

SCLERAL RUPTURE WITH THE PROLAPSE OF INTRAOCULAR CONTENTS - A CASE REPORT

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Abstract: Sclera plays an important role in protecting the eyeball, providing a strong mechanical resistance to the eye wall. Scleral wounds are extremely severe due to the high risk of infection (endophthalmitis) and have to be addressed with a high suspicion for a more extensive disruption of ocular anatomy and exposure of intraocular contents. One of the most severe forms of mechanical ocular trauma is the scleral rupture. Ruptures are caused by a blunt object which compresses the eyeball and as soon as the resistance of the eye wall is overcome, the eye wall opens at its weakest point. Due to the risk of expulsive choroidal haemorrhage, the primary repair is urgent. We present the therapeutic approach of a 55-year old male with an extensive scleral rupture and prolapse of intraocular tissues after a severe blunt ocular trauma.

INTRODUCTION

Scleral rupture is defined as a full-thickness wound caused by a blunt trauma.(1) The rupture might be anterior, near Schlemm canal, with prolapse of the intraocular contents. An extensive subconjunctival haemorrhage can mask an anterior rupture. Rupture can also occur at the site of a surgical wound such as cataract, keratoplasty or vitrectomy. An occult posterior rupture should always be ruled out, especially when there is minimal visible damage to the anterior segment with the asymmetry of anterior chamber depth and low intraocular pressure.(2)

A proper evaluation of the injury and a systematic approach is mandatory for restoring the eye's anatomic integrity and visual function.(1)

CASE REPORT

A 55-year-old white male came at the Countz Clinical Emergency Hospital of Sibiu, Ophthalmology department with severe ocular pain in the right eye and significant decreased vision in the right eye after an ocular trauma with a blunt object. He had no significant medical or ophthalmic history.

On presentation, his visual acuity was light perception in the right eye and 20/20 in the left eye. External examination revealed periorbital erythema, swelling and a skin laceration at the lower eyelid. Thorough examination of the left eye was normal. Slit lamp examination of the right eye revealed a large scleral rupture at 2 mm from the limbus, from 12 to 5 hours parallel to the limbus with prolapse of intraocular contents. (figure no.1) Slit lamp examination of the left eye was normal. Examination of posterior segment of the right eye revealed dense vitreous haemorrhage. Fundus examination of the left eye was normal.

An orbital X-ray was performed to rule out orbital fractures or an intraocular foreign body.

Intravenous and topical prophylactic antibiotic treatment was initiated to cover organisms commonly associated with posttraumatic endophthalmitis and, also appropriate tetanus prophylaxis was administered.

Figure no. 1. The anterior segment aspect at admission which shows the extensive globe rupture with massive extrusion of internal ocular structures



The surgical repair was done urgently, within 3 hours after the injury, in general anesthesia.

Surgical technique

Prior to suturing, conjunctiva and Tenon's capsule were completely cleared off the sclera in order to expose the wound edges. The superior rectus muscle was secured with a double-armed 5.0 Vicryl. The exposed vitreous was cut off at the wound edge with Vanas scissors and uveal tissues were repositioned. The scleral wound was closed with interrupted sutures 8.0 Vicryl, around 80% depth to avoid choroidal haemorrhage and retinal injury.

Figure no. 2. Anterior segment appearance in the first day after the surgery



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CLINICAL ASPECTS

Postoperative management

On the first day after the surgery, full clinical examination was performed. The visual acuity of the right eye was hand movements. Slit lamp examination showed a quiet eye, good ocular tonus, no wound leakage, minimal stromal oedema, Descemet folds, anterior chamber depth slightly raised, hyphema ~ 3 mm, no secretions. Topical antibiotics, steroid and cycloplegic drops were administered. Intravenous antibiotics were continued.

Figure no. 3. Day 2 after the primary repair



Figure no. 4. Day 3 after the surgical repair: quiet eye, normal ocular tonus, no wound leakage



Figure no. 5. Day 4 postoperatively



An ocular ultrasound of the right eye was performed and it revealed an inferior retinal detachment, infero-temporal haemorrhagic choroidal detachment, temporal choroidal haematoma, vitreous haemorrhage. The patient was transferred to a vitreo-retinal department, where the retina was reattached. Postoperatively, the patient benefited from topical treatment with antibiotics, steroids, and medication to control the intraocular pressure as well as systemic antibiotic treatment.

Figure no. 5. Anterior segment appearance 1 month after the primary repair. The visual acuity was 1/15 cc; intraocular pressure= 8 mmHg



Figure no. 6. 2 months after the primary repair



DISCUSSIONS

General anesthesia provides a good control of ocular tonus during the surgery. Peribulbar anesthesia has to be performed with a very careful case selection; it is recommended to be done in small anterior wounds without extensive uveal incarceration due to the high risk of further extrusion of the intraocular contents.

All pediatric patients and extensive open globe injuries require general anesthesia.(1,3,4,5)

A scleral suture is preferred to be done at around 80% depth to avoid choroidal haemorrhage and retinal injury. Scleral wounds anterior of ora serrata can be sutured in full depth without the risk of retinal injury.

A too superficial suture is dangerous as it does not provide enough strengthens to the eye wall. If a wound is too posterior, it is better to leave it unsutured as it requires too much pressure on the globe and the risk of tissue extrusion is extremely high. Orbital soft tissue can put enough pressure on the wound to close spontaneously within few days post injury.(1)

The primary repair should be done as soon as possible as the risk of expulsive choroidal haemorrhage is very high in case of scleral rupture.(6,7)

The conjunctival repair should be meticulously performed in order to minimize the risk of endophthalmitis.(8)

CONCLUSIONS

The case presented had a good evolution under treatment even though the ocular trauma score was 2, which predicted a poor functional outcome.

The primary surgical repair done urgently, within 3 hours after the injury was the key for achieving the best visual outcome for the patient.

The visual acuity of the right eye was 0,1 cc 2 months after the surgery. Globe ruptures are severe ocular injuries, but a systematic approach is mandatory in order to restore the eye's anatomic integrity and the best visual function.

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