

Summary

Implantation of artificial corneas AlphaCor and KeraKlear in patients with severe corneal disorder: long-term outcomes.

Purpose: To assess the long-term results of AlphaCor and KeraKlear implantation, to evaluate the main complications and risk factors.

Methods: An artificial cornea AlphaCor was implanted in 15 eyes of 15 patients. KeraKlear has been used in 4 eyes of 4 patients. All patients before the surgery were examined in detail. The evaluation of best corrected visual acuity (BCVA) and slit-lamp examination of anterior segment of the eye were performed. The status of posterior segment of the eye was assessed with B-scan ocular ultrasound examination. Corneal pachymetry was performed in patients before the KeraKlear implantation. Digital photographs of anterior segment of the eye in all cases were obtained. Intraocular pressure (IOP) was satisfactory controlled before AlphaCor and KeraKlear surgery in all eyes.

Postoperatively evaluation of BCVA and IOP, slit-lamp examination with digital photography of anterior segment of the eye and B-scan ocular ultrasound examination were regularly performed.

Results: Best corrected visual acuity after AlphaCor surgery ranged from hand movement to 0.8. The survival rate of the AlphaCor at 1, 2, 3 and 4 years was 80%, 53%, 40% and 27%, respectively. The most common complications of the AlphaCor surgery were stromal melting, optic deposition and retroprosthetic membrane formation. The relatively common device-unrelated complication was trauma in a different postoperative period.

Mean BCVA after KeraKlear surgery was improved from 0.017 to 0.054. The survival rate of the KeraKlear ranged from 11 days to 26 months. Complications of the KeraKlear surgery were extrusion of the device in 2 patients (in one case there was also an eye globe rupture probably after trauma) and elevation of IOP in the operated eye in 1 patient. In case with the eye globe rupture the eye evisceration surgery was performed.

Conclusion: AlphaCor and KeraKlear provide a treatment option for patients with corneal blindness in which a donor tissue graft would not succeed. This surgery is challenging and should be performed by an experienced corneal surgeon. Ongoing vigilance in follow-up is also important.