Abstract - Evolution in the Management of Glaucoma and Cataract

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The management of the patient with glaucoma and a cataract has been a controversial topic in Ophthalmology during the past century. Advocates for the variety of options available to Ophthalmologists proposed their positions based on personal experience often to the exclusion of any other considerations. Despite the publication of a clinical series reporting the results of a particular intervention there was frequently a bias based on personal experience that influenced the work. The early reports of surgery for an eye with glaucoma and cataract centered around 3 main alternatives: (1) cataract surgery alone; (2) glaucoma surgery followed by cataract surgery; (3) combined surgery. The prominent procedure in this era was intracapsular cataract extraction without intraocular lens implantation. The results of cataract surgery alone failed to control the IOP without the administration of more medication or later glaucoma surgery in the long term. Performing ICCE in an eye after filtration surgery often resulted in the loss of IOP control in 40-50% of eyes and the presence of a filtering bleb imposed the need to modify the standard procedure often resulting in a less than desirable surgical outcome. Combined surgery consisted of ICCE and either sclerectomy, iris inclusion, cautery of the wound, cyclodialysis, trabeculotomy, or trabeculectomy. In selected eyes many of these procedures produced excellent results, but the surgery was more demanding and at times morbidity was greater than with cataract surgery alone.

Advances in the late 1970s and 1980s offered broader alternatives in managing glaucoma and cataract. The adaption of microsurgery by a greater number of Ophthalmologists worldwide helped to refine glaucoma surgery, specifically the widespread use of a form of trabeculectomy. Intraocular lens implantation was used by more Ophthalmologists to treat aphakia and the development of the posterior chamber IOL obviated the need for iris or angle support, both of which had disadvantages in some glaucomatous eyes. However, it was the popularization of extracapsular cataract surgery that exerted the most profound influence on the management of these conditions. The advantages of an intact posterior capsule became readily apparent by maintaining compartmentalization of the eye; protecting the filtration bleb from vitreous, serving as a locus for the IOL implantation and stabilizing the blood aqueous barriers. There was a sudden proliferation of publications on the benefits of combined surgery for glaucoma and cataracts. Even the adherents of sequential surgery benefitted from these new advances.

In the 1990s there has been a shift to phacoemulsification, implantation of small incision IOLs and foldable IOLs, clear corneal incisions and also the use of antimetabolites in glaucoma filtration surgery. The surgical options for managing these conditions have not changed but the technical advances afford the Ophthalmologist much greater flexibility. Many surgeons are now performing clear corneal phacoemulsification on their glaucoma patients who require cataract surgery because of the overall benefits of small incision surgery, as well as, the demonstration of IOP reduction in many of these eyes. There is also less reluctance to treat patients medically after cataract surgery because newer glaucoma medications effectively reduce IOP without the myriad of side-effects observed with the agents we used previously. This technique also preserves conjunctiva should filtration surgery be required in the future.

The eye with a prior filtering bleb will also benefit from clear corneal phacoemulsification. This situation is similar to a strategy of sequential surgery. The smaller incision, less postoperative inflammation, working at a distance from the filtering bleb and preservation of conjunctiva are all beneficial in promoting IOP control after cataract surgery. In these eyes the issue of managing the miotic pupil or posterior synechias become particularly important.

Surgery for glaucoma and cataract has combined phacoemulsification and trabeculectomy. There are many variations in technique and approach that have conflicting outcomes. Many of these center on the routine use of antimetabolites. Another variant is whether there are advantages in using a single site versus separate sites for the two procedures.

In the past several years publications describing the combination of phacoemulsification with trabeculectomy and with non penetrating techniques such as viscocanulostomy, deep sclerectomy with collagen implant and deep sclerotomy with sodium hyaluronate gel have also been reported. These later procedures will require longer periods of observation to assess their benefit.

Over the past 60 years the technical advances in cataract/IOL and glaucoma surgery have provided the Ophthalmologist with the opportunity to tailor the appropriate procedure to the patient's particular situation. The introduction of newer pharmacological agents to control IOP and to modulate wound healing have also strongly influenced the approach to managing these conditions. Challenges remain in dealing with glaucoma and cataract but the future is bright as new technology is on the horizon.