7.3.2. Surgical management of vitreous block (malignant glaucoma): iridozonulovitrectomy

Manejo quirúrgico del glaucoma maligno: iridozonulovitrectomía

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Vitreous block, also known as aqueous misdirection, malignant glaucoma (MG) or ciliolenticular block, is a secondary angle-closure glaucoma, due to anterior rotation of the ciliary body[1,2]. This rare and aggressive form of glaucoma was first described by Von Graefe in 1869, and it classically includes: a) central and peripheral shallowing of the anterior chamber; b) the presence of a patent iridotomy; and c) elevated intraocular pressure (IOP). Although choroidal alterations might be involved in its pathophysiology, the absence of choroidal effusion or haemorrhage is needed for the diagnosis. Ultrasound examination, therefore, is mandatory in many of these cases, when MG is suspected. In cases of bleb hyperfiltration, wound leak or choroidal detachment, IOP may be unusually low[2].

A uniform shallowing of the anterior chamber depth despite the patent iridotomy and the absence of an *iris bombé* are the signs to differentiate MG from a pupillary block[1].

MG is more frequent after incisional glaucoma surgery: it represented the etiology in 82% of cases in a series of 118 patients with this condition[3]. Cataract surgery is another common etiology (0.03-0.06%)[4,5]. It has also been described after many other situations: pilocarpine administration, Nd-YAG capsulotomy or iridotomy, bleb needling, deep sclerectomy, corneal transplant and pars plana vitrectomy. But it has also been described in patients with no prior surgery, trauma or intraocular inflammation[2].

The exact pathophysiology is not totally clear, but forward displacement of the ciliary body and lens is a common sign in all MG cases. Sudden anterior chamber decompression (including anterior chamber paracentesis) can produce forward displacement of the complex and induce misdirection of aqueous into the vitreous[1,2].

Weak zonules may play a key role in the initiation of the fluid misdirection in eyes with MG. The role of choroidal changes in its mechanism has also been described[6]. It is actually accepted that choroidal expansion, pushing the vitreous forward, may be an important factor in the development of MG. Subtle choroidal enlargement, as little as 50 microns, can lead to a large increase in IOP[2].

During cataract surgery, anterior chamber decompression may contribute to anterior rotation of the ciliary body by inducing separation of the vitreous base from the pars plana, resulting in aqueous misdirection[7]. More than 50% of cases of a large series occurred within the first week after the surgery[3].

Short axial length is one of the main risk factors (overall mean axial length of eyes with malignant glaucoma was 21.37 ± 0.28 mm). Other risk factors are preoperative high IOP, preoperative shallow anterior chamber and history of MG in the fellow eye[2].

Treatment

Initial management is mainly medical, and include topical cycloplegics, oral carbonic anhydrase inhibitors, systemic hyperosmotic agents and topical steroids[1]. With this approach, resolution of the situation can be achieved in almost 50% of cases in the first 5 days after presentation[8]. Dave *et al.*[1], in cases of MG after trabeculectomy in phakic eyes, recommend long-term continuation of antiglaucoma medications and strong cycloplegics in order to prevent recurrences. Other treatment options include Nd-YAG capsulotomy and pars plana vitrectomy with or without lensectomy[9-11]. Transscleral cyclophotocoagulation may be a good option in eyes with extensive conjunctival scarring or eyes with poor media[1]. Debrouwere *et al.*[12] reported a 100% recurrence rate after medical treatment alone, a 75% recurrence after laser hyaloidotomy and 0% recurrence after PPV with intraoperative hyaloidotomy and iridectomy.

Our preferred therapeutic approach in cases of pseudophakic MG unresponsive to medical treatment is the technique described by Lois *et al.*[13] in 2001: zonulo-hyaloido-vitrectomy via the anterior chamber. This minimally invasive technique can achieve an excellent resolution rate with few complications, even in cases of hazy corneas or poor visualization (Video 1).

Video 1. Surgical management of vitreous block (malignant glaucoma): iridozonulovitrectomy.

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