Commentary: Evaluation of complications and visual outcomes in various nucleus delivery techniques of manual small incision cataract surgery

Manual small incision cataract surgery (MSICS), owing to its close chamber, suture-less technique, and independence from advanced equipment, is a rapid, reliable, physiologically sound, and cost-effective alternative to phacoemulsification.[1,2]

Ophthalmic literature is teeming with research articles comparing the outcomes of MSICS with phacoemulsification. However, there is a conspicuous scarcity of articles comparing visual outcomes and complications of various nucleus delivery techniques in MSICS. The original article titled "Evaluation of complications and visual outcomes in various nucleus delivery techniques of manual small incision cataract surgery" in this issue fills this lacuna.[3]

In terms of level of statistical evidence provided, the article scores high owing to the fact that it was a double-masked, randomized, controlled trial. The fact that authors have appropriately laid out inclusion and exclusion criteria, used block randomization, defined assessment parameters, elucidated postop follow-up schedule, applied appropriate biostatistical tests, and presented results lucidly not only denotes sound understanding of research methodology but also makes the study more robust.

The authors have demonstrated their steps in calculating the sample size for the trial; a feature which, unfortunately, is missing in many clinical research articles. However, one needs to point out that while the authors have used difference in incidence of corneal edema (between two techniques) from their historical data for the purpose of sample size calculation,

they have reported difference in best-corrected visual acuity at eighth postop week as the primary outcome. Usually, the sample size is calculated using the historical data of the intended primary outcome under study. The surgeons were also aware beforehand of the technique of nucleus delivery planned for a particular study subject. This could have been improved by maintaining allocation concealment up to a step prior to nucleus delivery.

From a clinical standpoint, the data presented in the article are useful in selecting a specific technique of MSICS for regular use and training new surgeons. In terms of visual outcomes, all the techniques under study in this trial showed comparable results at the fourth and eighth weeks' postop follow-up. However, nucleus delivery using the anterior chamber maintainer (ACM) had the advantage of early visual recovery when compared with others. The surgically induced astigmatism among the various groups was not different either.

The authors have studied the differences in incidence of various intraoperative complications among the five groups. Although the occurrence of some of these complications (e.g. premature entry, posterior capsular rent, secondary glaucoma) cannot be attributed solely to the nucleus delivery technique, the others do serve as surrogate measures of difficulty or ease of the technique and are hence important data points. Here too, ACM technique seems to hold the edge over other techniques barring the incidence of Descemet's membrane detachment.

Among postoperative complications, striate keratopathy, corneal edema, anterior chamber reaction, and hyphema could be considered to be most representative of the difficulty or ease of the technique. Among all these parameters too, the ACM technique was found to be better in this study.

The use of ACM for MSICS was popularized by Blumenthal in his landmark article.[4] The ACM maintains the chamber depth and minimizes the intraocular pressure fluctuations throughout the surgery, thus making it a more physiological technique.[5] This in turn results into lesser intra- and post- complications and faster visual recovery.

Descemet's membrane detachment is usually initiated at the site of ACM port during insertion of the ACM. The detachment is further aggravated as the membrane is stripped off by the fluid wave from an improperly inserted ACM port. It can easily be avoided using sharp bladed to create the paracentesis incision, and ensuring the ACM port is completely inside with the bevel facing down.

For the sake of a clinical trial, operating surgeons often have to use techniques which they are not accustomed to. One has to always bear this in mind while comparing and interpreting the "complications" data in such trials. A surgeon who is well versed with a particular technique may be able to deliver results comparable to those demonstrated by the ACM group. Having a single surgeon in a trial ensures consistency and standardization of all surgical steps except the step under study. However, one could argue that presence of more than one surgeon closely mimics real-life scenario.

MSICS, being the surgery of choice in hospital-based community cataract surgery campaigns, is an integral part of Indian ophthalmology.[6,7] It also serves as stepping stone for budding surgeons toward phacoemulsification. Hence, a thorough understanding of the outcomes and complications of various techniques is warranted.

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References

1. Gogate P, Optom JJ, Deshpande S, Naidoo K. Meta-analysis to compare the safety and efficacy of manual small incision cataract surgery and phacoemulsification. Middle East Afr J Ophthalmol 2015;22:362-9.
2. Gogate P, Deshpande M, Nirmalan PK. Why do phacoemulsification? Manual small incision cataract surgery is almost as effective, but less expensive. Ophthalmology 2007;114:965-8.
3. Sharma U, Sharma B, Kumar K, Kumar S. Evaluation of complications and visual outcome in various nucleus delivery techniques of manual small incision cataract surgery. Indian J Ophthalmol 2019;67:1073-8.
4. Blumenthal M, Moisseiev J. Anterior chamber maintainer for extracapsular cataract extraction and intracapsular lens implantation. J Cataract Refract Surg 1987;13:204-6.
5. Malik KP, Goel R. Nucleus management with Blumenthal technique. Anterior chamber maintainer. Malik KP. Goel R. Indian J Ophthalmol 2009;57:23-5.
6. Pai SG, Kamath SJ, Kedia V, Shruthi K, Pai A. Cataract surgery in camp patients: A study on visual outcomes. Nepal J Ophthalmol 2011;3:159-64.
7. Vivekanand U, Shetty A, Kulkarni C. Cataract surgery outcomes at a rural eye care hospital in India. Trop Doct 2011;41:253-6.

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