



**‘POSTURE-LESS’ DMEK: IS POSTURING AFTER DESCEMET
MEMBRANE ENDOTHELIAL KERATOPLASTY ACTUALLY
NECESSARY?**

Maria Phylactou, Harry Roberts, Mark Wilkins

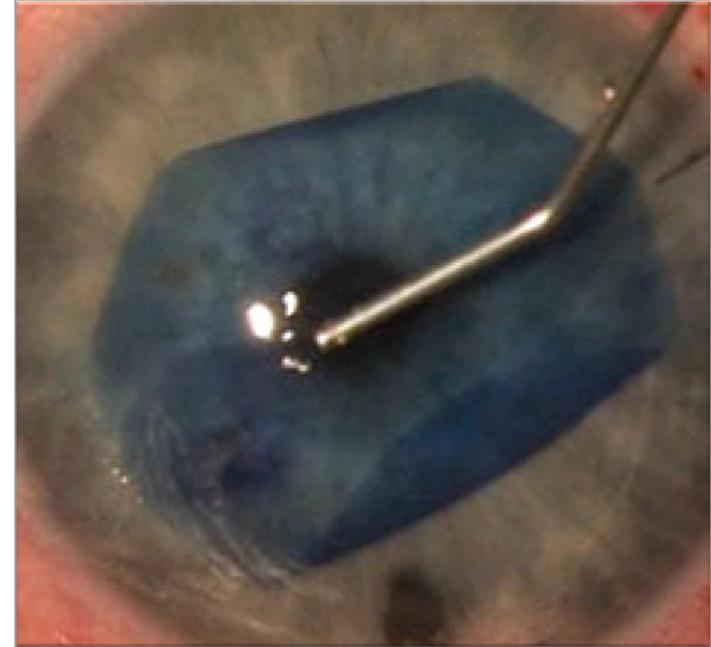
Department of Cornea & External Diseases

Moorfields Eye Hospital, London, UK

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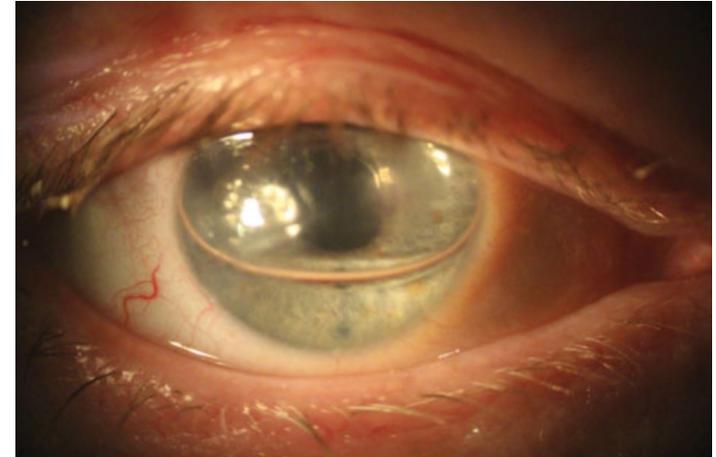
INTRODUCTION

- **DMEK** has become a standard treatment option, with excellent visual outcomes, for patients requiring a corneal endothelial graft.¹
- During the immediate postoperative phase, the presence of a gas bubble and its surface tension prevent significant graft detachment.
- The reported rebubbling rates vary between 0.2% to 76%, with a mean rate of 28.8%.²
- There is no consensus on the optimum intraoperative or postoperative posturing regimes.



INTRODUCTION

- Studies showed no difference in graft detachment rates between various intraoperative tamponade times.³
- Up-to-date there are no reports of DMEK performed without intraoperative tamponade time or postoperative supine posturing.
- This study aimed to present the results of DMEK surgery in which there was no intraoperative or postoperative posturing required.





METHOD

- Retrospective, noncomparative, interventional case series of 134 consecutive eyes of 101 patients requiring DMEK for any cause of endothelial failure.
- DMEK was performed with an intraoperative inferior peripheral iridotomy (PI). After unscrolling and centration of the graft the anterior chamber (AC) was near-total filled with 20% SF6.
- **There was no intraoperative tamponade time, and postoperatively patients did not posture.**
- Main outcomes were graft detachment, rebubbling, primary and secondary graft failure, rejection, intraoperative and postoperative complications.



RESULTS (1)

Graft Detachment Rate

- 5/134 (3.7%) greater than 1/3 of the graft area
- 19/134 (14.2%) less than 1/3 of the graft area

Rebubbling Rate

- 19/134 (14.2%); average number of rebubbling procedures performed was 1.13

Primary Failure: 6/134 (4.5%)

Secondary Failure (first 12 months): 6/134 (4.5%)

12-month graft survival: 122/134 (91.0%)

Rejection

- 9/134 (6.7%); average time was 9.5 months (range 1-20 months) after surgery



TABLE 1. Clinical Details of Posture-Less Descemet Membrane Endothelial Keratoplasty Patients Requiring Rebubbling Procedures

Indication for surgery	
Demographic	
PBK	n = 5/22 (22.7%)
FED	n = 11/89 (12.4%)
Failed PK	n = 1/4 (25%)
Failed DMEK	n = 2/9 (22%)
Age at time of surgery, years	70±14 (range, 32-88)
Gender	
Male	9/19
Female	10/19
Laterality	
Right	13/19
Left	6/19
Associated additional surgical procedures	
Cataract surgery	n = 6 (32%)
Revision of glaucoma tube	n = 1 (5%)
Rotation of ICL	n = 1 (5%)
Grade of surgeon	
Consultant	n = 10 (53%)
Fellow	n = 9 (47%)
Anatomical comorbidities	
None	n = 13
Corneal scarring	n = 1
Glaucoma drainage device	n = 2
Angle closure	n = 1
Keratoconus	n = 1
Anterior uveitis	n = 1

Abbreviations: CSR = central serous retinopathy; DMEK = Descemet membrane endothelial keratoplasty; FED = Fuchs endothelial dystrophy; ICL = implantable collamer lens; PBK = pseudophakic bullous keratopathy; PK = penetrating keratoplasty

TABLE 2. Clinical Details of Posture-Less Descemet Membrane Endothelial Keratoplasty Cases in Which Primary Failure Occurred

Case	Indication for Surgery	Age	Additional Procedures	Grade of Surgeon	Comorbidities	Graft Detachment/Rebubbled	Details of Failure
1	PBK	88	No	Fellow	No	Yes	Traumatic insertion. Successful repeat DMEK
2	FED	69	Triple DMEK	Fellow	No	No	Primary failure. Successful repeat DMEK
3	PBK	61	No	Fellow	AAU	Yes	Primary failure. Successful repeat DMEK
4	Failed PK	32	Insertion of secondary IOL	Consultant	Keratoconus	Yes	Persistent detachment. Successful repeat DMEK
5	PBK	75	No	Fellow	Glaucoma tube	Yes	Persistent detachment. Repeat DMEK not offered due to poor compliance
6	PBK	84	No	Consultant	Glaucoma tube, PXF	yes	Persistent detachment. Regraft declined

Abbreviations: AAU = acute anterior uveitis; DMEK = Descemet membrane endothelial keratoplasty; FED = Fuchs endothelial dystrophy; PBK = pseudophakic bullous keratopathy; PXF = pseudoexfoliation

TABLE 3. Clinical Details of Postoperative Complications Occurring in Posture-Less Descemet Membrane Endothelial Keratoplasty

Nature of Complication	N =	%
Pupil block	2	1.5
Raised IOP/Steroid response	5	3.7
Urrets-Zavalía Syndrome	1	0.7
Cystoid macular edema	7	5.2
Progression of glaucomatous visual field loss	1	0.7
Microbial keratitis	1	0.7
Peripheral anterior synechiae	1	0.7
Anterior uveitis	2	1.5

Abbreviation: IOP = intraocular pressure

RESULTS (2)

DISCUSSION

- Mathematical modeling shows that gas-graft contact in large bubbles is minimally affected by the orientation of the eye in comparison with small bubbles.^{4, 5}
- This is consistent with the current technique of maximizing the SF6 fill phase facilitated by an inferior PI.
- The use of SF6 has been shown to translate into a lower rate of rebubbling compared with air in a meta-analysis from 5 comparative studies of 1195 eyes.⁶
- Hence, the choice of **gas** and the **size** of the bubble after surgery both translate into the gas-graft coverage immediately postoperatively and its half-life.



CONCLUSIONS

- ‘Posture-less’ DMEK rebubbling rate was **14.2%**, which is sufficiently **below** the reported mean rate of rebubbling.
- This rebubbling rate is **lower** than a database audit published from the current institution, with a 21.1% rebubbling for pseudophakic DMEK and 17.1% for triple DMEK.⁷
- The primary failure rate of 4.5% is also **lower** than a multicenter study of 2485 DMEKs, which reported a primary failure rate of 7.0% and lower than the DMEK primary failure rate at the current institution.^{7, 8}
- In summary, this series of 134 ‘posture-less DMEKs’ did not suffer any increased risk of graft detachment, rebubbling or other postoperative complications, which lead to the conclusion that **posture-less DMEK is a safe and reliable technique.**



THANK YOU!

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