CASE REPORT

DOI: 10.5336/caserep.2020-80080

A Non-expected and Extreme Complication of Phacoemulsification: Scleral Wall Rupture

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ABSTRACT Rupture of the scleral wall during intraocular surgeries is extremely rare even in patients with a history of trauma, underlying ocular or systemic autoimmune disease. In this report, we describe a single case of a partial scleral wall rupture during phacoemulsification. We aim to discuss this extreme complication and to highlight the importance of a trauma history before phacoemulsification. An 84-year-old patient was hospitalized with the plan of phacoemulsification surgery. During phacoemulsification, conjunctival chemosis appeared all around the limbus and subconjunctival hemorrhage at nasal side. After conjunctival dissection, partial scleral rupture was detected. Iris-choroid were expelled from the wound. Phacoemulsification was immediately stopped and wound was closed primarily. There were no signs or symptoms of prior inflammation, and rheumatologic workup was negative. Nevertheless, the patient had an old ocular blunt trauma history. During the examination of a patient with a trauma history, scleral wall structure should not be overlooked. Weakness in scleral wall could lead to detrimental complications during intraocular surgeries.

Keywords: Rupture; complication; phacoemulsification

In patients with a blunt trauma history to the globe; cornea, lens, iris and retina could show several signs indicating ocular weakness.[1] Although sclera is frequently affected from blunt trauma; it could easily be overlooked in ocular examination before intraocular surgeries. Even after a long period of time, sclera could give clues about an old trauma such as colour change or thinning. Here we describe a partial scleral rupture during phacoemulsification presenting approximately thirty years after an ocular blunt trauma.

CASE REPORT

An 84-year-old patient was referred to our clinic with decreased vision in both eyes. Best corrected visual acquity (BCVA) was 3/10 on her right eye and 2/10 on her left eye on the Snellen chart. On biomicroscopic examination; cornea was clear, anterior chamber depth was normal and nuclear cataract was present bilaterally without any phacodonesis or iridodonesis. On fundoscopic examination; optic disc, macula and retinal vessels appeared normal in both eyes. Intraocular pressure was measured 14 mmHg and 16 mmHg in her right and left eye respectively. Axial length in both eyes were 22.59 mm and 22.72 mm, respectively. The patient did not define a history of any systemic disease, ocular surgery or painful red eye. However, the patient described a history of repetitive blunt ocular and facial trauma as a victim of domestic violence approximately thirty years ago.

The patient was hospitalized with the plan of left phacoemulsification surgery. Under topical anesthesia, a 2.8 mm clear corneal incision, continuous

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Peer review under responsibility of Turkiye Klinikleri Journal of Case Reports.

Received: 30 Nov 2020 ***Received in revised form:*** 13 Jan 2021 ***Accepted:*** 14 Jan 2021 ***Available online:*** 08 Feb 2021

curvilinear capsulorhexis, hydrodissection and hydrodelineation were performed. When nearly half of the nucleus was phacoemulsificated, conjunctival chemosis appeared all around the limbus and subconjunctival hemorrhage at nasal side. Phacoemulsification probe was retracted from the anterior chamber. After conjunctival dissection, it was detected that 1 mm apart from the nasal limbus; sclera was ruptured between 7 and 11 o'clock circumferentially (Figure 1). Iris-choroid were expelled from the wound. At the time of the rupture, bottle height was 75 cm H_2O. As high infusion levels would increase the protrusion of choroid from the ruptured area, phacoemulsification was immediately stopped. Remaining nucleus particles were extracted manually. The wound was closed primarily with multiple 6.0 polyglactin (vicryl) sutures. After intracameral antibiotic injection, the operation ended without intraocular lens implantation.

At postoperative first day, cornea was edematous with prominent descement folds. Anterior chamber depth was normal and 3+ cells were detected. Intraocular pressure was 6 mmHg with applanation tonometry. Fundus visualization was inadequate due to corneal edema. B-scan ultrasonography showed choroidal detachment nasally. Topical dexamethasone drops (8x1) and moxifloxacin drops (4x1) were prescribed. The patient was consulted to the rheumatology department. They reported that there was no evidence of systemic vasculitis or arthritis; laboratory tests including complete blood count, blood chemistry screen, C reactive protein, rheumatoid factor, anti-cyclic citrullinated peptide, antinuclear antibody, anti double-stranded DNA, antineutrophil cytoplasmic antibody (p-anca, c-anca) and erythrocyte sedimentation rate were unremarkable. After one month,

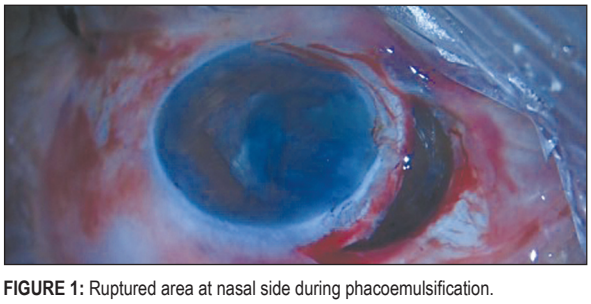

FIGURE 1: Ruptured area at nasal side during phacoemulsification.

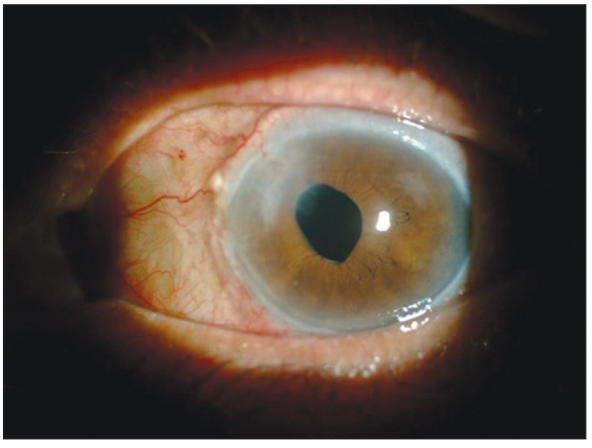

FIGURE 2: One month after phacoemulsification, inflammation was relieved.

inflammation was relieved and corneal edema was not present (Figure 2). Topical dexamethasone drops were gradually tapered and topical moxifloxacin drops were stopped. The patient's next visit was at postoperative third month. BCVA was 2/10 in her left eye with aphakic correction. Choroidal detachment was entirely resolved and there was no retinal detachment. She did not accept to have secondary intraocular lens implantation and did not attend to any further visits.

The informed consent was obtained from the patient before the study.

DISCUSSION

In this report, we describe a single case of a partial scleral rupture during phacoemulsification, with a history of ocular blunt trauma. Scleral wall rupture has been reported during various surgical procedures. It was reported during the placement of sutures in strabismus, scleral buckling procedure and periocular anesthesia.[2-6] Domínguez Yates et al. described a degenerative myopic case of scleral rupture during silicon oil injection in pars plana vitrectomy.[7] LaMattina et al. reported a patient of partial bilateral partial scleral rupture with a history of LASIK surgery performed with a mechanical microkeratome.[8]

Any eye surgeon will encounter a complication during phacoemulsification. Here we described an extraordinary complication of this surgery. Even in

patients with a history of trauma, underlying ocular or systemic autoimmune disease; rupture of the scleral wall during an intraocular surgery is extremely rare. In this case, the patient's old history of blunt trauma was our explanation for the spontaneous globe rupture during phacoemulsification. An impact from temporal side of the sclera might have caused nasal scleral weakness with contrecoup mechanism. During the examination of a patient with trauma history, scleral wall structure should not be overlooked. Thinning/colour change of the sclera might be suggestive of a weakness in the scleral wall. Since intraocular pressure increases during phacoemulsification, high infusion levels should be avoided in patients with a weak scleral wall.

When we reviewed the literature, we didn't encounter a case that might be similar to our patient's. We think that discussion of a partial scleral rupture presenting approximately 30 years after ocular blunt trauma, is of interest to the ophthalmology community.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Mahmut Asfuroğlu;* ***Design:*** *Mahmut Asfuroğlu;* ***Control/Supervision:*** *Yonca Asfuroğlu;* ***Data Collection and/or Processing:*** *Mahmut Asfuroğlu, Yonca Asfuroğlu;* ***Analysis and/or Interpretation:*** *Mahmut Asfuroğlu, Yonca Asfuroğlu;* ***Literature Review:*** *Mahmut Asfuroğlu;* ***Writing the Article:*** *Mahmut Asfuroğlu, Yonca Asfuroğlu;* ***Critical Review:*** *Mahmut Asfuroğlu, Yonca Asfuroğlu;* ***References and Fundings:*** *Mahmut Asfuroğlu;* ***Materials:*** *Mahmut Asfuroğlu.*

REFERENCES

1. Pieramici DJ, Sternberg P Jr, Aaberg TM Sr, Bridges WZ Jr, Capone A Jr, Cardillo JA, de Juan E Jr, Kuhn F, Meredith TA, Mieler WF, Olsen TW, Rubsamen P, Stout T. A system for classifying mechanical injuries of the eye (globe). The Ocular Trauma Classification Group. Am J Ophthalmol. 1997;123(6):820-31. [Crossref] [PubMed]
2. Taherian K, Sharma P, Prakash P, Azad R. Scleral perforations in strabismus surgery: incidence and role of prophylactic cryotherapy--a clinical and experimental study. Strabismus. 2004;12(1):17-25. [Crossref] [PubMed]
3. Mills MD, Coats DK, Donahue SP, Wheeler DT; American Academy of Ophthalmology. Strabismus surgery for adults: a report by the American Academy of Ophthalmology. Ophthalmology. 2004;111(6):1255-62. [Crossref] [PubMed]
4. Brown P, Chignell AH. Accidental drainage of subretinal fluid. Br J Ophthalmol. 1982;66(10): 625-6. [Crossref] [PubMed] [PMC]
5. Joseph JP, McHugh JD, Franks WA, Chignell AH. Perforation of the globe--a complication of peribulbar anaesthesia. Br J Ophthalmol. 1991;75(8):504-5. [Crossref] [PubMed] [PMC]
6. Frieman BJ, Friedberg MA. Globe perforation associated with subtenon's anesthesia. Am J Ophthalmol. 2001;131(4):520-1. [Crossref] [PubMed]
7. Domínguez Yates AL, Rojas J, Saravia MJ. Scleral rupture during intraoperative silicone oil injection in pars plana vitrectomy. Am J Ophthalmol Case Rep. 2019;15:100506. [Crossref] [PubMed] [PMC]
8. LaMattina KC, Feder RS, Koreishi AF, Goldstein DA. Partial scleral rupture presenting 4 years after laser in situ keratomileusis. Cornea. 2019;38(4):498-501. [Crossref] [PubMed]