Clinical Issues: Patient acceptance of ocular implants for Glaucoma Drug Delivery

Tina Wong FRCOphth, FRCSEd, PhD
Singapore National Eye Centre, Ocular Therapeutics and Drug Delivery Research Group
Singapore Eye Research Institute, School of Materials Science & Engineering, Nanyang Technological University, Singapore.

Core Concepts
• Different methods are currently being developed to improve drug delivery to the eye and thus treatment outcomes in glaucoma.
• Many approaches aim to control IOP over a period of several months. Delivery systems include contact lenses, punctual plugs, biodegradable and non-biodegradable implants.
• Micro- and nanoparticles act as vehicles for sustained drug release.
• The site of delivery varies from topical through subconjunctival to intraocular.
• With all new approaches one must always consider patient needs and preferences.
• Based on recent survey results around 75% of glaucoma patients would trade their eye drops for a subconjunctival injection at 3 monthly intervals.

Challenges with patient adherence and drop instillation techniques result in suboptimal health outcomes in many chronic illnesses requiring lifelong management. Glaucoma is no exception. Lowering intraocular pressure (IOP) is imperative to limit optic nerve damage and progressive visual field loss, but research on adherence to anti-glaucoma treatment reveals regular departure from their recommended medication regimen by a significant proportion of patients. Although ophthalmologists encourage proper medication use by their patients, ocular drug delivery methods are being developed to help patients by improving drug delivery and thus treatment outcomes.

The many approaches currently under development all aim to increase clinical efficacy of IOP control through sustained drug release over several months. These delivery systems include contact lenses that release drugs, bio-degradable implants made of micro or nanoparticles and non-biodegradable reservoirs leaching the drug of interest. The routes of administration of these drug delivery systems for glaucoma vary. They include topical application via contact lenses releasing drugs such as timolol, punctual plugs as a sustained release route for the delivery of travoprost or latanoprost, subconjunctival injection of nanoliposomes loaded with latanoprost or intra-cameral implantation releasing bimatoprost. With potentially so many potential choices for route of sustained drug delivery in glaucoma, it is an exciting time in a changing landscape of medical glaucoma management. However, with all this interest and excitement of emerging new technologies, one must include preferences of the patient using the drug.

There are only a few studies reporting on glaucoma patients’ opinions and acceptance of sustained drug delivery systems, should they be made available commercially. In a Singapore study, Chong et al. interviewed 151 glaucoma patients regarding their acceptance of a sub-
Improve methods for glaucoma care and an ageing population will lead to a situation where patients will be living with glaucoma for 20 or more years. The need for regular monitoring and ongoing treatment will increase demand for eye care services. (Image 3)

References