

Ophthalmology Times

CUTTING-EDGE ADVANCEMENTS

Designer cataract surgery concept tailored to each case

‘Premium’ cataract surgery is not necessarily
‘custom’ cataract surgery

Gloves Off with Gulani by Arun C. Gulani, M.D., M.S.

Editor’s Note: This is the first of a three-part column that will address the concept and approach to designing primary cataract surgery. The two subsequent columns will address staged cataract surgery in complex cases and correcting premium cataract surgery complications.



As in previous columns, I always like to start with the mindset.

Though cataract surgery is considered to be one of the most routinely performed procedure in all of medicine—with millions of cases performed annually—this very concept of a routine surgery is abhorrent.

I believe that cataract surgery is an opportunity for surgeons to enable patients to have the best sight possible for the rest of their life. Because no cataract surgery should be considered routine, each patient deserves not only the best surgery performed using the best technology,

but also a designed concept to meet their visual requirements that is tailored to each case individually.

This column is the first of three in which I will share with colleagues the concept and approach to designing primary cataract surgery. The two subsequent columns will address staged cataract surgery in complex cases and correcting premium cataract surgery complications.

In my attempt to always empower colleagues, I would like at the outset also to clarify that beyond a certain necessity, technology is an added benefit, not a crutch upon which to become dependent in the pursuit of perfect vision.

The most important statement I shall make in this column is what I ask my fellows and visiting surgeons when they tell me that a certain patient has a cataract. I follow that statement with my rhetoric: "Cataract and what else"? What I am trying to drive home is a point that whenever we see a patient with a cataract we must ask ourselves "What else?" is associated with it.

This single statement will cause a paradigm shift in our mindset that the industry has spent millions of dollars on in trying to configure premium cataract surgery.

I teach my fellows with an analogy to the game of bowling. First pick all the pins, i.e., associated ametropia, presbyopia, pathology, etc., and then aim for a strike. To have two pins standing at the end of a throw could be human error, mistake, or complication but to not aim to strike is unacceptable!

This leads us into my four categories of cataract presentations.

The surgeon's first consideration is determining the associated pathologies, ametropias, past ocular surgical history, and visual dysfunctions of each patient and then choosing options from the available array of treatments (Gulani 3T system) to resolve all of each patient's conditions during one surgery that they need anyway, i.e., cataract surgery.

By not doing so, a surgeon will have missed out on the only opportunity that individual patients had for the rest of their lives.

With such an outlook, I encourage colleagues to classify every cataract patient into four categories and then individually plan to address all of their correctable visual issues (bowling pins) using custom designed cataract surgery.

The Gulani Cataract Category Classification comprises four categories:

Cataracts with associated refractive errors (i.e., myopia, hyperopia, astigmatism, and presbyopia); Cataracts with a previous eye surgery (i.e., RK, LASIK, etc.); Cataracts with an associated pathology (i.e., Fuchs disease, corneal scar, keratoconus etc.) and Enhancement of a previous cataract surgery (i.e., residual ametropia, haloes, glare, etc.) When all of these factors are considered for individual patients, the surgical plan unfolds clearly.

For example, a Category 1 cataract patient may wear bifocal glasses for farsightedness, astigmatism, and presbyopia. Therefore, there are four visual factors affected—cataract, farsightedness, astigmatism, and presbyopia. Instead of considering such a patient as a routine case and rushing them through a cataract surgery assembly line, the surgeon should try to correct all of the patient's visual problems during one cataract surgery.

Category 2 patients who have undergone previous refractive surgeries such as LASIK and RK may present with either long-term side effects of those surgeries with gradually decreasing vision over time or a need for an enhancement. Their vision can be planned using cataract surgery with specific new technology lens implants including incision sealants and intraoperative calculation technology to be followed by staged, laser vision surgery for excellent visual outcomes.

For Category 3 patients who have an associated pathology, such as keratoconus, corneal scars, or Fuchs dystrophy besides cataracts, the surgeon can plan for the visual endpoint by first manipulating the optics of the eye using new technology IOLs with cataract surgery to prepare for laser Corneoplastique techniques.

Finally, Category 4 patients with previous cataract surgery may have the wrong IOL power/ technology in place or a surgical complication or may want an enhancement of their cataract surgery. In such cases, the surgeon should plan to exchange the lens implant or piggyback or perform corneal refractive surgery to correct not only their resultant spectacle prescription but also resolution of the offending symptoms.

CUSTOM PLANNING, CUSTOMIZED VISION

This four-category classification allows surgeons to place practically every cataract case into a plan mode and then work toward the Gulani 3-T system: target, technology, and technique, when designing a customized cataract surgery plan.

I spend extensive time with every patient determined to find my pins and to confirm their visual target. We can then work on how to deliver that target based on their clinical status from the 3-T system to the four-category classification to see how the plan unfolds.

TARGET

The surgeon first determines the patient's customized visual goals of monovision, blend, progressive, or accommodative vision and any professional requirements, for example, for pilots and night vision-dependent professions.

TECHNOLOGY

The technologies to be considered are the type of lens implant: monofocal, multifocal, toric, accommodating, or dual IOLs; the cataract extraction technology: femtosecond laser/phacoemulsification; intraoperative aberrometry measurement systems, combinations such as LASIK laser vision surgery/diamond astigmatic incisions; and two- or three-dimensional visualization systems including the recently FDA-approved incision sealants.

In addition, combined knowledge about the technologies and the optics of the eye allow measurement of higher order aberrations along with secondary refractive errors and optical zones with corneal asphericity, which are factors that affect vision beyond the three common refractive errors.

TECHNIQUE

The surgical technique could be based on cataract densitometry analysis, associated pathologies, and planned correctables dependent on incision site placement and energy applications.

Armed with this information, the surgeon can then dedicate a plan personalized to each patient. Rather than being intimidated by technology or its indispensability, one can confidently pick the technology most applicable in each case from a shelf (in our mind) as we determine the target and technique for that case remembering all the time that for that particular patient this surgery will impact the rest of his or her life.

Thus, rather than forcing a set technology and technique on all patients, imagine the fun of picking specific technologies such as femtosecond laser in cases of mature white cataracts or nystagmus, incision sealants in RK cases, toric or accommodative lens implants previous refractive or corneal irregularity cases, and then even combination technologies to design each case to achieve its best vision potential.

Though one cannot guarantee outcomes in every case, one can surely guarantee the attempt to perfect each and every case. This mindset will make every cataract surgery a pleasure and raise the bar from routine assembly line medicine to focused, custom-tailored surgery with a payback that is beyond measure.

In the next part of this three-part column, I will review cataract surgery as a planned optical manipulation in a staged, combination concept to correct complex cases in designing vision.

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