

Acute urinary retention during cataract surgery

Retenção urinária aguda durante a cirurgia de catarata

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ABSTRACT

We present a case of a 66-year-old male patient with primary angle closure glaucoma who underwent cataract surgery. He was also under tamsulosin treatment for benign prostate hyperplasia. Due to high intraocular pressure and shallow anterior chamber, 150 mL of 20% mannitol was given intravenously, before phacoemulsification cataract surgery. The iris prolapsed from the main incision and the pupil constricted, right after the main incision was opened and the pupil shrank. An additional 150 mL of 20% mannitol was given intravenously, to reduce the high vitreous pressure. Acute urinary retention induced by mannitol infusion developed during the surgery. The surgery had to be interrupted while the floppy iris was prolapsed from the corneal incision. A foley catheter was inserted and the patient was relieved. This case reminds us to also keep acute urinary retention in mind, in patients with benign prostate hyperplasia, especially if intravenously infusions of mannitol or even other fluids are planning to be given during surgery.

RESUMO

Apresenta-se o caso de um paciente de 66 anos com glaucoma primário de ângulo fechado que foi submetido a cirurgia de catarata. Ele também estava em tratamento com tansulosina para hiperplasia benigna da próstata. Devido à alta pressão intraocular e câmara anterior rasa, foram administrados 150 mL de manitol 20% por via intravenosa, antes da cirurgia de catarata por facoemulsificação. Houve o prolapso da íris entrou da incisão principal, e a pupila contraiu logo após a incisão principal ter sido aberta e a pupila ter encolhido. Foram administrados mais 150 mL de manitol 20% por via intravenosa, para reduzir a pressão vítrea elevada. Durante a cirurgia, desenvolveu-se retenção urinária aguda induzida pela infusão de manitol. A cirurgia teve de ser interrompida enquanto houve o prolapso da íris flácida da incisão da córnea. Foi inserida uma sonda de Foley e o paciente ficou aliviado. Este caso nos lembra de que devemos ter em mente a retenção urinária aguda em pacientes com hiperplasia benigna da próstata, especialmente se estiver prevista a administração intravenosa de manitol ou mesmo de outros fluidos durante a cirurgia.

INTRODUCTION

Benign prostatic hyperplasia (BHP) has always been an additional systemic disease that ophthalmologists pay attention to in terms of alpha-adrenergic receptor blocker use and development of intraoperative floppy iris syndrome (IFIS).⁽¹⁾ Tamsulosin, an alpha 1A adrenergic receptor blocker, relaxes bladder neck smooth muscle and blocks alpha 1 adrenergic receptors in the iris dilatator muscle and prevents the pupil from being fully dilated during cataract surgery. In chronic use, it causes iris atrophy and causes IFIS.⁽²⁾

Another important issue to be considered in patients with BHP is acute urinary retention. It is defined as “the patient’s inability to void spontaneously despite having a painful or palpable bladder” and is a urological emergency.⁽³⁾ Rapid bladder decompression with suprapubic or urethral catheterization is the basis of treatment for all etiologies.⁽⁴⁾

In this case report, we present a patient with cataract and BPH, which when combined, caused two major complications at the same time, IFIS and acute urinary retention during phacoemulsification cataract surgery.

CASE REPORT

A 66-year-old male patient, applied to ophthalmology clinic with sudden decrease in vision and acute pain in the right eye. The best corrected visual acuity (BCVA) was 20/25,000 in the right eye and 20/25 in the left eye. In the slit-lamp examination, there was stage 3 nuclear cataract in the right eye and stage 1 nuclear cataract in the left eye, and the anterior chamber was shallow in both eyes. Intraocular pressure (IOP) measured with Goldmann applanation tonometry was 32 mmHg in the right eye and 26 mmHg in the left eye. Optic nerve cupping was 0.8 and retinal nerve fiber layer (RNFL) thickness was 55 μ m bilaterally. Iridocorneal angle was detected as closed in gonioscopy examination, in both eyes. The patient was diagnosed with primary angle closure glaucoma (PACG). Laser iridotomy was performed on both eyes and dorzolamide/timolol (Tomec[®] ophthalmic solution, Abdiibrahim, Turkey), brimonidine (Alphagan-P ophthalmic solution, Allergan, Ireland), and latanoprost (Xalatan[®] 0.05% ophthalmic solution, Pfizer, USA) eye drops were started. In the follow-up, left IOP was regulated, but an IOP of 23 mmHg was measured in the right eye. Since the patient had closed-angle glaucoma and moderately elevated IOP in the right eye, cataract surgery was decided for the right eye, considering the low RNFL thickness. The patient was also under treatment with amlodipine for arterial hypertension and tamsulosin for BPH. Sixty minutes before the cataract operation, 150 mL of

20% mannitol was given to the patient by intravenous infusion in 15 minutes. The pupil was dilated pharmacologically with tropicamide (Tropamid[®] 1% Forte ophthalmic solution, Bilim İlac, Turkey), cyclopentolate hydrochloride (Sikloplejin[®] 1% ophthalmic solution, Abdiibrahim, Turkey) and phenylephrine hydrochloride (Mydfrin[®] 2.5% ophthalmic solution, Alcon, Switzerland). The pupil dilatation was good (approximately 5.5 mm). Surgery was performed under topical anesthesia with proparacaine hydrochloride eyedrop (Alcain[®] 0.5% ophthalmic solution, Alcon, Switzerland). A single plane 2.8 mm triplanar clear corneal incision was created and right after the creation of the incision, iris prolapsed, and the pupil began to shrink. Sodium hyaluronate 3.0% was injected and a continuous curvilinear capsulorhexis was performed. Adrenaline solution (diluted 1:100.000, 0.2 μ l) was instilled into the anterior chamber after hydrodissection and hydrodelimitation to dilate the pupil. Adrenaline stopped pupillary constriction, but iris prolapses continued from the incision. The phacoemulsification phase was initiated, but the iris continuously prolapsed into the phaco tunnel and adhered to the phaco tip, as expected in an IFIS case combined with PACG. The anterior chamber became shallower, and the maneuvering space required for phacoemulsification in the anterior chamber gradually decreased. An additional 150 mL of 20% mannitol solution was given as an infusion to lower IOP and increase anterior chamber depth. During the procedure so far, the patient was moaning and straining which could be because of the orbital pain. The straining was contributing to iris prolapse and anterior chamber shallowing, so the patient was told the eye pain would soon be over, to soothe him. But the patient explained that he had a severe pain in his lower abdomen and had an intense urge to void. The surgery had to be interrupted due to the agitation of the patient, but the phacoemulsification phase was not complete, and the floppy iris was actively prolapsed from the corneal incision. He tried to pass urine on the operating table with the help of the nurses, but he was unable to void. His distended bladder was palpable in the lower abdomen. A foley catheter was inserted and more than 1,000 mL of urine was drained, confirming the diagnosis of acute urinary retention (globe vesicale). After the bladder was drained and the patient was comfortable again, the operation continued. The iris was put back inside with viscoelastic agent and the phacoemulsification was completed. An intraocular lens was implanted into the capsular bag successfully and the surgery was terminated without any major ophthalmological complications. However, intraoperative iris trauma, including iris herniation and

momentary entrapment in the phaco tip, occurred but was managed without causing persistent damage or affecting the surgical outcome. The patient whose IOP was regulated postoperatively was referred to urology for BPH follow-up.

DISCUSSION

It has been reported that tamsulosin, which is widely used in the treatment of BPH, significantly increases the incidence of IFIS during cataract surgery.⁽⁵⁾ When IFIS develops, the risk of complications such as iris trauma, corneal endothelial loss, posterior capsule rupture, high IOP, and vitreous loss increases.⁽²⁾ Chang et al. reported the incidence of vitreous loss as 12% in patients who developed IFIS.⁽⁶⁾

There are several intraoperative strategies for preventing or managing IFIS. In potential IFIS cases, creating a self-sealing, triplanar corneal incision is crucial, as a well-structured incision can help prevent iris prolapse through the wound.⁽⁷⁾ In this case, a triplanar clear corneal incision was performed. Intracameral phenylephrine can reduce iris floppiness and support pupillary dilation, making it a useful option in most cases of progressive miopia. However, if the iris dilator muscle is severely damaged, phenylephrine may be ineffective.⁽⁸⁾ In this case, we administered intracameral adrenaline to enlarge the constricting pupil and maintain iris stability. However, the iris continued to prolapse, and the pupil kept constricting. Intracameral lidocaine may also help alleviate pain associated with iris prolapse,⁽⁹⁾ but since the primary source of pain in this patient was bladder-related, lidocaine was not used. Iris retractors are a recommended surgical technique for patients at high risk of IFIS, particularly those with a small pupil at the start of surgery. However, their use requires at least two additional incisions, and placement after capsulorhexis can be challenging. Additionally, they tend to prolong surgical time. Despite these drawbacks, iris retractors eliminate the risk of intraoperative pupillary constriction, making them a suitable option for patients with inadequate preoperative dilation.⁽¹⁰⁾ In this case, since the initial pupil dilation was adequate, iris retractors were not utilized. As the patient's severe pain subsided following bladder emptying and the anterior chamber stabilized, the surgery was completed without iris retractors.

In these case, major complications such as posterior capsule rupture and vitreous loss did not occur, but there was an unexpected complication. Acute urinary retention is a well-known complication of BPH, and it has been reported that acute urinary retention occurs with a frequency of 2% in the general surgery population.⁽⁴⁾ To

the best of our knowledge, this is the first case in the literature, reporting acute urinary retention during an ophthalmological surgery. Acute urinary retention caused the operation to be interrupted in an unsuitable way. In this case, tamsulosin, which was used to prevent acute urinary retention, caused the development of IFIS. IFIS, on the other hand, led to a significant prolongation of the operation time and paved the way for the development of acute urinary retention and caused a vicious circle. In addition, mannitol infusion due to increased pre-operative and intraoperative IOP is another triggering factor.

In conclusion, BPH has always been an important comorbidity for the development of IFIS due to alpha blocker use in ophthalmology. However, the development of IFIS and acute urinary retention at the same time, which is very rare, should be kept in mind in patients with BPH who will undergo cataract surgery, and preventive measures should be taken into place, in order to avoid risky situations.

AUTHORS' CONTRIBUTION

EAU: acquisition and interpretation of data and having participated in writing the manuscript; MEB: contributed to the conception and design, interpretation of data, critically reviewing the content; SG: contributed to the conception and design, critically reviewing the content.

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