

Role of small incision cataract surgery in the Indian scenario

An entire journal issue devoted to small incision cataract surgery (SICS) is testimony to the popularity of the technique. Although the editor probably intended a perspective on manual SICS (MSICS), a brief background might justify my wider viewpoint. Having learnt the technique of MSICS 17 years ago, facilitated by Michael Blumenthal, I learnt the other SICS technique, phacoemulsification, formally from Kenneth Spitzer in 1992. I ensured that both techniques, MSICS (1992) and phacoemulsification (1994), became routine for all residents (and faculty) in my residency program.^[1] Accordingly, although I have popularized MSICS around the country, I will take a broader outlook and comment on several aspects of SICS, not just MSICS.

Until recently, MSICS was considered as a low-tech, unproven poor cousin to the gold standard phacoemulsification. Several recent articles have compared MSICS to phacoemulsification and demonstrated almost equivalent outcomes.^[2-4] The proven advantage of phacoemulsification is a statistically significant benefit in induced astigmatism of about 0.4 diopter (D); the clinical significance of this statistically significant difference is however debatable.^[4,5] On the other hand, nucleus drop with phacoemulsification (0.9%) has a higher relative risk compared with MSICS (Thomas R, unpublished data).^[6] Moreover, how much ever we may espouse providing the gold standard for the entire cataract population, in reality even if that were desirable, "phacoemulsification for all" (cataracts) in India (or for that matter anywhere) is neither practical nor feasible. The advantages of MSICS as a low-cost "equally effective" technique makes it an alternative, especially in an unequally developed country like ours.

It is argued that MSICS is worse for the endothelium, but a formal study showed no difference in endothelial cell loss between MSICS and phacoemulsification.^[4] This is however likely related to the technique of MSICS. There are several types of MSICS, some of these being more elegant and sound in principle than others. I am partial to the Blumenthal technique of MSICS because of the philosophy of the technique as well as that of the anterior chamber maintainer (ACM) integral to this method.^[5] The ACM keeps the chamber formed (and endothelium protected) during all the steps of the surgery; other MSICS techniques are unlikely to be equivalent in this respect. The ACM also makes cortex aspiration easier and safer; and if an aspirating cannula is used on a syringe without the plunger, capsule vacuuming can be safely performed without expensive "cap-vac" software. What's more, the ACM converts cataract surgery into an "egress" system, much like vitrectomy (a procedure with a low endophthalmitis rate). It is my bias that such an "egress" system decreases the endophthalmitis rate in cataract surgery too. In fact, I have always used the ACM for phacoemulsification too. It especially makes teaching very much easier and safer, permitting focus on the "phaco" steps rather than things like foot positions.^[1] Moreover, the ACM continues to cleave planes created by hydrodissection (even if incomplete). Also, the aspirated fluid is replaced immediately, obviating reliance on expensive software to decrease fluctuations and surges: it literally converts a low-end phacoemulsification machine into a high-end model. Finally, if one wants to learn microincision cataract surgery, an ACM allows that almost without a learning curve.^[7]

There are those who argue vehemently for MSICS, while others perceive phacoemulsification as the only way. Is there a reason for "phaco" surgeons to learn MSICS too? 100% phacoemulsification (like 100% anything else) is not possible. Even the most experienced phaco surgeons need to "bail out" sometimes, even if it is only due to machine failure. The published literature from India documents this occurrence as 3.7%, about one in 25.^[8] Phacoemulsification converted to an unplanned standard extracapsular (ECLX) surgery is worse than a planned ECLX; conversion to MSICS, usually utilizing the same wound, provides better outcomes. Surely, we do not espouse the training of surgeons in phacoemulsification only, as is the current trend in developed countries. Such a surgeon "bailing out" of phacoemulsification would be "bailing out" into tiger country, without a parachute.

Similarly, there are reasons for MSICS advocates to learn phacoemulsification. Many patients demand phacoemulsification and are willing to pay more for it, permitting sustainability, in all settings. Even if we strongly believe a particular case is better suited for MSICS, our decision is more likely to be accepted if made from the position of skill in both methods. Rather than supporting only phacoemulsification courses, industry too might be advised to take the broader view and sponsor teaching of cataract surgery per se, including MSICS. After all, those who learn MSICS today are the ones who will want to learn phacoemulsification tomorrow; they are tomorrow's market. The only skills left to acquire will be the actual "phaco" steps, which MSICS surgeons can attain more easily.

Therefore, MSICS is really not so much an "alternative" but can be an additional technique in our armamentarium. This armamentarium also includes the standard ECLX as well as the now-forgotten intracapsular surgery. Each technique is used according to the case encountered, the setting, as well as the surgeon's skill and comfort level. A (now rare) hypermature, subluxated lens suspended by only a quadrant of zonules might require intracapsular surgery; alternatively, there is a MSICS technique to glide such a nucleus out too, if the surgeon were comfortable with that. Others may have the skill to perform phacoemulsification in such a case: as long as it does not cost much (which it does) and is not much more likely to involve a vitreoretinal intervention (which it is), because the end result is unlikely to be different.

I feel that this issue of the journal on MSICS would have benefited from an article on the teaching of surgical skills and techniques. There are some basic requirements for the transfer of cataract surgical skills: "one-on-one" teaching by an experienced surgeon using high-quality microscopes (with beam-splitters and assistant scopes), as well as instrumentation (and attitude) to manage

complications in the most modern manner; the goal is to obtain the best outcome possible under the teaching circumstances.^[9] Anything less is a travesty.

Although I learnt MSICS unsupervised (because there was no alternative and it was essentially an extension of ECLX), phacoemulsification, was an entirely different technique that I considered unsafe to learn without expert help.^[10] The accompanying editorial recommends the model that we were using 15 years ago, wherein the surgeon was taught in his own environment.^[11] In this day and age, with the abundance of SICS courses and trained surgeons, there is really no excuse for unsupervised learning of a potentially dangerous technique like phacoemulsification (or for that matter, MSICS), while placing the patient at (avoidable) risk. Still worse is to be instructed in phacoemulsification by an industry engineer, no doubt skilled in machine nuances and armed with the theoretical knowledge of the procedure, but without the ability to safely train an ophthalmologist. Industry must forbid their engineers from such practice.

Actually, the profusion of SICS courses is a sad testimony to the state of our residency programs. Surely, the next generation of ophthalmologists should at least be adequately trained in modern cataract surgery and not have to seek courses or fellowships to achieve this. Modern cataract surgery does not mean just the steps of the surgery. Residents will do whatever they observe their teachers do. If they are exposed to shoddy routines, like not scrubbing between cases, sharing of instruments, and general lack of respect for sterile operating room procedures (all of which constitute an unfortunate, reckless attitude), whether in the setting of residency programs, camps, or SICS courses, it will only serve to spawn and reinforce bad habits. The process will ruin our generation next and place their patients at risk.

We are already witnessing the negative impact. It seems that some colleagues do not sterilize the phaco tips (let alone hand pieces) between cases. With the risk of not just endophthalmitis, but in these days, HIV and hepatitis B too, this practice is extremely irresponsible and worse than negligence. Let us be reasonable. If you want to perform a high-tech technique like phacoemulsification, please understand that the machine, handpieces, disposables, and the procedure are going to be relatively expensive. Accept it. Cutting costs on sterilization and safety is not the answer to the perceived need for high volumes, not with any technique. If economization is required, economize elsewhere, or use a procedure like MSICS that does not require expensive instrumentation, and that does not mean that such appalling shortcuts are permissible with the cheaper MSICS. Industry too should also discharge their responsibility (and avoid potential problems for themselves) by proactively educating their customers about sterilization requirements for their machines and accessories.

To conclude, there is a welcome trend towards SICS in our country. Both MSICS and the "other" SICS have a place in our armamentarium and are complementary, and both are here to stay. Supervised, responsible teaching of SICS techniques is the need of the hour, which is the primary responsibility of residency programs; courses and fellowships, although important, are "band-aid" measures that can do only so much.

Ravi Thomas

Queensland Eye Institute, 41 Annerley Road, South Brisbane 4101,
Queensland, Australia. E-mail: ravi.thomas@qei.org.au

References

1. Thomas R, Naveen S, Jacob A, Braganza A. The visual outcome and complications of residents learning phacoemulsification. *Indian J Ophthalmol* 1997;45:215-9.
2. Gogate PM, Kulkarni SR, Krishnaiah S, Deshpande RD, Joshi SA, Palimkar A, *et al.* Safety and efficacy of phacoemulsification compared with manual small-incision cataract surgery by a randomized controlled clinical trial: Six-week results. *Ophthalmology* 2005;112:869-74.
3. Ruit S, Tabin G, Chang D, Bajracharya L, Kline DC, Richheimer W, *et al.* A prospective randomized clinical trial of phacoemulsification vs manual sutureless small-incision extracapsular cataract surgery in Nepal. *Am J Ophthalmol* 2007;143:32-8.
4. George R, Rupauliha P, Sripriya AV, Rajesh PS, Vahan PV, Praveen S. Comparison of endothelial cell loss and surgically induced astigmatism following conventional extracapsular cataract surgery, manual small-incision surgery and phacoemulsification. *Ophthalmic Epidemiol* 2005;12:293-7.
5. Thomas R, Kuriakose T, George R. Towards achieving small-incision cataract surgery 99.8% of the time. *Indian J Ophthalmol* 2000;48:145-51.
6. Mathai A, Thomas R. Incidence and management of posteriorly dislocated nuclear fragments following Phacoemulsification. *Indian J Ophthalmol* 1999;47:173-6.
7. Thomas R. Learning micro incision cataract surgery without the learning curve. *IJO* 2008;56:135-8.
8. Dada T, Sharma N, Vajpayee RB, Dada VK. Conversion from phacoemulsification to extracapsular cataract extraction: Incidence, risk factors and visual outcome. *J Cataract Refract Surg* 1993;19:1521-4.
9. Kothari M, Thomas R, Parikh R. The incidence of vitreous loss and visual outcome in patients undergoing cataract surgery in a teaching hospital. *Indian J Ophthalmol* 2003;1:45-52.
10. Thomas R, Braganza A, Raju R, Lawrence G, Spitzer K. Phacoemulsification: A senior surgeon's learning curve. *Ophthalmic Surg* 1994;8:504-9.
11. Spaeth GL. Phacoemulsification: A senior surgeon's learning curve. *Ophthalmic Surg* 1994;25:509.