

# The influence of early Descemet stripping endothelial keratoplasty (DSEK) on visual outcomes in patients with pseudophakic bullous keratopathy

Sarah B. Weissbart, Kristin M. Hammersmith, Brandon D. Ayres,  
Christopher J. Rapuano, Parveen K. Nagra, Irving M. Raber, Amir A. Azari

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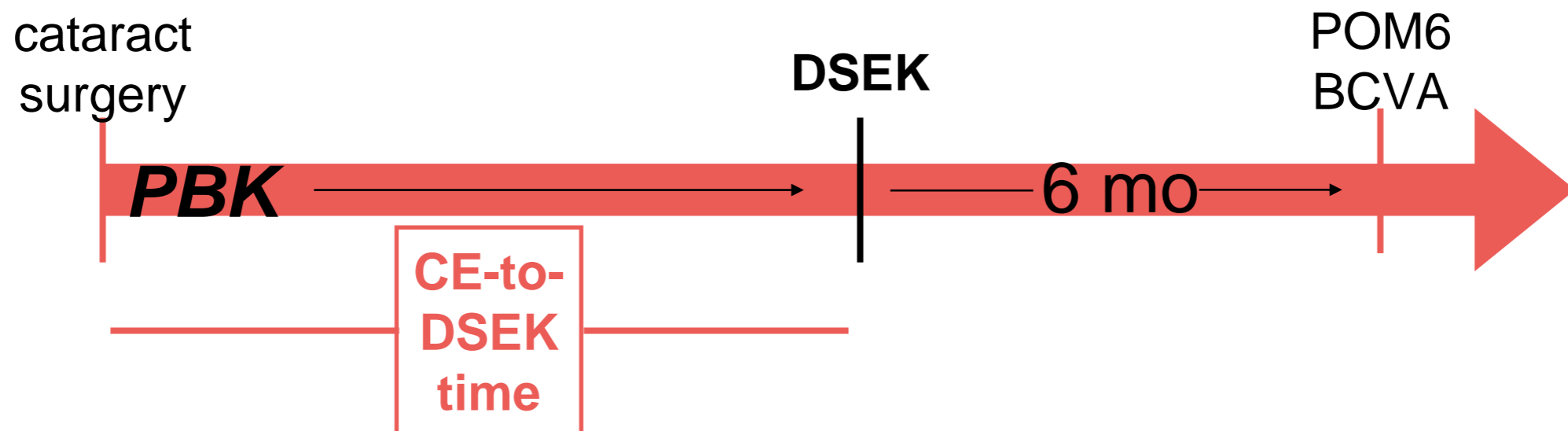
# Purpose

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- Long-standing corneal edema due to endothelial dysfunction can lead to permanent subepithelial & stromal scarring that can limit visual potential following DSEK.
- The ideal time to perform DSEK for patients with pseudophakic bullous keratopathy (PBK) in order to maximize visual outcomes is unclear. This limits our ability to counsel patients regarding the urgency of treatment.
- Aim: To determine if the timing of DSEK in relation to cataract surgery (CE) is associated with post-DSEK visual outcomes in patients with PBK.

# Methods

- Retrospective study
- Primary aim: to assess the relationship between CE-to-DSEK time and post-DSEK BCVA
- Secondary aim: to investigate the influence of other preoperative factors on post-DSEK BCVA
  - age, gender, surgeon, pre-DSEK VA, pre-DSEK pachymetry (CCT)



# Methods

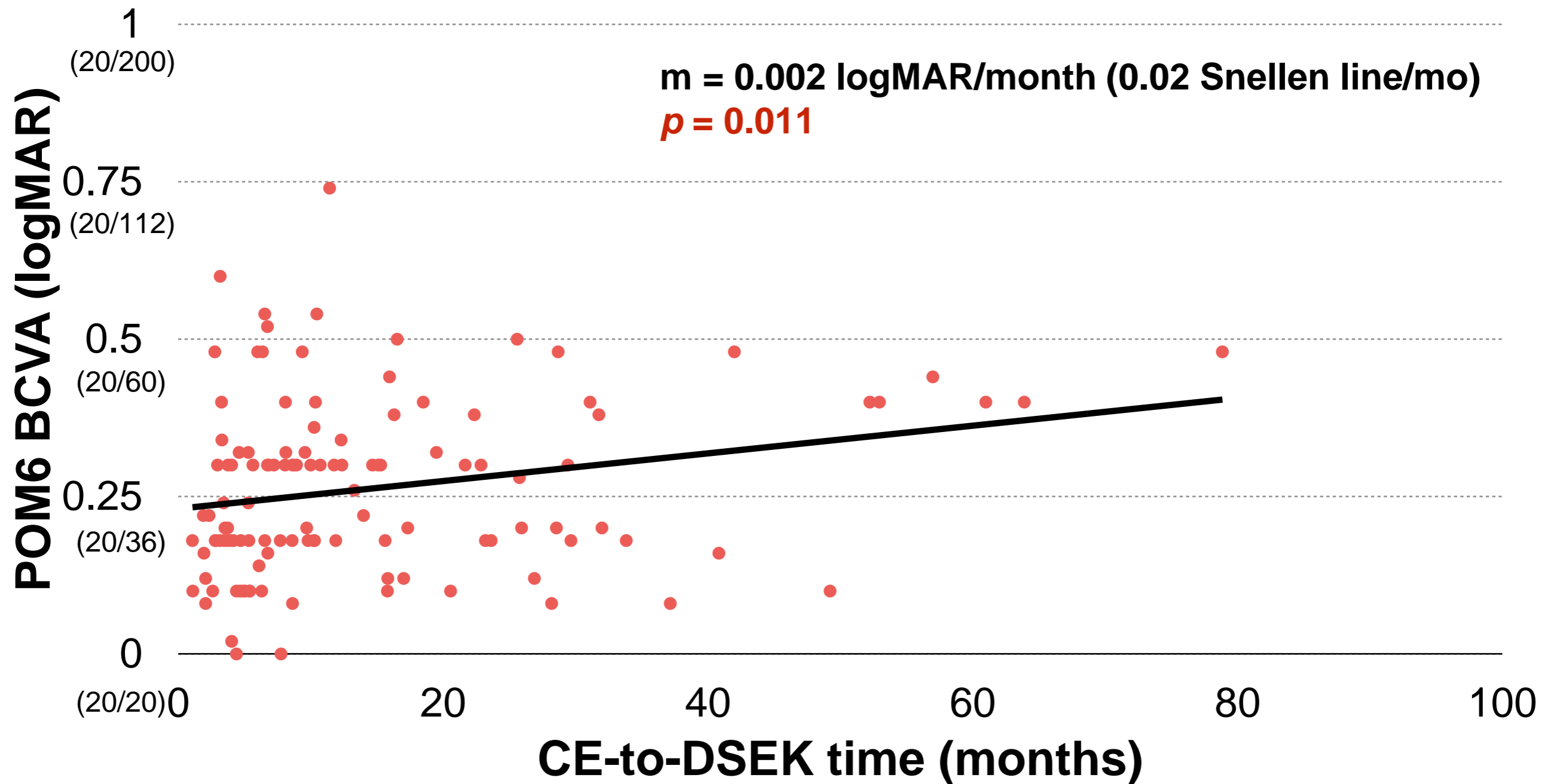
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- Inclusion criteria:
  - DSEK cases performed for patients who experienced corneal decompensation following CE
  - known CE date
  - $\geq 6$  months of follow up post-DSEK
- Exclusion criteria:
  - combined DSEK/CE
  - retinal or other pathology that might limit BCVA
  - advanced glaucoma or history of tube shunt or trabeculectomy

# Results: Overall Demographics

	<b>Mean±SD (n=120 eyes)</b>
<b>Age (years)</b>	64.7±22.3
<b>Gender</b>	
<b>Male</b>	54 (45%)
<b>Female</b>	66 (55%)
<b>Pre-DSEK VA (logMAR, Snellen)</b>	0.76±0.62 (20/115)
<b>Pre-DSEK CCT (um)</b>	691.2±90.7
<b>CE-to-DSEK time (mo)</b>	14.6±14.7
<b>POM6 VA (logMAR, Snellen)</b>	0.26±0.14 (20/36)

# Results



# Results

	CE-to-DSEK time ≤6 mo (n=40)	CE-to-DSEK time > 6 mo (n=80)	<i>p</i>
<b>Age (years)</b>	68.1±15.4	62.9±24.9	0.2374
<b>Gender (n, %)</b>			0.697
Male	17 (42.5%)	37 (46.25%)	
Female	23 (57.5%)	43 (53.75%)	
<b>Surgeon (n, %)</b>	0/4/20/11/3/2 (0/10/50/28/7.5/5)	1/14/34/14/14/3 (1.2/18/43/18/18/3.8)	0.404
<b>Pre-DSEK VA (logMAR, Snellen)</b>	0.979 (20/191)	0.652 (20/90)	<b>0.0004</b>
<b>Pre-DSEK CCT (<i>um</i>)</b>	706.3±114.3	685.5±80.1	0.3213
<b>CE-to-DSEK time (mo)</b>	3.7±1.3	20.1±15.4	<b>0.0000</b>
<b>POM6 VA (logMAR, Snellen)</b>	0.21±0.13 (20/32)	0.289±0.14 (20/39)	<b>0.0035</b>

# Multivariate Regression: POM6 VA (logMAR)

	Coefficient (m)	<i>p</i>	95% Confidence Interval	
<b>Older age</b>	-0.002	<b>0.025</b>	-0.003	-0.0002
<b>Male gender</b>	0.025	0.339	-0.027	0.078
<b>Surgeon</b>	-0.034	0.941	-0.240	0.258
<b>Pre-DSEK VA (logMAR)</b>	0.004	0.896	-0.054	0.062
<b>Pre-DSEK CCT (<i>um</i>)</b>	-0.00002	0.920	-0.0003	0.0003
<b>Increased CE-to-DSEK time (mo)</b>	0.003	<b>0.001</b>	0.001	0.004

For every 1 month increase in CE-to-DSEK time, POM6 VA increased by 0.003 logMAR (0.03 Snellen line)



# Results

	POM6VA 20/40 or better	POM6VA worse than 20/40	<i>p</i>
<b>Age (years)</b>	68.50±35.29 (n=84)	55.78±11.78 (n=36)	<b>0.004</b>
<b>Gender</b>			<b>0.037</b>
<i>Male</i>	43 (51.2%)	11 (30.6%)	
<i>Female</i>	41 (48.8%)	25 (69.4%)	
<b>Surgeon (n, %)</b>	1/14/38/18/10/3 (1/17/45/21/12/3.5)	0/4/16/7/7/2 (0/11/44/19/19/5.6)	0.814
<b>Pre-DSEK VA (logMAR, Snellen)</b>	0.72±0.60 (20/105) (n=84)	0.86±0.65 (20/145) (n=36)	0.276
<b>Pre-DSEK CCT (um)</b>	688±94.41 (n=84)	697±82.04 (n=36)	0.668
<b>CE-to-DSEK time (mo)</b>	11.71±10.32 (n=84)	21.45±20.45 (n=36)	<b>0.001</b>

# Predictors (univariate) of POM6 VA 20/40 or better

	Odds Ratio	<i>p</i>	95% Confidence Interval	
Pre-DSEK VA	0.71	0.275	0.385	1.212
Pre-DSEK CCT	1.00	0.664	0.994	1.004
CE-to-DSEK time	<b>0.96</b>	<b>0.003</b>	0.930	0.984
CE-to-DSEK time ≤6 mo	<b>2.68</b>	<b>0.039</b>	1.053	6.824

For every 1 month increase in CE-to-DSEK time, patients were 4% less likely to achieve a POM6VA of 20/40 or better.

Patients were 2.68x more likely to experience POM6VA 20/40 or better if they underwent DSEK within 6 months of CE.

# Predictors (multivariate) of POM6 VA 20/40 or better

	Odds Ratio	<i>p</i>	95% Confidence Interval	
<b>Older age</b>	1.01	0.472	0.984	1.036
<b>Male gender</b>	0.47	0.203	0.143	1.513
<b>Surgeon</b>	5.78	0.118	0.642	52.018
<b>Pre-DSEK VA (logMAR)</b>	0.71	0.565	0.219	2.288
<b>Pre-DSEK CCT (<math>\mu\text{m}</math>)</b>	1.00	0.607	0.992	1.005
<b>CE-to-DSEK time (mo)</b>	<b>0.93</b>	<b>0.001</b>	0.896	0.971

For every 1 month increase in CE-to-DSEK time, patients were 7% less likely to achieve a POM6VA of 20/40 or better.

# Conclusions

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- A statistically significant relationship was found between CE-to-DSEK time and post-DSEK visual acuity.
  - Post-DSEK VA was not associated with pre-DSEK VA or pachymetry.
- Performing earlier DSEK for pseudophakic corneal edema may be associated with improved visual outcomes.
- Limitations: retrospective, no control group
- Further prospective study is necessary to determine the role of DSEK timing in the surgical planning and preoperative counseling of patients with pseudophakic corneal edema.