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Expulsive choroidal effusion: case report of a rare complication of intraocular surgery

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Summary
A case of expulsive choroidal effusion occurring during extracapsular cataract extraction in a 75 year old woman is presented. The episode occurred at the time of insertion of the pseudophake into the ciliary sulcus. The woman had pre-existent filtering bleb and was hypertensive, factors which may have contributed to the episode. Although this is dramatic occurrence, it needs to be distinguished from expulsive choroidal hemorrhage which carries a much worse porgnosis. In this instant, management was expectant and patient attained 6/12 with over-refraction. It is recommended that patients who may be at risk for expulsive choroidal effusion should have in the bag pseudophake fixation rather than sulcus fixation to obviate pressure on the circular vascular arcade.

Résumé
Nous presentous un cas d'epanchement choroidieu explulsif suiveur chez une femme de 75 aus lors d'une extraction extracapsulaire de la cataracte. L'episode est survenu au moment de l'insertion de l'implant dans le sulcus ciliare. La patiente presentait une ampoule de fulteration pre-existence et etait hypertendue, facteurs susceptibles d'avoir contribue a l'episode. Bieu qu'I s'agisse d'un accident dramatique, il doit etre distingue d'une hemorrhagie choroidienne explusive, don't le pronostic est plus severe. Aucun traitment specifique ne fut alplique et le patient a garde une vision de 6/12 apres correction. Nous recommandous que les patients presentant un risque d'epanchement, choroideu beneficient d'un implant insere dans le san plutot que dans le sulcus cilliare pour eviter pression sur l'arcade ciliarie.

Introduction
Many ophthalmologists are familiar with expulsive choroidal hemorrhage as a dreaded complication of intraocular surgery, and most can expect to experience this problem at some point during their operating careers [1]. With the advent of small incision surgery however, this complication is becoming very rare. Less well known is expulsive choroidal effusion which occurs during intraocular surgery and needs to be distinguished from hemorrhage especially because of the marked difference in prognosis [2]. In this condition, there is a sudden massive transudation of serous fluid across the walls of the cilio-choroidal vessels during intraocular procedures, such as cataract extraction and/or trabeculectomy.
In this communication, we report the occurrence of an expulsive choroidal effusion during extracapsular cataract extraction with intraocular lens implantation in a 75-year-old woman with a pre-existing filtering bleb.

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Report of a case
A 75-year-old woman was admitted for extracapsular cataract extraction in the left eye. Three weeks before presentation, she had had a trabeculectomy performed in that eye in another center, following which she noticed a progressive diminution of her vision in that eye. The visual acuity was merely hand movement. Significant findings included a flat bleb, with some prominent sutures over the trabeculectomy site causing some degree of irritation, a well formed anterior segment, a pigment-blocked peripheral iridectomy, pigments on the lens surface and a mature cataract. There was no view of the posterior segment. In the right eye, there was a moderately dense central scar on the cornea and early cortical opacities in the lens. Glimpses of the posterior segment revealed a tigroid fundus with moderate disc pallor. It was not possible to ascertain the cup-disc ration with certainty in view of the existing opacities. The intraocular pressures were the same in both eyes at 17.3 mmhg. She was on topical treatment with spersadexoline and timoptol to the operated eye.

Generally, the woman was frail looking but reasonably healthy for her age, and appeared depressed probably on account of her eye problems. It was noted that she had been on medication for high blood pressure.

The irritant suture was removed two weeks after her presentation while she was advised to continue with the topical therapy to which was added topical Diclofenac eye drops and acetyl salicylic acid tablets. Surgical removal of the cataract was deferred to allow healing and stabilisation of the filtering bleb.

Surgery eventually took place six weeks after presentation. An extracapsular cataract extraction with posterior chamber intraocular lens insertion was planned using a clear cornea incision to avoid the filtering bleb, under local anaesthesia. Five milliliters of 2% lidocaine with adrenaline was injected over the condylar process of the mandible to effect O'brien anesthesia of the facial muscle, while 3 ml of the same substance was injected retrobulbarly into the muscle cone. The anaesthetic was supplemented with about 2 ml of facial block and 1 ml of retrobulbar block when the desired effect was not immediately achieved. After the corneal incision, can-opener capsulotomy was carried out under visco-elastic cover (Viscomet, Hydroxypropyl methyl cellulose). The nucleus was subsequently delivered and irrigation/aspiration proceeded with a simcoe canula, using normal saline as the irrigating fluid. More visco-elastic material was introduced at this stage to reform the anterior chamber (A/C) and the intraocular lens. (Appalens power 20D model BMJ 652 length 13 mm, modified J loop with 10 degree angultion, biconvex) was introduced. The inferior haptic was initially introduced into the ciliary sulcus beneath the iris at 6 o'clock. The superior haptic was then grasped with a pseudophake introducer and attempt was made at compression dialing, aiming to position the most convex point of the superior haptic at 3'o clock. At this point, a sudden bulge was noticed over the choroid all around.

but especially in the temporal area. There was no corresponding shallowing of the anterior chamber, probably because of the presence of visco-elastic material. The positioning of the superior haptic was completed and the decision to close the eye immediately was then taken. This was effected with four interrupted 10-0 nylon sutures. It was not immediately obvious if this was a partial expulsive choroidal hemorrhage or a choroidal detachment, but the bulge did not progress any further after closure. A sclerotomy, which is sometimes advocated in the face of a choroidal effusion or expulsive hemorrhage, was not done. Subconjunctival gentamicin 0.5 ml was given and topical terramycin applied after which the eye was firmly bandaged.

The following day, a severe clouding was noticed in the anterior chamber, with some residual soft lens matter, while the swelling over the choroid was still discernible, even with the pen-torch. The pseudophake was intact and well positioned except for a minor iris tuck. The patient was commenced on topical atropine 1%, gentamicin, and spersadexoline. 0.5 ml of depomedrol injection was given sub-tenons on the second day post-operatively. The A/C clouding cleared subsequently. The patient was discharged on the fifth post-operative day, by which time there was no evidence of the choroidal bulge, which on clinical grounds we had concluded was probably a choroidal detachment. The view of the posterior segment was largely unimpeded, revealing a pink disc and a flat retina. The Cup-Disc (C/D) ratio was about 0.85.

Subsequent postoperative management consisted of control of post-operative inflammation, and maintenance of intraocular pressure at normal levels by supplemental treatment with Timoptol 0.5%. The post-operative IOP varied from to 15 to 20 mmhg. There was no post-operative shallowing of the AC as such. With over-refraction, the vision improved to 6/12 in the left eye. Patient was eventually referred to a clinic in Lagos for follow up, as she was normally resident there.

Discussion

As we did not carry out a supra-choroidal tap, it could be argued that we could have been dealing with a partial expulsive choroidal haemorrhage. This is however most unlikely given the rapid rate of resolution and the not too unfavourable visual outcome. Also, expulsive hemorrhage is characteristically accompanied by sever pain in those cases performed with the patient under local anesthesia, which was distinctly not the case here. The aetio-pathogenesis of these two conditions are however similar. Hypertension, arteriosclerosis and sudden changes in intraocular pressure are predisposing factors. There are certain important differences. For expulsive haemorrhage, bleeding occurs as a result of rupture of the short posterior ciliary arteries [3], while the process of exudation through the wall of the choroidal vessel is the underlying pathway to choroidal detachment in expulsive choroidal effusion.

The choroidal vessels differ from the retinal vessels in that they lack desmosomal attachments and are thus porous to large molecular weight molecules [4]. Some workers believe that a certain degree of choroidal serous effusions accompanies all intraocular surgery. Choroidal detachments are associated with hypotony in many instances, especially when the wound is not water tight, in which case the detachment develops slowly. It is possible that the fact that our patient had an existing filtering bleb contributed to the occurrence of the episode. We do not know what her IOP was before the filtration, but it stood at 17.3 mmhg before cataract surgery was carried out. A large differential in pressure pre- and post-filtration may have predisposed her as such, but further lowering of the intraocular pressure during the cataract extraction may have precipitated the sudden effusion.

Bellows and associates [5] described four cases in which filtering surgery was interrupted by rapid forward movement of the lens-iris diaphragm. Two of the four patients however had Sturge-Weber syndrome and all had high episcleral venous pressure. In the two cases described by Ruiz and Salmonsen [2] a severe coughing episode was said to have occurred. A positive Valsalva episode, which would theoretically cause an elevation of the transmural venous pressure, (normally between 1 and 3 mmHg) was however not noticed in our case. But the fact that the sudden effusion occurred at the time of insertion of the pseudophake could theoretically account for an elevation of this transmural venous pressure.

With an implantation in the ciliary sulcus, pressure may have been brought to bear on the circular vascular arcade of the ciliary body. This circular vascular arcade is formed by a union of the two long posterior ciliary arteries and the anterior ciliary arteries. Together with the 20 odd short posterior ciliary arteries, the choroidal vascular plexus is constituted as an expandable vascular bed. This would suggest that in marginal situations such as in this case with an existing bleb and fluctuations in the intraocular pressure as well as blood pressure elevation and possible arteriosclerosis, an in-the-bag implantation should be aimed for, rather than a sulcus implantation. The blood pressure prior to surgery was not known, but we understood her to have been on anti-hypertensive medications before her admission. This would suggest that we were dealing with a liable blood pressure situation which may in turn have contributed to the episode experienced.

In conclusion, it is perhaps advisable that attempts should be made to identify patients at risk of expulsive choroidal effusion before pseudophake insertion. These may include hypertensives, and glaucomatour patients with pre-existent filtering blebs. In such cases, pseudophake implantation should then be into the capsular bag rather than into the ciliary sulcus.

References

1. Jaffe N, Welsh RC, Welsh J (Eds) 1971: The second report on cataract surgery.
2. Ruiz SR, Salmonsen MD Expulsive choroidal effusion, a complication of intraocular surgery. Arch Ophthalmol 1976; 94: 69-70.
3. Girard, LJ, Spak KE, Hawkins RS, et al. Expulsive hemorrhage during intraocular surgery. Trans Am Acad Ophthalmol Otolaryngol 1973; 177: 119-125.
4. Moses RA. Adler's physiology of the eye, ed 5. St. Louis, CV Mosby Co Publishers 1970.
5. Bellows AR, Chylack LT Jr. Hutchinson BT Choroidal detachment: Clinical manifestation, therapy and mechanism of formation. Ophtalmology 1981; 88: 1107