Commentary: AADI: New kid on the block

Until recently non-valved glaucoma drainage devices (GDDs) were conspicuously absent from the armamentarium of glaucoma specialists in India, though several are available in the industrialized world. This void has been filled by the Aurolab Aqueous Drainage Implant (AADI), manufactured indigenously by Aurolabs, Madurai, India; it was released for commercial use in 2013. AADI is modeled on the non-valved Baerveldt Drainage Implant (BGI, Advanced Medical Optics, Inc., Santa Ana, CA) 350 mm^2 plate. Developed by Prof. George Baerveldt, BGI was first introduced in 1990 and its design is a modification of the earlier Molteno implant.

Multiple studies of BGI have proven its efficacy and safety; including ones that have compared it to the commonly used valved device, Ahmed glaucoma valve (AGV) and have found better success rates.[1-3]

Having been introduced only recently, there are a very few studies that have reported the efficacy and safety of AADI;

there has been only one retrospective study that has reported results of AADI vis-à-vis AGV.[4]

The authors have presented the results of a pilot study of AADI vs AGV, where adult patients suffering from refractory glaucoma were prospectively randomized to receive either of the two devices. They found both the devices to be equally efficacious, but the AGV group needed 1.83 times more number of topical medications.

Where complications were concerned, though there were no differences between the groups, hypotony seems to have occurred at a higher rate in the valved device group, the valve mechanism being provided to prevent this very complication. Though not explained by the authors, this frequently happens due to a large needle-track entry into the AC (or sulcus). Every effort should be made to prevent this, as post-operative shallow AC and choroidal detachment are undesirable sequelae of hypotony in GDD surgery. Early post-operative hypotony in AADI is also avoidable if steps for occlusion with non-permanent ligature are meticulously performed. Ligature and verification of complete occlusion with balanced salt solution and a lacrimal cannula, is best achieved before the plate is anchored to the sclera.

Ligature autolysis is expected approximately 5–6 weeks post-surgery, during which period variable number of anti-glaucoma medications have to be continued. To aid control of intraocular pressure (IOP) in this period, certain other adjunct procedures can be undertaken per-operatively. These include fenestrations and vicryl stents in the tube anterior to the ligature, as well as a rip-cord inside the lumen. The authors have presented a technique of placement of 1/0 nylon stent suture parallel to the tube and ligated along with the tube; the free end of the stent was positioned in the lower fornix, for removal in the early post-operative period should IOP not be under control.

Authors report higher failure rate of AGV in their study on IOP criterion alone. Use of lesser potent steroids in the post-operative period may have contributed to the failure of AGV in this criterion, and in this context, non-definition of hypertensive phase appears to be a limitation of the study. The venturi valve in AGV is restrictive but nonetheless permits immediate flow of aqueous around the plate, before capsule formation. This allows inflammatory factors from AC to stimulate a fibrotic response in the subconjunctival space. Use of betamethasone may have thus been inadequate in the AGV group. On the other hand, deferred flow due to planned non-permanent ligature in a non-valved implant may have elicited a less aggressive fibrous reaction, despite use of lower potency steroids.

Authors are encouraged to follow-up these patients for much longer, in-order to establish intermediate and long-term results. Other researchers also should take cognizance and plan full-fledged prospective studies, with lessons learnt from the methodology of the existing one.

AGV is available in India at a considerable cost to the patient (approximately USD 250) and BGI (more expensive, at USD 750) is not purchasable in India. AADI on the other hand is quite accessible to the population-at-large at a fraction of the cost (USD 50). This study (as well as the retrospective one published elsewhere) provides early evidence that AADI is as efficacious and safe as AGV, perhaps with a better complete success rate, just as large randomized control trials have opined about BGI when it has been compared to AGV. Furthermore, need for medication is much more in the AGV group; so not only does the patient shell out more for the surgery, but will likely also have to continue with anti-glaucoma medications lifelong, which in turn have financial and quality-of-life implications.

Therefore, with every study of AADI adding to the burgeoning evidence of its efficacy and safety in pediatric[5] and adult[6] refractory glaucomas, it can only be a win-win situation. The new "kid", AADI, will then be most welcome in the quest to fight needless blindness in refractory glaucomas in a newly industrialized country like ours and in low-to-middle income countries worldwide.

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