their study. Older patients usually have preexisting “against the rule astigmatism” which gets nullified with a temporal incision providing a good UCVA to the patient postoperatively. Holladay JT *et al*¹² and Kohnen T *et al*¹³ provided similar results in their studies.

CONCLUSION:

Temporal phacoemulsification gives a good postoperative UCVA (uncorrected visual acuity) and faster visual rehabilitation. The possible complications of this technique are easily manageable, thereby making it a safe and preferred technique.

LIMITATIONS: Small sample size
Short follow-up period.

CONFLICT OF INTEREST: NIL

REFERENCES:

1. Nirmalan PK, Robin AL, Katz J. Risk factors for age-related cataract in a rural population of southern India: The Aravind Comprehensive Eye Study. *British Journal of Ophthalmology* 2004; **88**:989-994.
2. Raina, B., & Sharma, P. (2020). The study of the demographic profile of patients of senile mature cataract attending the eye OPD of GMC Jammu, India. *International Journal of Research in Medical Sciences*, 8(3), 833-835. doi:http://dx.doi.org/10.18203/2320-6012.ijrms20200481
3. Malik VK, Kumar S, Kamboj R, *et al*. Comparison of astigmatism following manual small incision cataract surgery-superior and temporal approach. *Nepal J Ophthalmol* 2012; 4; 7:54-58.
4. Al Mahmood AM, Al-Swailem SA, Behrens A. Clear corneal incision in cataract surgery. *Middle East Afr J Ophthalmol*. 2014 Jan-Mar;21(1):25-31. doi: 10.4103/0974-9233.124084. PMID: 24669142; PMCID: PMC3959037
5. Fine IH. Clear corneal incisions. *Int Ophthalmol Clin*. 1994;34(2):59-72. doi:10.1097/00004397-199403420-00005
6. Grzybowski, A., Kanclerz, P. Do we need day-1 postoperative follow-up after cataract surgery? *Graefes Arch Clin Exp Ophthalmol* 257, 855–861 (2019).
7. Abrar Ali, Tabassum Ahmed, Tahir Ahmed. Corneal problems during and after phacoemulsification by beginner phacoemulsification surgeon. *Pak J Med Sci* May - June 2007 Vol. 23 No. 3 401-404.
8. Findl O, Amon M, Petternel V, Kruger A. Early objective assessment of intraocular inflammation after

- phacoemulsification cataract surgery. *J Cataract Refract Surg.* 2003 Nov;29(11):2143-7. doi: 10.1016/s0886-3350(03)00411-5. PMID: 14670423.
9. Nikose AS, Saha D, Laddha PM, Patil M. Surgically induced astigmatism after phacoemulsification by temporal clear corneal and superior clear corneal approach: a comparison. *Clin Ophthalmol.* 2018 Jan 3; 12:65-70. doi: 10.2147/OPHTH.S149709. PMID: 29379266; PMCID: PMC5757199.
 10. Roman S, Ullern M. Astigmatisme induit par les incisions cornéennes supérieures et temporales dans la chirurgie de la cataracte [Astigmatism caused by superior and temporal corneal incisions in cataract surgery]. *J Fr Ophtalmol.* 1997;20(4):277-83. French. PMID: 9181139
 11. Snehal P Gade, Bhaskar S Khaire. The visual outcome with superior, superotemporal and temporal incisions used in phacoemulsification surgery - a comparative study. *MedPulse – International Medical Journal*, ISSN: 2348-2516, EISSN: 2348-1897, Volume 1, Issue 8, August 2014 pp 429-433
 12. Holladay JT, Cravy TV, Koch DD. Calculating the surgically induced refractive change following ocular surgery. *J Cataract Refract Surg* 1992; 18:429-43.
 13. Kohnen T, Dick B, Jacobi KW. Comparison of the induced astigmatism after temporal clear corneal tunnel incisions of different sizes. *J Cataract Refract Surg* 1995; 21:417-24.
-