

Atypical evolution of tenon cyst after Ahmed valve implantation

Evolução atípica de cisto de tenon após implante de válvula de Ahmed

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ABSTRACT

We describe the case of a patient with secondary glaucoma who developed tenon cyst after Ahmed valve implantation. Despite the initial expectant management and subsequent surgical interventions, only with the micropulse transecleral cyclophotocoagulation did the intraocular pressure reach acceptable values.

Keywords: Intraocular pressure; Filtering surgery; Postoperative complications; Glaucoma; Glaucoma drainage implants

RESUMO

Descrevemos o caso de um paciente portador de glaucoma secundário que evoluiu com cisto de tenon após implante de válvula de Ahmed. A despeito da conduta expectante inicial e das intervenções cirúrgicas posteriores, apenas com a utilização da ciclofotocoagulação transescleral com laser micropulsado a pressão intraocular atingiu valores aceitáveis.

Descritores: Pressão intraocular; Cirurgia filtrante; Complicações pós-operatórias; Glaucoma; Implantes para drenagem de glaucoma

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INTRODUCTION

Ahmed valve implantation (AVI) is an effective and relatively safe procedure, which is mainly indicated for patients with glaucoma secondary or refractory to previous filtering surgeries. Hypotonia, excessive capsular fibrosis, clinical failure, tube or plate erosion and infection stand out among the main complications deriving from this procedure.⁽¹⁾

The formation of encapsulated cysts - also known as tenon cysts - has been reported in 23% of AVI cases and remains a challenge in the management of these patients. It happens when the tenon capsule adheres to the episclera and forms a bubble impermeable to the aqueous humor, which leads to increased intraocular pressure (IOP).⁽²⁾

The aim of the current study is to present the case of a patient who evolved to this complication and the management procedures adopted throughout his clinical evolution.

Case report

R.A.S., male, 30 years old, single, born in Feira de Santana County (BA), was treated in an ophthalmological reference service, after reporting low visual acuity and pain in the left eye for approximately one year.

He reported severe short-sightedness, which evolved to bilateral retinal detachment. He was subjected to vitrectomy with silicone oil infusion, retinopexy in both eyes and facetectomy in the right eye (RE). He was using eye drops such as Timolol Maleate, Brimonidine Tartrate, Brinzolamide and Latanoprost, as well as oral acetazolamide, at assessment time.

The ophthalmological examination has shown VA c/c 20/100 in RE and counting fingers at 1 meter in the left eye (LE). Biomicroscopy has shown pseudophakia in RE; LE presented forwarded buckle, shallow chamber, pupillary seclusion, nuclear cataract 3+/4+ and silicone oil in the anterior chamber. Fundoscopy has shown cup-to-disc ratio 0.7 in RE and impractical ratio in LE. RE and LE recorded intraocular pressure 13 mmHg and 20 mmHg, respectively. LE pachymetry reached 564 micrometers; gonioscopy presented Shaffer grade 2 angle, pigmentation 3+/4+ and iris convexity 1+/4+.

Facetectomy with upper temporal band resection and Ahmed FP7 valve implantation was scheduled due to glaucoma refractory to treatment and cataracts.

Surgery was uneventful (Figure 1) and the patient evolved to VA c/c 20/50 in LE, transparent cornea, well-positioned tube

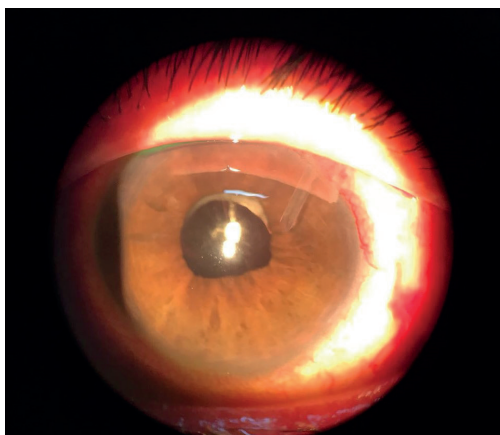


Figure 1: LE after facetectomy + follow-up band resection + AVI.



Figure 2: Aspect of patient's tenon cyst



Figure 3: Proptosis with limited eye motility

and intraocular pressure 10 mmHg (without using hypotensive eye drops).

The patient presented diplopia and proptosis in the left eye at the 30th postoperative day (Figures 2 and 3). Ophthalmological examination has shown limitation in LE abduction and elevation, 15-degree Hirschberg esotropia, upper temporal tenon cyst with hemorrhagic content and intraocular pressure of 30 mmHg.

Cystic content puncture was carried out, and acetazolamide and hypotensive eye drops (0.5% timolol maleate and dorzolamide hydrochloride) were prescribed, in view of patient's clinical condition. The patient evolved with transitory improvement, which required new punctures, although without remission. Thus, he was subjected to surgical review, which removed the tenon cyst and used a collagen matrix of porcine origin - Ologen TM.

The patient presented improved condition, but he returned 60 days later complaining of diplopia and proptosis. Based on his condition, it was made the option for surgically removing the scleral band and the valve.

The patient returned with improved aesthetic pattern of the eye, but he presented increased eye pressure (38 mmHg). Maximum therapy with hypotensive eye drops and oral acetazolamide administration was prescribed and the patient was subjected to micropulsed diode laser therapy.

The patient presented controlled intraocular pressure for three months; however, he had a new IOP elevation episode and was subjected to another laser session, after which he presented satisfactory pressure control (12 mmHg), due to the use of hypotensive eye drops, as well as stabilized visual acuity at 20/70.

DISCUSSION

Tenon cysts resulting from filtering surgeries, either trabeculectomy or Ahmed valve implantation, are featured by a thick-walled bubble and prominent vascularization associated with elevated IOP. Male sex, previous laser trabeculectomy, previous eye surgery and use of preoperative sympathomimetics are among the risk factors for Tenon cyst development.⁽³⁾

Patients' whose eyes have suffered rupture in the blood-aqueous barrier - such as uveitis, neovascular glaucoma or previous surgery cases - present higher incidence of bubble failure. Valve implants are associated with direct contact between pro-inflammatory substances - such as the transforming growth factor-beta 2 (TGF-beta 2), which is abundantly found in the aqueous humor of glaucomatous eyes - and the conjunctival tissue; thus, they enable better healing in the immediate postoperative period.⁽⁴⁾ Non-valve implants would present weaker outcomes due to the flow restriction imposed in the surgical procedure. Such a restriction also substantiates a mechanical theory, according to which the early compression on the inner wall of the filtering bubble can lead to tenon cyst development. In addition, it is well known that Ahmed S2 valves composed of polypropylene present higher rate of complications caused by greater scarring process than Ahmed PF7 valves, which have silicone in their constitution and present smoother surface, lower profile and greater flexibility.^(5,6)

Ocular motility disorder is a possible complication in all drainage implant types; it may happen due to the mass effect produced by the implant itself or by the bubble, as well as by adhesion or posterior fixation suture, thus causing scarring below the rectus muscle. A retrospective study including 159 eyes subjected to AVI has found motility changes in four eyes (3%); one of them was subjected to strabismus surgery, whereas the other one had the implant removed.⁽⁷⁾

A comparative study about partial or non-removal of tenon cyst during AVI in patients with neovascular glaucoma did not find changes in the incidence of complications, which included the incidence of hypertensive phase. Therefore, routine tenon capsule removal in these patients is not recommended.⁽⁸⁾ However, another study focused on comparing capsule removal and new valve implantation in patients presenting encysted AVI has found similar IOP control between groups. The group subjected to new valve implantation presented all complications associated with the tube, whereas cyst recurrence was similar in both groups. Despite the small size of the assessed sample, capsule removal appears to be a simpler and cheaper procedure with lower complication rates.⁽⁹⁾

A study has suggested that the use of porous collagen matrix, which prevents subconjunctival space collapse, would be effective in AVI failure review.⁽¹⁰⁾ However, a prospective randomized trial did not show statistically significant difference in the use of collagen matrix to control IOP, in the need of using antiglaucoma medications or in the success rate, in comparison to conventional AVI surgery.⁽¹¹⁾

Micropulsed diode laser is a transscleral cyclophotocoagulation method that has been gaining ground, since it is not taken into consideration to treat only end-stage glaucoma. Studies have shown the acceptable predictability and safety of this method.⁽¹²⁾ Old age and higher baseline IOP are among the factors classified as predictors of higher micropulsed laser success rate; however, these factors did not show association with glaucoma severity, trabecular meshwork pigmentation or number of applied shots.⁽¹³⁾ Based on a recent study, patients with mean preoperative IOP of 25.1 ± 5.3 mmHg evolved to mean postoperative IOP of 17.5 ± 5.1 mmHg ($p = 0.004$); the mean number of medications in use

decreased from 3.0 ± 1.1 to 1.4 ± 1.0 ($p = 0.03$). Keratopathy, transient hypotonia, hyphema, persistent mydriasis and choroidal effusion were the most frequent complications found in the aforementioned study.⁽¹⁴⁾

Although the surgical therapy was promptly provided, the patient presented unfavorable evolution, a fact that shows how some cases remain challenging to the management of glaucoma. The micropulsed diode laser enabled satisfactory patient's response after the second session, which confirmed its importance as another instrument available to treat difficult-to-control glaucoma cases. The importance of this report lies on the discussion generated by an unusual case in clinical practice, whose management remains controversial.

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