## Commentary: Aurolab aqueous drainage implant: Miles to go

As far as non-valved glaucoma drainage devices (GDDs) are concerned, Aurolab aqueous drainage implant (AADI) is still a relatively new kid on the block[1] versus its design inspiration, the Baerveldt glaucoma implant (BGI). However, in the past decade, there is mounting evidence, albeit retrospective,[2-6] that this indigenously manufactured GDD not only is efficacious but also has an acceptable safety profile. However, there is a paucity of well-conducted prospective studies, and therefore, the current study[7] is a step in the right direction. This study confirms what the retrospective studies which preceded it had concluded. Not only is AADI successful in reducing intra-ocular pressure but also AADI does so with significantly reduced topical anti-glaucoma medications (AGMs) and is relatively safe in the bargain. The current[7] study has reported a success rate of 91.1% at a relatively short follow-up of 6 months, which, however, seems to be higher than that reported by Rathi *et al*. (79%)[8] at 6 months in an RCT comparing AADI with the valved device (Ahmed glaucoma valve, AGV). The overall success has been reported as 91.7% and 92.6% at 1 year by Puthuran *et al*.[3] and Pathak Ray and colleagues,[2] respectively; the same authors reported 80.9% (Puthuran *et al*.[3]) and 87.5%[4] success rates at 2 years. Puthuran *et al*.[3] reported a declining success rate – it reduced to 64.6% at 4 years (vs 91.7% at 1 year). However, only further follow-up will determine

whether the success rate in this study[7] will decline over time. These differences in success rates were likely influenced by the differing etiology and severity of glaucoma treated in each of these studies.

One of the single largest reason limiting the widespread use of non-valved GDD is the fear of hypotony and its sequelae, and therefore, it is encouraging to note that hypotony occurred at a relatively low rate (14.7%) and was mostly transient.[7] The majority (8.8%) occurred only at the time of presumed suture autolysis (around 1 month post-op) along with choroidal detachment. Late hypotony was not reported by the authors,[7] but follow-up is short. Other authors have also reported low rates of hypotony and choroidal detachment with AADI.[3,4] There is a perception among many ophthalmologists that hypotony is relatively rare in the valved GDD; however, in a retrospective comparison between valved (AGV) and non-valved (AADI) devices, Pandav *et al*.[9] reported a 20% rate for both the devices, with no difference in the number of interventions for it. In fact, Rathi *et al*.,[8] in their prospective study comparing the two GDDs, reported 26.3% and 36.8% rates of hypotony in the AADI and AGV groups, respectively. On the other hand, another retrospective study did not report hypotony in either type of GDD in the first year of follow-up.[10]

Furthermore, the authors[7] have stated that they had lower rates of other complications (the rate was 56%, although most were self-limiting). They especially mentioned the absence of conjunctival retraction and/or dehiscence, and this is explained by the fact that the majority of the eyes in their cohort were primary glaucomas with failed filtration. Such eyes are considered to have very favorable outcomes with low risk for complications as reported by The Tube Versus Trabeculectomy (TVT) Study,[11] which was designed to prospectively compare the safety and efficacy of non-valved tube shunt surgery (BGI) and trabeculectomy with mitomycin C in eyes with prior ocular surgery (cataract extraction with an intra-ocular lens and/or failed filtering surgery). The tube group not only had a lower rate of failure at 5 years (29.8%) but also a significantly lower rate of hypotony when compared to trab. Therefore, cohorts which have a greater proportion of secondary refractory glaucomas, especially post vitreo-retinal surgery and neovascular glaucoma, are likely to witness greater conjunctiva-related complications.[4]

Overall, this prospective study has several merits; however, it also has several limitations. The most important one is that it has a very small sample size with a very short follow-up. Second, inclusion of a heterogeneous group of various sub-types of glaucoma (a significant proportion comprises primary glaucomas) can produce confounding results. Furthermore, as the sample size is small, sub-group analyses becomes difficult. It is imperative that prospective studies are conducted with long-term follow-up including those that compare with the valved GDD, AGV. These studies should have more homogeneous cohorts, focused either on primary glaucomas with failed filtration or on secondary refractory glaucomas, or they need to be suitably powered to conduct sub-group analyses in the case of mixed cohorts. Furthermore, a cost-benefit analytical study will help propagate the use of AADI not only in India but also world-wide in zones of emerging economies. We, therefore, have a collective responsibility toward these additional miles that need to be accomplished through AADI.

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