Histopathological Findings of Failed Grafts Following Descemet’s Stripping Automated Endothelial Keratoplasty (DSEA K) at KKESH

Alkatan H., Al-Shehri A., Al-Rajhi A., Khairi A.
King Khaled Eye Specialist Hospital, Riyadh, Kingdom of Saudi Arabia

Abstract

Purpose: To study the histopathological findings of failed DSAEK grafts and to analyze the causes of these failures.

Design: Retrospective series with clinicopathological correlation.

Methods: Twenty-one patients with no history of trauma and with no cases of rejection were reviewed. The cases were derived from the cases of the KKESH corneal service with no host cornea. Twelve of the 21 cases were studied histopathologically and submitted for correlation of these findings with clinical and operative findings. The results were then analyzed for correlation with clinical findings.

Results: Significant attenuation of the endothelial cells found in 11/13 cases (85%). Other associated findings included: 1/13 cases had Endothelial attenuation of the Descemet’s membrane (case 10) and the other has shown formation of paracentral guttat. Other cases also showed paracentral guttat of the donor endothelium with secondary endothelial detachment. This complication was observed in 8/9 cases (89%). Another finding is that the DSEA K flap thickness may affect the stable attachment of the graft-host cornea in 2, epithelial ingrowth and fibrous proliferation in 6 cases, graft detachment in 4 cases, retained recipient Descemet’s membrane in 7/13 cases (54%), variability of graft thickness in 13/21 (62%) and 2 of these had clinical DSAEK or PKP in 1 case. The other case had a failed DSEA K graft with a reported rate of 6% for experienced surgeons. In 11 cases, several potential advantages over full-thickness penetrating keratoplasty (PKP) included more rapid visual rehabilitation, more predictable functional survival. In 4 cases, the authors have concluded that the presence of interface material such as Descemet’s membrane, fibrous proliferation or epithelium ingrowth along the host-graft interface may predispose to DSAEK failures related to graft detachment.

Conclusions: The high prevalence of endothelial cell detachment in the DSAEK grafts has been found in our study. The thickness of the flap in also of major concern in regard to the functional outcome of the case. The authors have concluded that the presence of interface material such as Descemet’s membrane, fibrous proliferation or epithelium ingrowth along the host-graft interface may predispose to DSAEK failures related to graft detachment.

Twelve patients were included. One patient had a repeated DSAEK on the same eye because of the failed initial procedure. The patient age ranged from 20 years to 72 years with the median of 65 years. Seven females and 5 males were included. Other associated complications were present in 5 patients (42%) and included corneal edema with cataract in one, fungal keratitis in one, surgical complications in one (21%). The indications for surgery included pseudophakic bulbar keratopathy (PKB) in 9 cases, PKP in 3 cases, contact lens related to corneal ulcer in one (8%) and DSAEK in one case. Persistent detachment of the graft was the commonest clinically identified cause for failure in 6/13 despite Descemet-stripping surface keratoplasty in 12/13 cases. Other causes included primary failure in 4/13, suspected herpetic keratouveitis in 2/13, vitreous endothelial cell loss in 2/13, and graft rejection because of poor compliance with the use of postoperative medications in 1 patient. Infection was considered in 3/13 cases with potential exposure to infection. The authors have concluded that the commonest causes for failure in the DSAEK flaps are in Table 1.

Conclusions

In conclusion DSAEK is an advantageous procedure for the management of endothelial dysfunction. Improved surgical techniques are needed to reduce the risk of graft detachment and endothelial cell loss. In regard to the detachment, the irregularity of the DSAEK flap thickness may affect the stability of the graft. Epithelial and endothelial ingrowth were seen to interfere with the appearance of the flap. Retained recipient Descemet’s membrane is a potential problem and can result in further complications if not removed. To reduce the risk of infection, the authors have proposed to reduce the risk of infection in the DSAEK grafts.

Table 2. Clinical and operative data of 12 failed DSAEK grafts with obstructed histopathological findings

Table 3. Comparison of histopathological findings with clinical, laboratory and operative findings

Table 4. Causes of failed DSEA K grafts

Reference