

CASE REPORT

Total Corneal Transplantation after Trauma

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Summary

The first successful corneal transplantation is known since 1905, performed by Eduard Zirm (2). It has been implemented in order to restore vision in a variety of corneal diseases and after ocular traumas. The traditional technique for corneal transplantation, penetrating keratoplasty (PKP), refers to the full-thickness replacement of corneal tissue with a healthy donor graft (1). Authors report a well-documented case about successfully transplanted cornea after penetrating ocular trauma to improve visual outcome.

Key words: corneal transplantation, penetrating keratoplasty, trauma

AIM OF THE DEMONSTRATION

The aim of this article is to demonstrate a case with successfully transplanted cornea after penetrating ocular trauma, in order to increase the awareness of up-to-date ophthalmological transplantation possibilities.

CASE REPORT

An 82-year-old men presented to a tertiary care facility with complaints of subacute decreased and blurred vision as well as expressed tearing in the right eye. Those symptoms were rapidly progressed over the last week.

A patient had a penetrating ocular work trauma 17 years ago. A jar of glass exploded and foreign substance was trapped in the right eye. Pars plana anterior vitrectomy, evacuation of intraocular foreign body and cataract surgery in oculus dextra (OD) was performed. After that vision has been maintained, however in the last five years blur has gradually increased. From medical history patient had underwent thyroidectomy and surgery of prostate adenoma, 9 years ago polycythemia vera was diagnosed.

On admission evaluating patient's vision with the right eye he could saw only hand movements, intraocular pressure was within the range of referent interval – 15 mm/Hg. Vision acuity oculus sinistra (OS) was 0,7, which is classified as mild vision loss. Intraocular pressure OS was normal - 13 mm/Hg. Objective findings in slit lamp biomicroscopy revealed oculus dextra (OD) keratopathy, cicatrix corneae. On both eyes (OU) arterphakia, dystrophia retinae and destructio corporis vitrei were observed. Taking into account that patient started to complain about blurred vision 5 years ago, were compared anterior segment optical coherence tomography (AN-OCT) pictures. OD ocular edema has increased and endothelium has become rugged (Fig.1). In this situation total corneal transplantation was indicated - to improve visual outcome in case of full thickness corneal scar. As a graft healthy tissue were used from a cadaveric organ donor. Applied surgical technique involved transplantation of all corneal layers, also known as penetrating keratoplasty (PKP). For

therapy patient received Sol. Maxitroli and Ung. Dexa-Chlora. No signs of graft rejection or other complications were observed and patient was discharged home the next day after surgery.

In follow-up examination after two months the operated eye was calm, transplantant was translucent, with sharp edges. Sutures were holding tight, wound was healing primarily (Fig.2-3). Intraocular pressure OD was 7 mm/Hg, OS – 9 mm/Hg. Visual improvement in OD was increased to 0,15, estimating that surgery was successful in order to improve visual potential.

DISCUSSION

Corneal transplantation is one of the most common type of transplantation (4). The high rates of successful outcomes are result of advances in technology and surgical techniques, however challenges still have maintained. Main difficulties are associated with intraoperative and postoperative complications (8). Careful surgery planning and science-based management are key factors to prevent complications and graft rejection (5). Even nowadays, the most common cause of graft failure remains graft rejection (7). Tan et al. reported an overall incidence of endothelial graft rejection of 20 % (6). Although technologies in ophthalmology are evolving rapidly, graft survival rates could be higher.

Latest studies have demonstrated that graft survival depends with indications for PKP therefore strict indications are determined (1,7). Additionally, preoperative and postoperative risk factors should be identified and then considered the best approach for a patient (3,8).

In our case patient had penetrating ocular trauma, which influenced structural anatomy of the eye, leaving scar tissue. Taking into account patient's ocular medical history with trauma, risks were increased, nevertheless to protect vision indications were remaining – subacute vision loss due to full-thickness corneal scar. Considering mentioned risk factors above, it was difficult to estimate the prognosis and the visual recovery was less predictable.

Overall, corneal transplantation is a widely used procedure to increase visual acuity in cases of corneal diseases or scars in regions where donor corneas are available. Despite the experience and rising modifications in technique, complications can still occur and before every surgery a doctor has to evaluate pros and cons.

Conflict of interest: None

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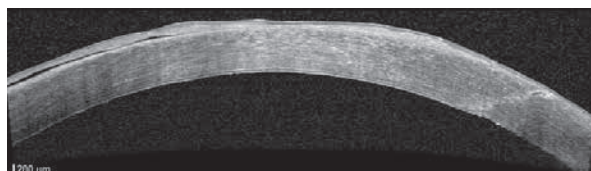


Fig. 1. An AN-OCT image before corneal transplant surgery demonstrating corneal edema and rugged endothelium



Fig. 2. An AN-OCT image after surgery representing successfully adhered clear corneal graft

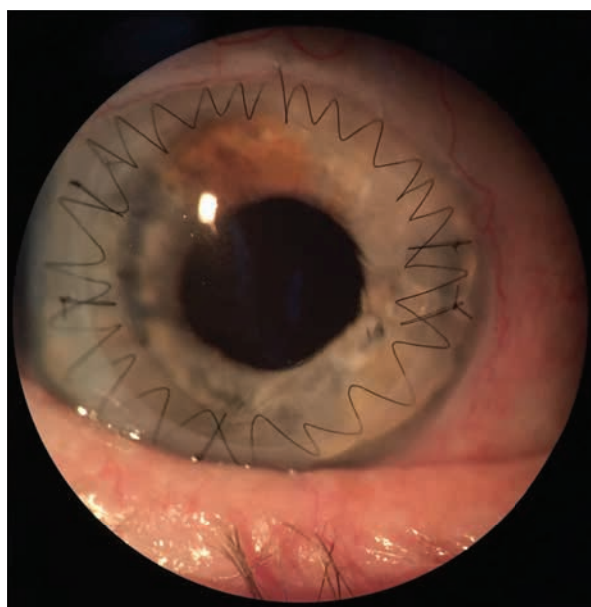


Fig. 3. A photography after total corneal transplantation with retained sutures