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Survey of corneal surgeons following a DMEK training course

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Introduction

Descemet membrane endothelial keratoplasty (DMEK) is rapidly becoming the preferred surgical treatment for many cases of Fuchs corneal dystrophy and pseudophakic bullous keratopathy. While the popularity of DMEK has been increasing, it still lags behind Descemet stripping automated keratoplasty as the most commonly performed surgery for posterior corneal disease. Many surgeons cite difficulty with learning the new technique as the reason for not performing DMEK. The purpose of this study is to assess the results of a skills transfer course utilizing a standardized DMEK technique and practice in a wet lab.

Methods

We released surveys consisting of 15 questions related to surgical technique and immediate patient outcomes designed to determine surgeon success following a DMEK training course offered at a single center (Devers Eye Institute, Portland, OR). The survey was given to surgeons having taken the course a minimum of 1 month prior. Results were gathered so that we were masked to the identity of all respondents and surgical centers. The survey was given to a total of 43 surgeons who took the DMEK training course between May 2013 and August 2015. These survey responses were collected and coded for analysis. Responses regarding surgery successes or complications were analyzed only for respondents who reported performing DMEK surgery.

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Figure 1. Number of DMEK cases performed

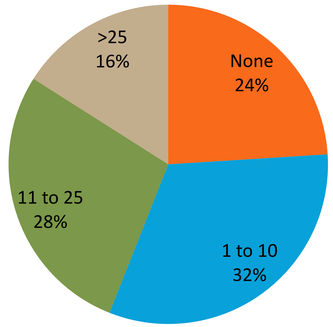

Figure 1. Number of cases performed by responding surgeons following a DMEK training course. Nearly half of respondents (44%) had performed greater than 10 cases at the time of the survey.

Results

Of the 43 surgeons who participated in DMEK training at Devers, 25 responded to the survey request. Following the surgical training, 76% (20/25) of respondents reported performing DMEK surgery, with a total of 367 cases among the group. The standardized technique taught at Devers was used by 84% of the respondents. Among all cases performed by the responding surgeons, the rebubble rate was 15%, the graft failure rate was 5%, the total rejection rate was 0.5%, and the rate of pupillary block was 1.4%. With regard to surgeon attitudes about DMEK, 54% believed that DMEK is more difficult than DSAEK (all had learned DSAEK prior to DMEK), 68% thought that DMEK yielded better outcomes for their patients, and 26% had performed DMEK in complex cases.

Table 1. Surgical outcomes

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Number of cases performed	15 (0-110)
Rebubble	15% (0-100%)
What size of bubble?	81% (60-95%)
Graft failure	5%
Rejection	0.5%
Pupil block	1.4%

Table 1. Among the 19 surgeons who started performing DMEK after their surgical training course, a total of 367 cases were performed. The complication rates and surgical parameters are listed in the table above.

Table 2. Surgeon practices and perspective

Table 2. Surgeon Training	
Standardized technique	84%
Learn DSAEK before DMEK	100%
Wet lab	89%
DMEK is more difficult than DSAEK	53%
DMEK outcomes better than DSAEK	68%

Table 2. After completion of the training course, the vast majority of surgeons employed the Devers standardized DMEK technique. All surgeons had experience with DSAEK prior to learning DMEK, but only half thought DMEK was more difficult than DSAEK.

Conclusion

Following a short, individual DMEK instructional courses at a single institution, the majority of surgeons began performing DMEK with success. As a cohort, surgeons had complication rates similar to those published by high-volume DMEK centers, and perceived that the DMEK procedure yielded better outcomes for their patients than DSAEK.

Clinical Significance

New DMEK surgeons must traverse a learning curve to reach proficiency and confidence with the procedure. Many cornea surgeons are intimidated by the surgery and have not implemented it in their practices. This study shows that, after a brief individual training course, surgeons are able to successfully perform DMEK surgery with complication rates comparable to those published by large referral centers. The majority of the surgeons who underwent the training course chose to use the standardized technique they were introduced to during training, and the majority found that their DMEK outcomes were superior to their outcomes with DSAEK. Only half of surgeons thought DMEK was more difficult than DSAEK. Our survey results suggest that centers with significant DMEK experience have the potential to help cornea surgeons overcome the barriers to performing DMEK by implementing short individual training programs utilizing standardized techniques and training materials, and the opportunity for wet lab practice.

References

1. Terry MA. Endothelial Keratoplasty: Why aren't we all doing DMEK? Cornea 2012; 31(5): 469-71
2. Terry MA, Straiko MD, Veldman PV, Talajic JC, VanZyl C, Sales CS, Mayko ZM. A standardized DMEK technique: Reducing complications using pre-stripped tissue, novel glass injector, and sulfur hexafluoride (SF6) gas. Cornea 2015;34(8):845-52
3. Hamzaoglu EC, Straiko MD, Mayko Z, Sales C, Terry MA. DSAEK v DMEK: First 100 eyes of each using a standardized technique at one institution. Ophthalmology, 2015. 122(11): p. 2193-9
4. Veldman, PB, Mayko Z, Sales CS, Stoeger C, Straiko MD, Terry MA. The s-stamp in descemet membrane endothelial keratoplasty safely eliminates upside-down graft implantation. Ophthalmology, 2016. 123(1): p. 161-4.
5. Veldman PB, Dye PK, Holiman JD, Mayko ZM, Sales CS, Straiko MD, Stoeger CG, Terry MA. Stamping an S on DMEK donor tissue to prevent upside-down grafts: laboratory validation and detailed preparation technique description. Cornea, 2015. 34(9): p. 1175-8.
6. Van Zyl C, Terry MA. DMEK: The Grand Prix of corneal transplant surgery. Expert Rev. Ophthalmology. 9(2), 89-98 (2014)
7. Monnereau C, Melles GR, et al. Multicenter study of descemet membrane endothelial keratoplasty: First case series of 18 surgeons. JAMA Ophthalmology, 2014; 132(10):1192-8

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