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Management of Corneal Perforation by Conjunctival Covering at the Bougouni Reference Health Center: A Series of Five (5) Cases

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Abstract **Case Report**

***Introduction*:** Corneal perforations are a major cause of ocular morbidity and blindness. Several surgical techniques can be used to treat them, including conjunctival covering, which has numerous therapeutic properties and reduces the risk of anatomical loss. ***Observation*:** We present a series of five (5) cases admitted to the ophthalmology department for ocular pain, in whom the clinical examination concluded a corneal perforation. The etiologies were traumatic in three patients, Mooren's ulcer in one and undetermined in another. Conjunctival covering was the technique used to manage the patients. Visual acuity improved in two of our patients after surgery, and remained almost unchanged in one. Two patients were lost to follow-up. ***Conclusion*:** Despite the advancement and promotion of new techniques, conjunctival covering still has its place in the management of corneal perforations, especially when the technical platform is weak.

Keywords: Corneal perforation, conjunctival covering, Bougouni Hospital.

INTRODUCTION

Corneal perforations are a terminal stage of infectious and immune pathologies [1], and a major cause of ocular morbidity and blindness [2, 3].

To avoid endophthalmitis and restore the tightness of the eyeball, emergency surgical treatment is required.

Several surgical techniques can be used: therapeutic lens placement [4], use of cyanoacrylate glue [5], lamellar grafting [6], transfixing keratoplasty [7, 8], conjunctival covering [9].

Conjunctival covering has been used for several decades to treat ocular surface disorders; the pathologies usually treated were herpetic keratitis [10], bullous keratitis, neuroparalytic keratitis [11] and trauma; indications have now been extended to chronic infectious keratitis [12], corneal perforations and marginal ulcers [13]; this technique offers a number of therapeutic properties, helping to suppress inflammation, restore an intact surface epithelium and improve the quality of the tear film. All this contributes to reducing patient pain and the risk of anatomical loss [14].

We report on a series of 5 patients who developed corneal perforation.

OBSERVATIONS

Case 1

This is a 42-year-old housewife who came to us with right-sided ocular pain following a foreign body projection that had been evolving for three (3) months. She had undergone traditional treatment but without success, which motivated her to consult our unit for better management.

Ophthalmological examination revealed visual acuity, finger count at 3m in the right eye; diffuse hyperhaemia with a perforated ulcer at 3 o'clock measuring approximately 4 mm in diameter and 2 mm from the limbus in the right eye (Image 1A), the Seidel was positive, and acuity in the left eye was 8/10 with no other particularities.

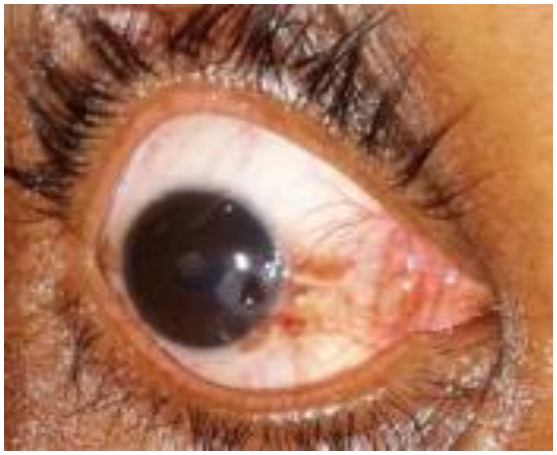

Image 1A

We proceeded with trimming with 10/0 monofilament and antibiotic corticotherapy based on a combination of dexamethasone-oxytetracycline ointment and ciprofloxacin eye drops.

On postoperative day 1, visual acuity was counted at 1 metre; on postoperative day 15, visual acuity was 3/10; a recurrence occurred 45 days after removal of the sutures, resulting in hypotonia; we then proceeded to cover the conjunctiva with an X suture, and the associated treatment was antibiotic- and corticosteroid-based.

After 45 days' follow-up, acuity was 7/10 (Image 1B), in the absence of seidel, with complete closure of the perforation.

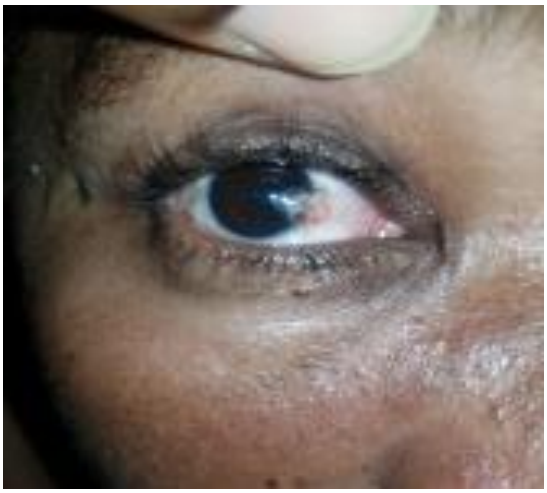

Image 1B

Case 2

A 5-year-old girl presented with pain and tearing in her left eye, following trauma caused by debris from an exploding drink bottle in the fire, which had been evolving for a week.

On admission, visual acuity was difficult to assess.

External examination revealed blepharospasm.

On slit-lamp examination, a 3.5 mm x 2 mm wide corneal perforating paracentral lateral superior wound associated with a herniated iris in the left eye (Image 2A).

Image 2A

We immediately performed a partial resection of the herniated tissue and a conjunctival covering (Image 2B).

Image 2B

After one week's follow-up, the eye was calm, graft in place, cornea clear, anterior chamber deep, however there was a vascular callus, the patient was lost to follow-up.

Case 3

An 18-year-old male student presented with left eye pain of progressive onset that had been evolving for about two months. There was no indication of trauma or other antecedents, and he had received a non-specific ointment-based treatment.

Clinical examination revealed the following in the left eye: visual acuity, ability to move the hands, central corneal perforation, oval in shape, measuring 4 mm by 2 mm in diameter with a vertical long axis; with vascular involvement (Image 3A).

Image 3A

The lateral control eye was normal.

A partial conjunctival covering of the perforation was performed, and a local treatment combining dexamethasone neomycin and polymixin eye drops and an ointment combining dexamethasone and framycin was instituted.

After a 45-day post-operative follow-up, visual acuity was 3/10 (Image 3B).

Image 3B

Case 4

A 15-year-old girl was admitted for a month with pain in her left eye, with no apparent cause.

Clinical examination of the left eye revealed: visual acuity: can move the hands, hyperhemia in a perikeratic circle, a lateral sclerotic corneal ulcer gnawing at the edges and extending from 6 to 11 a.m., 5 mm wide, perforated with herniation of the iris, the anterior chamber was narrow; we therefore concluded that it was a perforated Mooren's ulcer (Image 4A).

Image 4A

We proceeded with a patch resection of the iris, rejuvenating the edges and covering the conjunctiva. Associated local treatment consisted of dexamethasone oxytetracycline ointment; and topical ciprofloxacin 0.3% and indo collyre.

On the first postoperative day (D1), the eye was calm, the graft in place and the anterior chamber shallow.

At 15-day follow-up, the graft was in place, but with a vascular callus, the anterior chamber was deep and the pupil was dislocated.

Our course of action was a partial pirectomy combined with thermo coagulation.

At one-month follow-up, visual acuity was: finger count at 1 metre, eye calm, anterior chamber deep.

At one-year follow-up, visual acuity was: finger count at 0.5 metre, with dystrophy of the inner corneal rim (Image 4B).

Image 4B

Case 5

A 36-year-old farmer presented with left ocular pain following trauma caused by tree leaves while he was cutting them; the pain had been evolving for a week.

Visual acuity was coded as seeing hand movement in the left eye, with normal lateral control.

Biomicroscopic examination revealed diffuse conjunctival hyperhemia and a central corneal ulcer approximately 5 mm in diameter.

Treatment: Ciprofloxacin collyrium 0.3%, Diclofenac collyrium, fusidic acid ointment, ciprofloxacin 500 mg tablet, Metronidazole 500 mg tablet with improvement. Fifteen days later, the patient presented with lacrimation, blepharospasm, examination revealed a perforating ulcer 4 mm in diameter and athalamia.

In this case, we proceeded with a conjunctival covering maintained by an X-stitch.

At day 15 post-op, the patient's visual acuity was clear, the graft was in place and the anterior chamber was deep. The patient no longer complied with follow-up.

DISCUSSION

At present, the literature seems to be relatively patchy on the technique of conjunctival covering; it is an ancient method that used to be widely used, but it seems to have been forgotten in favor of recent techniques such as transfixing keratoplasty, amniotic membrane grafts, the use of biological glue or dressing lenses [14]. However, these benefits are numerous: the influx of neutrophils associated with collagenase release is an important factor in the pathogenesis of trophic ulcers, and vascular structures such as the conjunctiva release anti-collagenolytic substances, enabling a stable, high-quality ocular surface to be restored [15].

Conjunctival covering is mainly used in patients with a poor visual prognosis, as an alternative to mutilating surgery such as evisceration or enucleation [16]; however, the operative indications vary from one series to another [14].

The indication for conjunctival covering in our subjects was corneal perforation; in the series by Boidin H *et al.*, [14], it differed from one patient to another and chronic corneal ulcers were in the majority, but 6 out of 31 patients had corneal perforation; similarly, in the series by Lim *et al.*, [17], more than half the patients were operated on for bullous dystrophy.

In our observation, the etiologies of corneal perforation were traumatic in three patients, Mooren's ulcer in one and undetermined in another, whereas in the series by Vasseneix C *et al.*, [18] they were dominated by trophic ulcers, inflammatory ulcers and dry syndrome, with no notion of trauma. In the 31-patient series by Boidin H *et al.*, trauma occurred in 3 cases, and the main etiologies were chronic corneal ulcers (14 cases) and bullous keratopathy (9 cases).

All patients benefited from successful partial recovery, and in the Vasseneix C series, 4 out of 6 patients with perforation received successful partial recovery. According to Boidin H *et al.*, recovery was partial in 7 of 31 cases and complete in 24.

Visual acuity in two of our post-operative patients had improved from 2/10 to 7/10 at 30 days post-operative follow-up, for an initial visual acuity of voie bouger les mains (VBM) to compte les doigts (CLD) at 3 meters; it remained unchanged in one patient despite one year of post-operative follow-up. Two patients lost their sight after 7 days and 15 days of post-operative follow-up. Conjunctival coverage was definitive in all our patients.

There were no major complications in any of our patients.

CONCLUSION

Despite the advancement and promotion of new techniques such as keratoplasty, the use of biological adhesives, dressing lenses and amniotic membrane grafting, which also have their limitations, it must be acknowledged that conjunctival covering still has its place in the management of corneal perforations, especially when the technical platform is weak.

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