

Case Report

A Case Report of Corneal Abrasion after Cataract Surgery

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Abstract

Background: A corneal abrasion with pronounced inflammation and erosion after phacoemulsification surgery seems to be a rare event. It causes considerable ocular irritation with a presumably higher risk of postoperative endophthalmitis due to increased intraocular pressure changes and fluid influx through the clear cornea incision. Reports about this constellation and about a conceivable extension of endophthalmitis prophylaxis with topic anaesthetics seem not to be readily available.

Case presentation: A 62-year old patient underwent a standard phakoemulsification. During preparation the disinfection swab had contact with the cornea. A marked keratitis and a corneal erosion set in within hours after surgery. Additional prophylactic measures were adhibited as systemic antibiotics and anesthetic drops. Corneal or intraocular infection, corneal scarring or recurrent erosion did not occur; faced with the risk of delayed onset of endophthalmitis the patient developed posttraumatic stress syndrome.

Conclusions: The given case report of an uncommon perioperative complication contains deliberations unto additional prophylactic measures against endophthalmitis to be taken into account though otherwise deemed uncustomary.

Keywords

- Case report
- Cataract surgery
- Corneal abrasion
- Endophthalmitis
- Topic anesthetics

ABBREVIATIONS

CCI: clear cornea incision

BACKGROUND

A preoperatively caused corneal abrasion with symptoms of a marked keratoconjunctivitis and development of an erosion within hours after phakoemulsification surgery seems to be a rare event with a conceivably increased risk of a postoperative endophthalmitis as a serious complication. Data about this constellation or considerations to an extended prophylaxis seem not to be readily available. This case report describes an unusual postoperative course and takes into account otherwise uncustomary prophylactic measures.

CASE PRESENTATION

62-year old high school teacher; cataracta provecta; myopia magna; uneventful course identical operation 2 years earlier under equal circumstances. - No perioperative sedation; tropicamide, tetra- and lidocaine drops; disinfection by drawing swab with diluted povidone-iodine transversely over eyelids held partially open; contact with cornea as patient accidentally opened his eye. - Straight clear cornea incision (CCI) superior region; paracenteses; lidocaine and viscoelasticum intracameral; phakoemulsification; lens (hydrophilic acrylate) into capsule bag; cefuroxim 1 mg intracameral; stromal hydration at paracenteses and CCI. - Minor discomfort intraoperatively. 60 min after surgery: foreign body sensation. 2 hours: symptoms of keratoconjunctival

inflammation as hyperemia, eyelid swelling, flow of tears, photophobia, steadily more dolorous scratchy feeling and, after reopening eye held closed for 30 minutes, tearing sensation and onset of uncontrollable painful blepharospasm. - Tobramycin and dexamethason ointment; bromfenac drops; start cefuroxime and clindamycin orally in twice maximum dosage for 4 days; oral analgesics; oxyprobucaine 2-3 drops in intervals of 45-60 minutes for 24 hours. - Course: Severe discomfort for 2 days. - 24 hours after surgery: due to inflammation no conclusive evaluation. - 48 hours: slit lamp with fluorescein staining reveals erosion 12 mm² beneath center of cornea; due to continuous inflammation no attempt to assess CCI leakage; no secondary suture or sealing; no protective contact lens; no microbiological sampling. - 72 hours: subsiding inflammation; erosion 2 mm². - 7 days: patient notices immobile structure in form of lilac cotton ball in center of vision, disappearing within 5 days. - 2 weeks: no corneal scarring; regular pseudophakia. - Warned about symptoms indicating late onset of endophthalmitis for weeks to come, the patient, though assured that every conceivable prophylactic measure had been taken, developed a long-lasting posttraumatic stress disorder.

DISCUSSION AND CONCLUSIONS

Origin of abrasion and following keratoconjunctivitis

Retrospectively the contact of the transversally drawn disinfection swab with the cornea was most likely to have caused an impairment of the precorneal tear film and an extended abrasion which was followed by a marked inflammation and an

erosion. There were no signs of an increased corneal fragility before or after the operation; with regard to the uneventful course of the identical operation at the other eye molecular changes with increased vulnerability of the cornea had not to be taken into account.

Visibility of abrasions

There seems to be no accordance as to the recognizability of minutes old superficial corneal injuries in an operating microscope and without fluorescein staining. So a presumable damage during preparation should lead to postponement of the phacoemulsification. At the end of the operation swelling and roughening of the corneal surface was discernible.

Onset of pain

The corneal drop anesthesia may last for 20-40 minutes. Intracameral lidocaine, reaching the nociceptive fibers within the cornea by diffusion, has an analgesic effect of 60-120 minutes [1].

Concomitant corneal erosion

The retardedly seen erosion lay in a region where contact between cornea and inner surface of the upper eyelid had to be expected for a closed eye with intact Bell phenomenon.

Reopening his eye deliberately held closed for half an hour, the patient felt a tearing sensation and a sudden additional increase in pain. Thus the erosion seems to have developed due to an inflammatory adhesion about 2 hours postoperatively and before the application of anesthetic drops.

Increased risk of endophthalmitis

The entrance of particles containing fluid from the ocular surface into the anterior chamber through corneal incisions is regarded as the main cause of postoperative endophthalmitis. Delayed healing of the CCI increases the risk of infection [2]. Even normal eyelid closure deforms the bulbus and influences the intraocular pressure [3]. In case of blepharospasm an higher outflow and inflow has to be assumed.

In this context even postoperative entrance of ointment components through a CCI has been reported [4]. It is not unlikely that the structure in the center of vision described by the patient was a temporary intracameral precipitation or accretion.

For intracameral cefuroxime a decrease of concentration to 1/4 is described within the first hour after application while its impact on bacteria starts after 8-12 hours [3]. Thus the prophylactic effect of cefuroxime could subside while intracameral bacteria are present and the healing of the clear cornea incision is being delayed.

The postoperative application of antibiotic drops after preoperative rinsing of the conjunctival folds with povidone-iodine is not likely to eliminate the patient's own surface flora completely [2].

Adverse effects of topic anesthetics

Reviews about the use of topical anesthetic drops for traumatic corneal abrasions mention a potent analgesic effect without healing delay or complications, even if applied at need for up to 3 days or regularly every 30 minutes for 24 hours [5-7].

For an application to teletonometry daily for months no adverse corneal changes were put on record [8]. Erosion formation due to impairment of the corneal epithelium seems to depend on uncontrolled use of higher concentrated drops.

In the given case too frequent application and secondary problems as less frequent eyelid closure with unnoticed ocular desiccation or accidental trauma by contact with the dropping bottle were avoided by instruction of the patient. The erosion healed without delay which spoke against an overdosage.

Extended endophthalmitis prophylaxis

As long as healing of a clear cornea incision can not be assumed, every prophylactic measure additional to an intracameral antibiotic should be taken into account: physical rest; cooling compresses; antibiotic and analgesic drops; systemic analgesics; sedatives. The insertion of a protective contact lens seems ambiguous, probably causing further irritation and requesting the use of ointments to be tolerated; the lens will hardly impede the outflow and influx completely and might bring on a closed room for bacterial growth.

Oral and/or intravenous empirical antibiotics are not generally recommended for prophylaxis [2], but may be advantageous in the given case.

For traumatic corneal abrasions the use of anesthetic drops is not generally recommended [9]. In the special case with a possibly still patent clear cornea incision, the application, although hardly standardizable, seems to be a not unimportant additional measure in order to reduce the mechanical unrest caused by the inflammation. The drops should be applied in intervals as large as possible, informing the patient that not a permanent absence of pain is intended, but a lessening of involuntary eyelid squeezing and at least some relief for exacerbations of pain.

CONCLUSION

An early postoperative non-specific keratoconjunctivitis should be regarded as an emergency requiring immediate treatment and extended endophthalmitis prophylaxis by all means possible, including the supervised use of topic anesthetics in order to reduce the mechanical unrest at the endangered eye. In this context the conceivable risk of a transient corneal impairment and at the worst of a remediable corneal scarring should be weighed against the risk of an endophthalmitis with irreversible vision loss.

DECLARATIONS

Ethics approval

This case report is not based on an experimental procedure.

Consent for publication

Written informed consent was obtained from the patient for publication of his medical case. His professional occupation and age was modified for anonymization.

Availability of data

The data for this case report are included in this article and stored by the author.

Competing interests

The author declares that he has no competing interests.

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Author contributions

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