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 results were collected and coded for analysis. Responses regarding surgery successes or complications were analyzed only for respondents who reported performing DMEK surgery.

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. 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.

Table 1. Surgical outcomes

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number of cases performed</th>
<th>Rebubble rate (%)</th>
<th>What size of bubble? (%)</th>
<th>Graft failure (%)</th>
<th>Rejection (%)</th>
<th>Pupillary block (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMEK</td>
<td>15 (0–110)</td>
<td>15% (0–100%)</td>
<td>81% (80–95%)</td>
<td>0.5%</td>
<td>0.5%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

Table 2. Surgeon practices and perspective

<table>
<thead>
<tr>
<th>Standardized technique</th>
<th>Learn DSAEK before DMEK</th>
<th>Wet lab</th>
<th>DMEK more difficult than DSAEK</th>
<th>DMEK outcomes better than DSAEK</th>
</tr>
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<tbody>
<tr>
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Table 2. Surgeon training

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Conclusion

Following a short, individual DMEK instructional course, 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

Contact: P. James Sanchez- pjamessanchez@gmail.com