Editorial

The on-Going Evolution in Cataract Surgery

Charles Kelman (1930-2004), a Brooklyn New Yorker, introduced phacoemulsification in 1967 after being inspired by his dentist's ultrasonic probe. No one at that time knew how this discovery would revolutionize cataract surgery in the times to come. One of the greatest advantages of this technique lies in the small size of the surgical wound. The race for the decreasing millimeters really took off soon after the popularisation of the technique especially with the introduction of foldable IOL's at the end of the 1980's.

The surgical technique of phacoemulsification itself got evolved enormously as the surgeons gained experience since its modern inception. Excessive time was spent earlier on construction of scleral pockets and extra long tunnels to minimize surgically induced astigmatism only to be superceded by a gradual forward journey towards the limbus and then the clear cornea. The latter approach increased the incidence of intra-ocular infection compelling the more wary surgeons to retreat. The most favoured approach now is at the junction of anterior sclera with the posterior limbus which tends to have all the advantages of cornea as well as lesser astigmatism and higher degree of defence against endophthalmitis. The incision size has gone down to 2.2 mm in most of the cases which is astigmatically neutral. Micro coaxial phaco tip and the smart sleeve have all made it possible making even relatively newer bimanual phaco almost obsolete! Similarly the painstaking 'sculpting', 'cracking' and 'divide and conquer' techniques have been largely replaced by the modern horizontal and vertical chopping thus cutting the surgical time to a fraction of what it was earlier. The father of chopping technique is undoubtedly Nagahara who first showed his video back in 1993. Shortly after, Akahoshi described his technique of karate pre-chop but it did not gain wide acceptance due to the potential risk of zonular stress.

The real industrial revolution in the field of cataract surgery has been the development of IOL technology as well as modernization of the phaco equipment and its fluidics (cool phaco, ozil and most recently ozil intelligent phaco are just a few examples). The main force behind all that being the ever increasingly demanding patient to the extent that cataract surgery is now evolving into more and more of a refractive procedure with the aim of least or no dependence on the spectacles!

Five of the most popular implantable lenses world wide are ReStor; ReZoom , Tecnis ZM900, Crystalens and Acrysof Toric. ReStor IOL uses a combination of an apodized diffractive and refractive lens to focus light. ReZoom has multifocal zones that focus light simultaneously. Crystalens implant is the first accommodating lens to be approved by the FDA. After implantation it moves by the tiny ciliary muscles to enhance the focusing ability thus best correcting vision for distance and intermediate distance. Some patients may still need to wear reading glasses but the need is greatly reduced. However concerns do remain about the long term performance (7 years experience so far), behavior in capsular bag phimosis/PCO scenario, and the cost.

The first toric IOL approved by FDA was in 1998 (Staar-plate haptic) and ever since the technology has matured enormously. The on-line lens power calculators have made the whole procedure very simplified and the results highly predictable; but having said that, none of the available IOL's is perfect as there can be some halos and glare at night and dusk time with some of them. For example, ReZoom has good intermediate and distance vision but not as good near vision. Crystalens is very good with distance and intermediate vision but not as **srong** with near vision. It is also a bit more cumbersome to implant. The original ReStor +4.00 suffers a bit from weaker intermediate vision but is strong at distance and near. ReStor +3.00 has improved the intermediate power while not sacrificing its excellent distance and reading powers, and is on the aspheric platform to improve night driving as well.

For those patients who do not mind wearing glasses for part of their visual activity, the quality of life is splendid after modern cataract surgery! The search for the ideal and the flawless goes-on!

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