

# SUCCESSFUL CATARACT SURGERY AND IOL IMPLANT IN RETROBULBAR HAEMORRHAGE COMPLICATING RETROBULBAR ANAESTHESIA – Four Case Reports

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## SUMMARY

**Objective:** To demonstrate successful cataract surgery and IOL implant in cases of retrobulbar haemorrhage (RBH) complicating retrobulbar anaesthesia (RBA).

**Method:** A case report of four cataract patients from the University of Benin Teaching Hospital and DDS Eye Surgery, Port Harcourt who had cataract surgery and IOL implants following retrobulbar haemorrhage due to retrobulbar anaesthesia. The patients had their cataract surgery postponed for at least one hour after retrobulbar haemorrhage. They were given an oral dose of 500 mg of acetazolamide tablets stat and had controlled paracentesis to reduce the intraocular pressure. At the commencement of the cataract surgery, the patients had subconjunctival anaesthesia (2% lignocaine) to reduce the retrobulbar haemorrhage. Extracapsular cataract surgery and intraocular lens implant were then carried out.

**Result:** All four patients had successful extracapsular cataract extraction and intraocular lens implant.

**Conclusion:** Extracapsular cataract extraction and intraocular lens implant can be successfully done even where there is retrobulbar haemorrhage complication from use of retrobulbar anaesthesia in cataract surgery.

**Key words:** retrobulbar haemorrhage, retrobulbar, anaesthesia, cataract surgery, intraocular lens implant

## INTRODUCTION

Local anaesthesia is preferred whenever possible in

surgery because it is safer, cheaper (especially in developing countries) quicker, has few postoperative complications, and can be completely controlled by the surgeon. There is no need to starve the patient or do routine investigations such as chest x-ray and electrocardiogram (ECG).<sup>1</sup> Also, majority of the patients with senile cataract are spared the unnecessary risk of general anaesthesia associated with advanced age. The requirements for intraocular surgery using local anaesthesia as established in the 1950s and 1960s are threefold: globe and conjunctival anaesthesia; globe, lid and periorbital akinesia; and intraocular hypotonia.<sup>2</sup> Techniques for local anaesthesia for cataract surgery include retrobulbar, peribulbar, subtenon, subconjunctival injections and the topical application of a local anaesthetic. Retrobulbar anaesthesia (RBA) (also called intraconal) is one of the preferred techniques for local anaesthesia in ocular surgery.<sup>3</sup> It is easy to learn and easy to perform. It is the most effective technique of local anaesthesia in ocular surgery<sup>4</sup> and the preferred technique in developing countries including Nigeria. RBA causes anaesthesia of the nerves within the cone of muscles in the orbit causing anaesthesia of the perilimbal conjunctiva, cornea and the recti muscles supplied by the 3<sup>rd</sup> cranial nerve. Despite its effectivity, it has a number of potential complications, a few of which are serious or life threatening. These complications include retrobulbar haemorrhage (RBH), globe perforation/penetration, intravascular injections leading to central nervous system and cardiac complications; injury to the optic nerve and retinal artery occlusion.<sup>5</sup> Factors that predispose to these complications include long eyeball, staphyloma, enophthalmos, technique and proficiency of the medical personnel, and type and length of anaesthetic needle used.

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Retrobulbar haemorrhage (RBH) is the most common of the fairly serious complications of retrobulbar anaesthesia (RBA),<sup>7</sup> and it has a reported rate of 0.44% to 1.7%.<sup>8</sup> Curving the retrobulbar needle can reduce some of the serious complications,<sup>9</sup> as the tip of the needle will be far from the orbital apex and floor of the orbit. RBH can manifest immediately or be slow leaking. In its acute form or phase it increases proptosis with tight eyelids, subconjunctival and periorbital haemorrhage, and causes dramatic increase in intraorbital pressure.<sup>10</sup> Retrobulbar haemorrhage may lead to retinal artery compression because of mechanical tamponade or increased intraocular pressure. Management measures include urgent decompressive surgery<sup>11</sup> and anterior chamber paracentesis if there is impending retinal artery occlusion and postponement of surgery<sup>12</sup> and antiglaucoma medication.

Cancellation of surgery anywhere is unpleasant but is worse when it happens in developing countries like Nigeria. Successful cataract surgery after RBH has been reported by some ophthalmologist surgeons.<sup>12,13</sup> To minimize the cancellation of surgery and the very traumatic experience, including additional expenses for the patient, we suggest a brief postponement while the haemorrhaging subsides before going ahead with the cataract surgery and intraocular lens implant. The four cases reported took place at the University of Benin Teaching Hospital and DDS Eye Surgery, Port Harcourt.

#### METHODS AND PATIENTS

Four patients, three women and a man had retrobulbar haemorrhage (RBH) complicating retrobulbar anaesthesia. Two of the women and a man were patients at the University of Benin Teaching Hospital while the fourth, a woman, was a patient of DDS Eye Surgery, Port Harcourt. Three of the four retrobulbar anaesthesia procedures were performed by a resident grade ophthalmologist while the fourth was done by a consultant ophthalmologist. Immediately after the retrobulbar anaesthesia, the eyelids suddenly became tight with proptosis and it became difficult to release or insert the lid speculum. The measures taken included:

- a. Temporarily postponing the surgery for at least one hour
- b. Lateral canthotomy if eye was very hard. Only the male patient had this procedure carried out for an extremely hard eye
- c. Patient can be given 500 mg injection of acetazolamide or 500 mg tablets orally if the injectable is not available. All four patients had the 500 mg tablets as the injectable was not available
- d. After one hour, a highly controlled paracentesis was performed. A cotton tip applicator or bud was inserted unto the base of a 27-gauge needle used for the paracentesis. The paracentesis was performed by introducing the needle into the anterior chamber at the limbus. The anterior chamber was slowly

decompressed until the intraocular pressure was low enough to carry out the surgery with no fear of expulsive haemorrhage.

- e. Subconjunctival anaesthesia was given to augment the initial retrobulbar anaesthesia by injecting 1ml each of 2% lignocaine inter recti in the four quadrants.

All the four eyes had adequate akinesia and anaesthesia. The extracapsular cataract extractions and intraocular lens implants were successfully done with no significant difficulties. However, three spaced interrupted sutures were knotted to further assist in maintaining the anterior chamber depth in anticipated positive pressure rise, but this was not a significant problem.

#### RESULT

All the patients had adequate akinesia and anaesthesia. Only the male patient had lateral canthotomy because of the hard eye. There was no significant intraoperative increase in the intraocular pressures in the four patients. The knotted pre-placed sutures and visco elastic helped in maintaining adequate anterior chamber depth. Two patients had striate keratitis that resolved in 6 days. There were no posterior capsule rents and no vitreous losses in all the 4 eyes. All four patients had count fingers (CF) visual acuity on the first post-operative day. In all the four cases in this initial report, the cataract surgery and intraocular lens implants were successfully carried out despite the retrobulbar haemorrhage complication.

#### DISCUSSION

Retrobulbar anaesthesia (RBA) is effective, easy to learn and easy to perform. However, one common and significant complication is retrobulbar haemorrhage (RBH)<sup>7</sup> which occurs because RBA is a completely blind procedure.

Many factors contribute to RBH. The common factors include uncooperative and fearful patients, proficiency of the medical personnel and as now recognized, the technique of the RBA.<sup>14</sup> The straight needle in the common technique is inserted longitudinally and then 'in and up' with the eyes gazing up and looking nasally (medially).<sup>15</sup> In this technique, the straight needle easily picks the periosteum of the floor of the orbit and this causes bleeding; being a blind process — the position of the needle tip before the 'in and up' manoeuvre is not known. It can easily prick the orbital apex where the very large vessels and optic nerve lay.<sup>16</sup> If the needle jabs the large vessels at the apex, it leads to rapid features of RBH. To avoid RBH, the patient should be made to face up and maintain a primary gaze position. This causes the optic nerve and globe to shift out of the path of the needle,<sup>14</sup> reducing the chance of the needle striking vessels that will cause haemorrhage. To avoid structures which could cause RBH, bend the needle midway forty-five degrees and go

in tangentially, this moves the needle away from the floor of the orbit and the orbital apex. The deeper the needle is inserted into the orbit, the less danger to accidentally pierce the periosteum or the large vessels at the orbital apex.

In Nigeria, the common practice when RBH occurs is to postpone the surgery for at least two weeks and perform the surgery under general anaesthesia. This can create more problems because of the few number of anaesthetists, the extra cost of general anaesthesia and the need to carry out a number of tests, such as chest x-ray and electrocardiogram. The attendant risk of putting older patients under general anaesthesia should also be considered. The method described in this paper suggests the postponement of the surgery for one hour, to allow clotting to stop the bleeding, and thus stop intraocular pressure (IOP) from rising. Acetazolamide is used to bring down the IOP further. The controlled paracentesis prevents the IOP from dropping too rapidly and thus, removes the risk of expulsive haemorrhage associated with high IOP, and at the same time, it prevents the IOP from becoming too low which makes the eye too soft, making surgery difficult. The subconjunctival anaesthesia (SCA) was effective in providing adequate supplementary anaesthesia when used to augment the failed RBA.<sup>17</sup> On its own, SCA is effective, and more importantly, it does not increase the intraocular pressure.<sup>18</sup>

None of the four patients had any significant operative or post-operative complications, though we cannot generalize from this because the sample is too small. However, the complication of striate keratitis (2 patients) is not peculiar to patients with retrobulbar haemorrhage. Adepoju et al.<sup>19</sup> reported striate keratitis of 23.4% in 116 eyes with no retrobulbar haemorrhage complication. All four patients had visual acuity (VA) of counting fingers on the first post-operative day, a result comparable with our operated cataract and IOL implant eyes that had no retrobulbar haemorrhage.

In conclusion, this study is presenting an effective and safe alternative procedure to cancellation or postponement of cataract surgery, because of retrobulbar haemorrhage. It also has obvious advantages over general anaesthesia in terms of the patient's safety, comfort and cost.

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