Editorial

Ahmed versus Baerveldt shunts: Which one is better?∗

Dispositivo de Ahmed versus Baerveldt: ¿cuál es mejor?

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Drainage devices are an efficient surgical treatment for resistant glaucoma or when previous filtrating surgery fails. There are 2 types of these devices: those comprising valves, in which the device includes a restriction at the outlet of the aqueous, and devices without valves in which the tube connects with a dish without any type of restriction. Of the former, the best known is the Ahmed implant, while the best-known valveless device is the Molteno or the Baerveldt.

Many studies have compared these devices to analyze their mid- or long-term efficiency as well as their complications.1,2 Many of said publications comprise retrospective studies based on the personal experience of a surgeon, which means that sometimes the number of cases is small. In 2008, the American Ophthalmology Academy published an article in Ophthalmology analyzing all previous papers on these drainage devices and concluded that at this point in time there are no comparative studies having sufficient quality to affirm that one drainage device is more effective than another, with the exception of the data that confirm that the dish surface plays an important role in reducing intraocular pressure (IOP).3 Shortly before said article, 2 phase III perspective and randomized clinical trials had begun to compare the Ahmed device with the Baerveldt device. One of said trials is the Ahmed Baerveldt Comparison Study (ABC) (http://www.clinicaltrials.gov/ct2/show/NCT00376363) and the other is the Ahmed Versus Baerveldt Study (AVB) (http://www.clinicaltrials.gov/ct2/show/NCT00940823). The ABC study was coordinated by Donald Budenz of Miami University and covered 16 hospitals in 3 countries. Starting in November 2005, it included 276 patients, comparing the Ahmed model FP7 with a dish size of 184 mm² (143 patients) with the Baerveldt model 350 having a dish size of 350 mm² (133 cases). Surgeries were performed by 25 surgeons and a follow-up period of 4 years is planned.4 On the other hand, the AVB study was coordinated by Iqbal Ahmed of Toronto University and carried out in several hospitals (10 surgeons) of the United States and Canada. It began in July 2005 and included 238 patients, comparing said Ahmed model (124 cases) with the same Baerveldt model (114 cases), with a planned follow-up of 5 years.5 Both studies locate the tube of both implants in the anterior chamber, a relevant fact vis-à-vis possible complications. The results after one year of follow-up have been published recently with interesting data in what concerns results and complications, which will be commented below.

The ABC study found lower IOP in the Baerveldt device as from the second month of the follow-up and a better survival curve in Baerveldt than in Ahmed throughout the first year, although the difference is significant only for IOP values below 15 mmHg. This IOP value was achieved in 76% of cases with the Baerveldt compared to 61% with the Ahmed device. As of the third month, the eyes treated with the Ahmed device required more hypotensur treatment than the Baerveldt eyes. On the other hand, the AVB study only found significantly

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lower IOP values with Baerveldt than with Ahmed at month 12, and the survival rate is better with Baerveldt during the first year although only significantly better with this device for IOP values equal to or lower than 18 mm Hg. As of month 3, all the eyes treated with the Ahmed device required more hypotensor treatment than those treated with the Baerveldt device.

In what concerns post-surgery complications, the results are different. The ABC studies at month 12 found more tube occlusions and corneal edema in the eyes treated with the Baerveldt device than in those treated with the Ahmed device. The number of Baerveldt patients with complications was of 58% against 43% of Ahmed patients (p = 0.01). Severe complications that gave rise to re-interventions or loss of vision of at least 2 lines in the Snellen scale were found in 20% of Ahmed patients against 34% of Baerveldt patients (p = 0.01). The AVB study did not find significant differences between the overall number of complications or the overall number of patients with complications between both devices, although the Baerveldt device exhibited significantly more corneal edema cases and the Ahmed patients more elaborate encapsulations.

Although at the time of writing the results of the AVB after year 2 have not been published yet, they have been presented in the latest ARVO congress. At year 2, the survival rate for IOP ≤ 20 mm Hg was of 69% for Baerveldt patients and of 52% for Ahmed patients (p = 0.02). As of month 3 and up to year 2, Ahmed patients required more hypotensor medication than Baerveldt patients and there is no longer any significant difference between complications in both groups or in the overall number of patients and overall number of complications. However, there are more cases with corneal edema, more hypotension and more retina detachments in Baerveldt patients, in contrast with more bleb encapsulations in Ahmed patients.

The above results should be assessed with caution because the definition of survival rate, of complications or inclusion/exclusion criteria are not exactly the same in both studies. However, some data can be accessed after one-year follow-up in one study and 2 years follow-up in the other. The first is that there seems to be consensus in that the Baerveldt device produces higher IOP reductions than the Ahmed device and obtains somewhat lower IOP values. This hypotensor effect is produced at the cost of more post-surgery complications during the first year. Loss of vision can be greater in Baerveldt than in Ahmed patients. Accordingly, for patients who require lower IOP, the Baerveldt device could be better even at the risk of encountering more complications. Otherwise, the Ahmed device can be used if the target IOP values are not as low. On the other hand, both studies indirectly emphasize the importance of carrying out prospective, multicenter and randomized studies comparing various implants because it is the best method to determine if one is better than another. In addition, this would preempt the possibility that each author will publish retrospective studies of his group, which always gives rise to doubts and generates many publications providing small and sometimes biased amounts of data and, in short, this type of results is never definitive.

Even though we have always had the feeling that devices without valves reduce IOP more than theirvalved counterparts, both studies seem to go in the same direction. It remains to be seen whether these results hold after 3, 4 or 5 years and which of both devices exhibits the best survival rate as well as the number or type of complications. We shall have to await the results of these 2 long-term follow-up clinical trials.

REFERENCES