

SHORT COMMUNICATION

Ahmed valve for elevated intraocular pressure associated with black diaphragm lenses for aniridia

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PURPOSE. *To evaluate the Ahmed valve for decrease elevated pressure associated with black diaphragm lenses for aniridia.*

METHODS. *Drainage devices are useful to obtain good control of intraocular pressure in patients with aniridia and the authors often use them because of the poor results of medical therapy or filtering surgery. However, when the elevated intraocular pressure is associated with black diaphragm lenses for aniridia, most authors decide to carry out a filtering technique. The current authors opted for the implantation of an Ahmed valve in three patients, two with traumatic aniridia and the other with a congenital case. Every patient had a different kind of black diaphragm lens for aniridia.*

RESULTS. *The Ahmed valve controlled the intraocular pressure in levels below 20 mmHg for a follow-up year with no complications derived from its application.*

CONCLUSIONS. *Ahmed valve implantation was the best technique to decrease intraocular pressure in patients with aniridia. The authors have used it successfully for cases with elevated pressure associated with black diaphragm lenses for aniridia. (Eur J Ophthalmol 2007; 17: 437-40)*

KEY WORDS. *Ahmed, Aniridia, Black diaphragm intraocular lenses*

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INTRODUCTION

Aniridia is the total or partial absence of the iris of a congenital or traumatic origin which causes a decrease in visual acuity (VA), as well as photophobia and glare. Congenital aniridia is associated with corneal conjunctivalization, cataract, foveal hypoplasia, mental retardation, and Wilms' tumor (1).

Glaucoma appears in 50 to 75% of patients with congenital aniridia, and it tends to develop in the most traumatic cases. With the introduction of black diaphragm intraocular lenses (IOLs) and prosthesis for the improvement of vi-

sual function, the problem of ocular hypertension not only remained but seemed to get worse (2).

We assessed these lenses in eight eyes (seven patients), four with congenital cataract and four with traumatic cataract. Two Ophtec iris prosthesis (Ophtec BV, Groningen, The Netherlands), four black diaphragm IOLs type 67 G (Morcher GmbH, Stuttgart, Germany), and one Ophtec IOL were used for seven eyes, and two Morcher aniridia rings type 50 D were used for the eighth one. With regard to the surgical procedure, four prosthesis were sutured transsclerally and four inserted into the capsular bag.

Before the surgery, three out of eight eyes showed an ele-

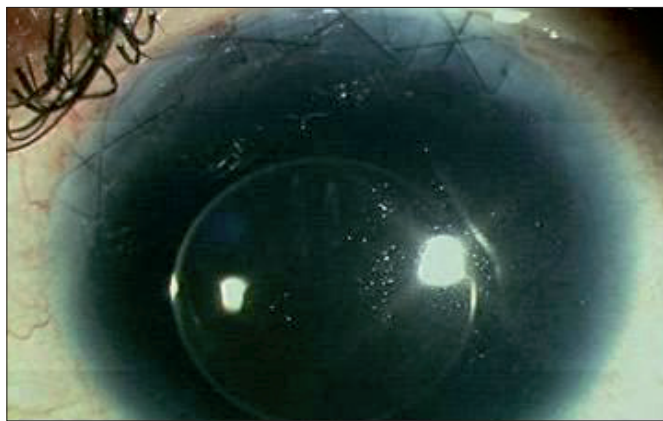


Fig. 1 - Case 2. Implantation of a black diaphragm intraocular lens for aniridia.

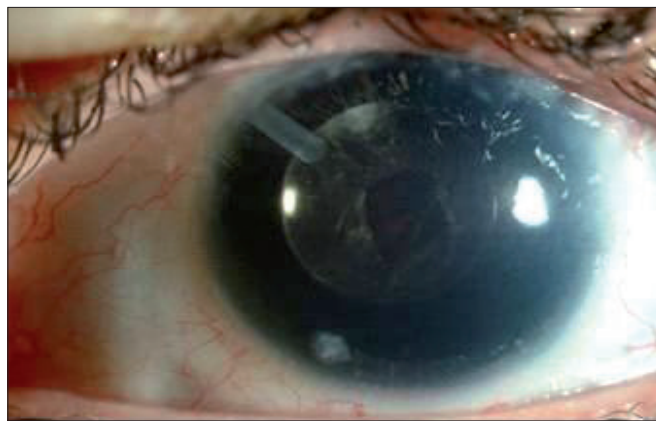


Fig. 2 - Case 2. Implantation of an Ahmed valve to control the elevated intraocular pressure associated with the black diaphragm intraocular lenses for aniridia.

ated intraocular pressure (IOP) controlled by eyedrops (timolol). After the implantation, 100% of the eyes had ocular hypertension regardless of the etiology of the aniridia, the type of prosthesis, or the surgical procedure used. In five cases, the use of timolol was enough to reach adequate tensional levels; whereas in the three remaining eyes, medical and surgical treatment could not reduce the IOP.

Finally, the Ahmed valve S2 implant was chosen. Ahmed valve (New World Medical, Inc., Rancho Cucamonga, CA) is a nonobstructive valve system to reduce IOP without chamber collapse. The valve body is inserted between the rectus muscles and sutured to the episclera. The drainage tube is inserted in anterior chamber 2 to 3 mm. It is normally used in active proliferative mechanisms of angle and in cases of unsuccessful filtering surgeries. Among its advantages are that it prevents flattening of anterior chamber in the immediate postoperative period as well as its easy application, efficiency, and lack of complications (3-7).

Case reports

Case 1

A 45-year-old man with post-traumatic aphakia and aniridia in the left eye had IOP controlled with timolol. VA measured 20/80 and horizontal cup to disc ratio 5/10. After an anterior vitrectomy, a black diaphragm Ophtec IOL was implanted by transscleral fixation. A month after the surgery, VA was 20/400 with an IOP of 42

mmHg, without it being controlled with topical or systemic treatment (acetazolamide, timolol, latanoprost). Cyclophotocoagulation was carried out, with a decrease of the IOP immediately after the surgery. After 6 months, the VA was 20/30 but the IOP was maintained at 30 mmHg. We opted for implantation of the Ahmed valve. After a follow-up year, the IOP remained stable around 16 mmHg with no further complications.

Case 2

A 22-year-old woman with congenital aniridia associated with bilateral cataracts had VA of 20/100 in both eyes and IOP was controlled with the use of timolol, dorzolamide, and latanoprost. There was no cupped disc. Phacoemulsification was carried out in the left eye alongside a +30 D Morcher black diaphragm IOL implant (Fig. 1). A trabeculectomy and antimetabolic (5-fluorouracil) were combined. A month later, the same intervention was carried out in the right eye.

Three months after the intervention, the IOP increased in both eyes (28 and 30 mmHg). The IOP did not become stable with topical treatment, leading to the implantation of the Ahmed valve in the left eye, and in the right one a month later (Fig. 2). A year later, the IOP is 17 and 19 mmHg without topical treatment.

Case 3

A 42-year-old man with traumatic aniridia in the right eye with VA of 20/200 had Ophtec iris prosthesis implanted in

sulcus by transscleral fixation, with a VA of 20/40 after the surgery, but the IOP could not be controlled (28 mmHg) in spite of latanoprost and timolol use. After a period of 4 months, a trabeculectomy was carried out but proved to be unsuccessful and after that, a cyclophotocoagulation was performed. Since the IOP did not decrease, an Ahmed valve was introduced after 2 months. After a year and a half the IOP is around 15 mmHg.

CONCLUSIONS

Some 50–75% of patients with aniridia develop glaucoma. Although the exact cause for this is unknown, several theories have been put forward, such as trabecular meshwork obstruction from the stump of hypoplastic iris or the abnormal development of trabecular meshwork and the Schlemm canal (1).

Implantation of black diaphragm IOLs prompted the development or progression of elevated IOP. It seems that the blood-aqueous barrier (BAB) breakdown associated with surgery could be of key importance for the destabilization of the regulating mechanisms of ocular pressure. This barrier could be already damaged in eyes with aniridia as part of the disease. The lens is too large for the capsular bag, and the contact with the iris stump causes chronic irritation. Moreover, the implantation is technically much more complex, with more inflammation during surgery, and many times the haptics or part of the lens are not placed in the sulcus but in the angle, thus causing dysfunction of the trabecular structures. It was also suggested that transscleral fixation of the IOL could reduce

the contact with the angle and prevent a major BAB breakdown, but from our experience it has not been able to prevent a rise of IOP (8-15).

Medical therapy is often insufficient for the control of ocular pressure in aniridia. Filtering and cyclodestructive surgical techniques have shown variable and poor results in the literature published on aniridia without prosthesis (16). Drainage devices (Molteno and Baerveldt) would obtain a much better tensional control and they are even considered as initial surgical treatment (17). Notwithstanding, in the published literature on black diaphragm in aniridia, the control of ocular pressure is almost always achieved with eyedrops and in cases where surgery is required, filtering techniques are used (8-15).

In our experience, due to the failure of other techniques, we have opted to use the Ahmed valve so as to maintain the IOP within normal parameters. We found no data in the literature about its use in black diaphragm lenses for aniridia. The valve controlled the IOP in levels below 20 mmHg for a follow-up year with no complications derived from its application. For that reason, it proved to be the most efficient technique in our study (6).

Proprietary interest: None.

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