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EDITORIAL (BY INVITATION)

Pseudoexfoliation glaucoma in pseudophakic eyes—still a therapeutic challenge

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Pseudoexfoliative glaucoma (PXG) is the most common secondary open-angle glaucoma, diagnostically characterized by whitish deposits of extracellular material. It has higher and more fluctuating intraocular pressures and therefore progresses quicker than primary open-angle glaucoma, and remains a therapeutic challenge [1, 2]. Therapeutic options include numerous eye drops, laser treatments and surgeries. There are also alternatives in surgeries: in addition to various minimally invasive surgeries (MIGS), filtering surgeries or implants with guided bypass of the trabecular meshwork have been used for a long time.

What is the best option for the patient as primary surgery? Prospective, randomized, comparative studies with enough patients with PXG and pseudophakia; longer follow-up of 3–5 years; use of the same dose and application time of mitomycin C (MMC); use of the same tube, and inclusion of the same ethnicity are very difficult to perform.

In the large Primary Tube versus Trabeculectomy Study (PTVT), it was shown after 5 years of observation that similar eye pressures were achieved in both groups (117 patients with trabeculectomy and IOP of 13 mmHg, 125 patients with tube and IOP of 13.4 mmHg), that there were no significant differences in surgical failure, but that less pressure-lowering medication was required postoperatively after trabeculectomy (1.2 versus 2.2 in the tube group). Unfortunately, there were only 4 patients with PXG in the tube group and only 1 in the trabeculectomy group. This does not allow any valid conclusions regarding PXG. Additionally, no pseudophakic eyes were included [3].

What influence on safety and efficacy does pseudophakia in addition to PXG have? A few publications compared the success of trabeculectomy with MMC in phakic and pseudophakic eyes with open angle glaucoma, with varying proportions of PXG eyes [4, 5]. The results showed that pseudophakia and higher preoperative IOP—possibly due to pseudoexfoliation—independently contributed to a worse surgical outcome. Supawavej C et al. [6] mentioned that the results after trabeculectomy were comparable in 39 eyes after phacoemulsification with clear-cornea tunnel compared to 39 phakic eyes, and Shingleton BJ et al. [7] showed that no statistically significant differences were found in pseudophakic eyes with virgin conjunctiva or eyes with conjunctival scarring after corneo-scleral tunnel and surgical manipulation of the conjunctiva. Is pseudophakia a risk factor for failure? McMillan BD and Gross RL [8] in their review of primary trabeculectomy versus tube implantation in pseudophakic eyes stated that success was essentially the same as in phakic eyes, that an important consideration was the virgin conjunctiva and that trabeculectomy would remain the preferred incisional glaucoma procedure. However, no eyes with PXG were included in their analysis.

Hwang SY et al., from the Department of Ophthalmology, Dong-A University, Busan, Republic of Korea, added some useful information to this very specific topic in this issue. They investigated the 3-year outcomes of primary Ahmed valve implantation (AVI, 36 eyes) versus primary trabeculectomy with mitomycin C (TRAB, 40 eyes) in pseudophakic patients with medically uncontrolled PXG in a retrospective study [9]. The authors built 3 groups for definition of success. One with IOP ≤ 18 mmHg, > 20% IOP reduction and no medication, one with IOP ≤ 18 mmHg, > 20% IOP reduction and irrespective of medication, and one with IOP ≤ 15 mmHg, but > 25% IOP reduction and no medication. The results of IOP, visual field, and success rate did not differ within the groups after 3 years. However, the IOP of the AVI groups at postoperative month 1 and 3 was significantly lower than that of the TRAB groups, and regarding the success rate in the group with the higher percentage of

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IOP reduction (> 25%) and the lower IOP (≤ 15 mmHg) again the AVI group was significantly better at 1 year than the TRAB group.

Presuming that patients with PXG will possibly experience a profit of lower IOP, and higher reduction from baseline, these results would speak in favor of AVI, but in the early postoperative phase only. After 1 year, this advantage is lost and both surgeries showed similar results.

So how to decide in pseudophakic eyes with PEXG? This paper adds some useful information for glaucoma surgeons. Both surgeries, AVI as well as TRAB, will in the long run lead to similar results. The often-necessary improvements of outcomes like laser-suturolysis or needling or application of antifibrotic substances was not the topic of the study, and they should be additionally considered. For the sake of the patients-perform the surgery you predominantly used to act successfully.

And my opinion? Nowadays, I would recommend avoiding surgeries with the concomitant use of Mitomycin C. In case of application, use it in low concentrations for a short time in a posterior location, away from the limbus. A few of these eyes are sleeping time-bombs. Besides a sweating bleb a blebitis with or without endophthamitis is a very severe, vision-threating complication. Sugimoto Y et al. [10] reported on 21 bleb-related infections in 1098 eyes, with an incidence of 2.2% at the 5-year follow-up in a Japanese study. There exists an ancient phrase: "Whatever you do, do it wisely, considering the consequences" (*Quidquid agis, prudenter ages et respice finem*). As always, good luck!

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