

INCIDENTS DURING CATARACT SURGERY IN HYPEROPIC PATIENTS

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Abstract: Cataract surgery in hyperopic eyes involves further complications, intra- and postoperatively, compared to emetropic eyes. I present the particularities of the hyperopic eyes which can lead to incidents or complications during the phacoemulsification. The paper analyzes and presents the complications related to hyperopia that occurred during the surgery or postoperatively.

INTRODUCTION

Cataract is the most common condition that leads to a decrease of the vision. It is generally related to aging. There is no effective medical treatment so far. The only solution is the surgery of the lens.(1,2,3)

The main procedure used is the phacoemulsification of the lens followed by an intraocular lens implant.

The cataract operation is considered one of the most precise procedures of the eye surgery. Some particularities of the hyperopic eyes require a special attention of the surgeon because of the complications that must be avoided.(4,5)

The most of them are related to the depth of the anterior chamber which can be smaller in hyperopic eyes.(6)

PURPOSE

The aim of the paper is to analyze the cataract cases in hyperopic patients regarding the intraoperative particularities and the postoperative evolution.

MATERIALS AND METHODS

I analyzed a group of 60 cases of hyperopic patients with cataract operated in 2015, compared with a group of 60 emetropic patients, operated in similar conditions. The cases were analyzed considering the anesthesia, the incisions, the capsulorhexis, the phacoemulsification and the postoperative edema.

RESULTS AND DISCUSSIONS

Anesthesia

The first important moment of the cataract surgery is the anesthesia. In most cases, cataract surgery is performed under local anesthesia (topic or parabolbar). The main disadvantage of the local anesthesia is that the patient has the freedom of movement during the procedure.(4,6,7)

A particular situation is emphasized by the patients with debilitating diseases, tremor, chronic cough etc. A sudden movement can cause an unnecessary event during the operation. Excessive sedation can also be dangerous. The patient can awake suddenly, disoriented, moving violently the head, which can determine severe intraocular destructions. A permanent communication with the patient helps him maintaining his attention. The relative closed system offered by the small incisions of the phacoemulsification has great advantages when movements occur. Though, the small anterior chamber in

hyperopic eyes represents a further risk factor when movements occur.(6,9)

Patients with risk of movements can benefit from parabolbar anesthesia. But this can raise the risk of choroid hemorrhage in microphthalmic eyes.(6,10,11)

In most of the studied cases, I used topical anesthesia. During the surgery, movements occurred in 8 (13,33 %) cases of hyperopic eyes and 7 (11,66%) cases of normal eyes. In 12 cases of hyperopic patients the time of the surgery increased by 5-10 minutes because of the small anterior chamber. In these cases, there appeared some subconjunctival hemorrhage because of the fixation.

I used parabolbar anesthesia in 4 cases (6,66 %) of the hyperopic eyes and 2 (3,33%) of the normal eyes (Parkinson disease) (figure no. 6).

In 1 case (hyperopic eye), I performed the surgery under general anesthesia (Alzheimer disease).

Incisions

The construction of the incisions determines the maneuverability of the instruments in the chamber. This might be important in eyes with small anterior chamber as hyperopic eyes might be. Also, the intraoperative and postoperative evolution of the incisions depends on their design. The main problems related to the construction of the incisions which could determine complications are:

- External incision localized too anteriorly or too posteriorly;
- Internal incision localized too anteriorly or too posteriorly;
- Too deep or too superficial tunnel;
- Too short tunnel;
- Too large or too narrow tunnel.(6,8,9,12)

In hyperopic eyes, the tunnel is a bit shorter and anterior to permit a better maneuverability of the nucleus (figure no. 1).

In 5 cases (8,33 %), in hyperopic eyes, I experienced some fluctuations of the chamber due to the short tunnel.(4,5,6)

Capsulorhexis

The rhexis represents one of the most important manoeuvres of the surgery. It requires maximum of attention. The line of the rhexis should be continuous and the diameter should match the size of the nucleus and of the implant (figure no. 2). A larger rhexis can slip in periphery. A small rhexis makes the hydrodissection and the rotation difficult.

For maintaining the anterior chamber in hyperopic eyes with high intraocular pressure more viscoelastic substance

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can be used. A special attention is needed in intumescent cataracts associated with small anterior chamber.(4,6,7)

In 3 cases (5 %) with intumescent cataracts and small chamber I performed, initially, the aspiration of the liquid cortex. Afterwards, the surgery went on without other complications.

Phacoemulsification

The emulsification of the nucleus and the aspiration of the cortex present some particularities in hyperopic eyes.

The small chamber is problematic considering the manipulation of the fragments at a safe distance to the endothelium (figures no. 3,4).(8,9) It may be helpful to use more viscoelastic material for the protection of the cornea and for maintaining a deep chamber.

In 1 case (1,66 %) of hyperopic eye with small chamber a small lesion (2/2 mm) of the endothelium occurred during the manipulation of the fragments. The patient presented corneal edema first day postoperatively with its total remission on 7-day check-up.

Postoperative corneal edema

Generally, the corneal edema is more frequent in patients with small anterior chamber.(6,10,11)

In our cases in similar conditions (cataract type, endothelial cells) hyperopic patients had more transitory edema compared to emetropic patients: 7 cases hyperopic (11,66 %) – 3 cases emetropic (5 %) (figures no. 5,6).

In all cases, the cornea was clear on 7-day check-up.

Figure no. 1. Main incision in hyperopic eye

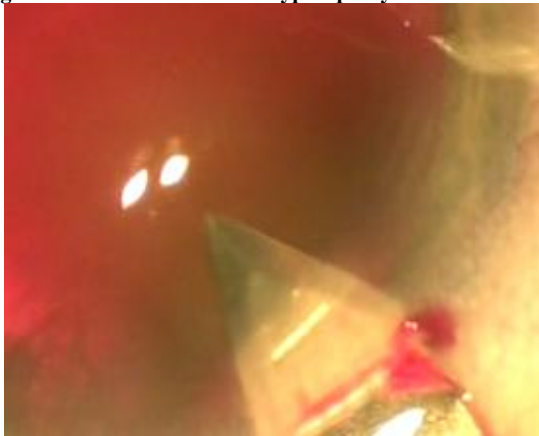


Figure no. 2. Capsulorhexis



Figure no. 3. Phacoemulsification of the nucleus

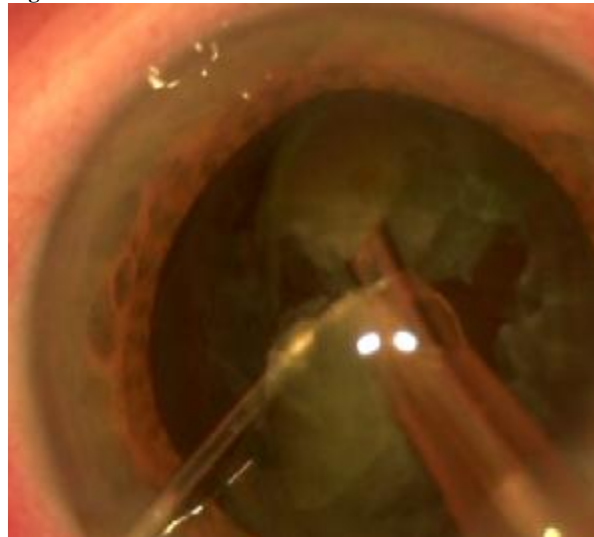
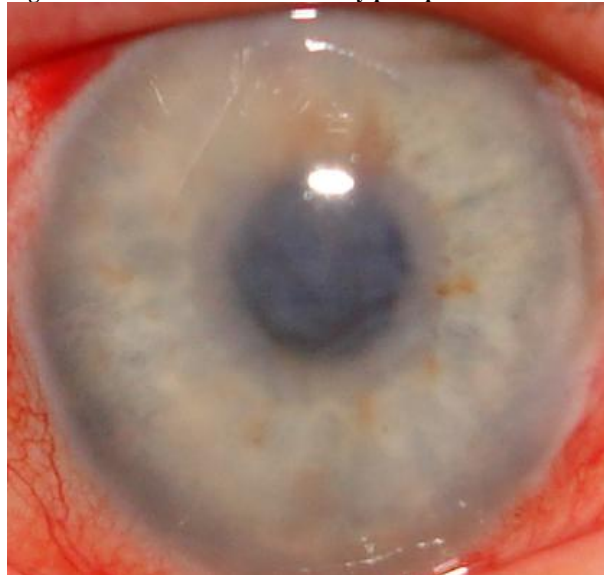


Figure no. 4. Aspiration of the cortex

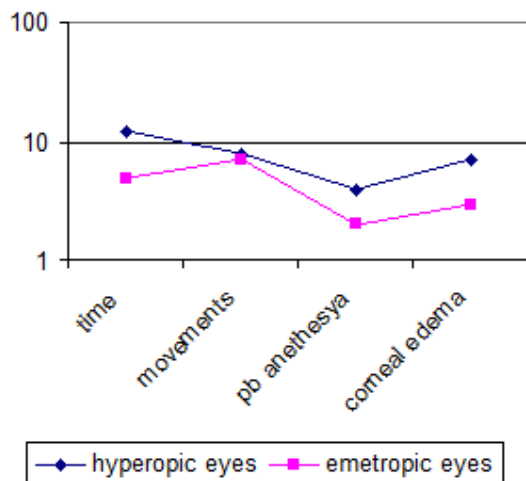


Figure no. 5. Corneal edema first day postop



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Figure no. 6. Time of surgery, movements, parabolbar anesthesia, corneal edema in hyperopic eyes compared to emetropic eyes



- Kim T. Current research supports the trend toward smaller surgical incisions. *J Cataract Refract Surg.* 2007;2:6-9.

CONCLUSIONS

- Cataract surgery in hyperopic eyes has more intra- and postoperative risks compared to emetropic eyes;
- The type of the anesthesia is decided considering the particularities of the patient (tremor, ability to focus for several minutes);
- Topical anesthesia is preferred in hyperopic eyes;
- The architecture of the incisions is adapted to the conformation of the cornea and to the chamber of the hyperopic eye.
- A small anterior chamber makes the capsulorhexis more difficult compared to normal eyes;
- Corneal edema is more frequent in hyperopic eyes.

REFERENCES

- Kanski JJ. *Clinical Ophthalmology A Synopsis*, Second Edition, Butterworth Heinemann Elsevier; 2009.
- Langstaon DP. *Manual of Ocular Diagnosis*, Sixth Edition, Lippincott Williams&Wilkins; 2008. p. 152-176.
- Dumitrache M. *Tratat de Oftalmologie*, Ed. Carol Davila; 2012.
- Steinert R. *Cataract Surgery, Technique, Complications, Management*, Second Edition, Elsevier; 2004.
- Teodoru A. *Oftalmologie clinică*, Editura Universitară Carol Davila, București, ISBN: 978-973-708-645-7; 2012.
- Teodoru A. *Complicațiile facoemulsificării*, Editura Universitară Carol Davila, București, ISBN: 978-973-708-644-0; 2012.
- Biro ZS. *Bazele facoemulsificării*, Pecs; 2002. p. 23-35.
- Allen D. New IOL implantation and fluidics technologies make transitioning to a micro-coaxial technique easier and safer. *J Cataract Refract Surg.* 2007;2:3-5.
- Osher RH, Falzoni W, Osher JM. Our phacoemulsification technique. In L Buratto, L Werner, M Zanini et al (eds), *Phacoemulsification principles and techniques*, ed 2, Thorofare, NJ, SLACK, Inc.; 2003. p. 62-87.
- Bergmann Koury C. *New Technology IOLs*, *Cataract & Refractive Surgery Today Europe*; 2006. p. 18-23.
- Allen D, Benjamin L, Packer M, Pfeifer V, Little B. A Shallow Chamber during Routine Phaco, *Cataract & Refractive Surgery Today Europe.* 2006. p. 24-27.