



First Report of Toxic Anterior Segment Syndrome (TASS) in Two Patients Receiving DSAEK Grafts from the Same Donor

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CONFLICT OF INTEREST

The authors declare no financial or proprietary interest in any material or method mentioned in this presentation.

PURPOSE

To report a unique case series of toxic anterior segment syndrome (TASS) following a Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) and a triple procedure (DSAEK, phacoemulsification and intraocular lens implantation) in two patients who received grafts from the same donor.

INTRODUCTION

Toxic Anterior Segment Syndrome (TASS) is an acute, sterile inflammatory reaction occurring within 12–48 hours after anterior segment surgery.

Etiology is multifactorial and linked to **non-infectious toxic exposure**, including: instrument residues, endotoxins in intraocular solutions, denatured viscoelastics, contaminated surgical materials.

Most frequently reported after cataract surgery; **post-DSAEK TASS remains rare.**

CASES PRESENTATION

Patient 1

Indication: Previous endothelial graft rejection

Procedure: DSAEK

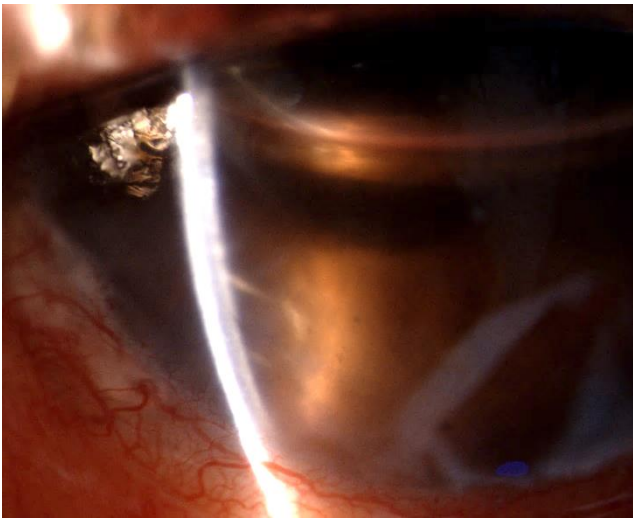


Fig. 1: Patient 1, post-op Day 1. Diffuse corneal edema with fibrinous membranes in the AC.

Patient 2

Indication: Cataract & corneal decompensation after TRAB w/ MMC

Procedure: Triple procedure (DSAEK + PHACO + IOL)

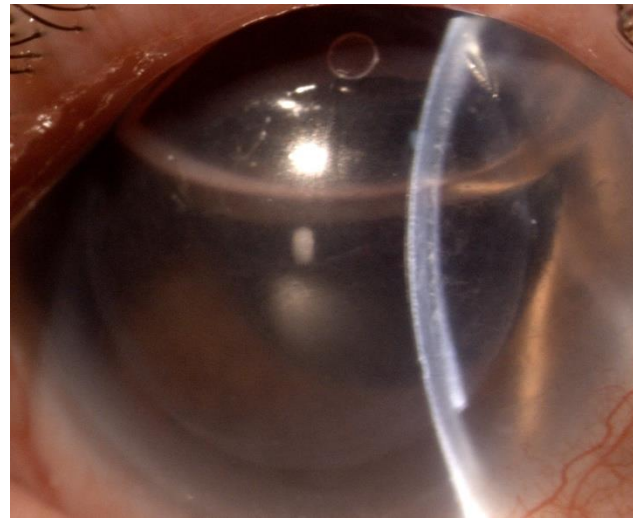


Fig. 2: Patient 2, three hours post-op. Clear cornea & endothelial graft

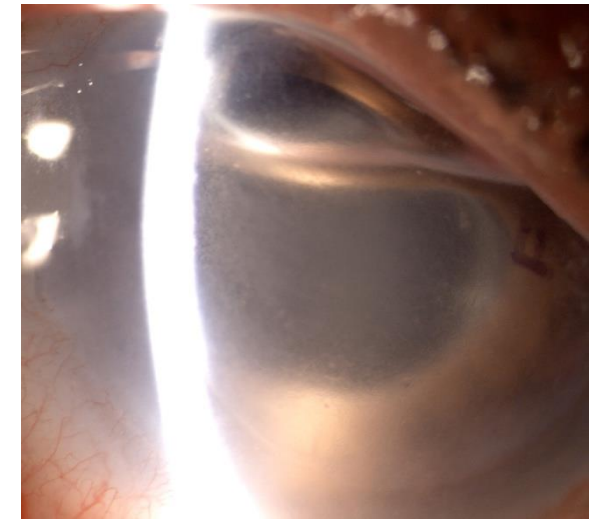


Fig. 3: Patient 2, post-op Day 1. Diffuse corneal edema with marked AC cellular reaction and fibrinous membranes.

Postop Day 1: TASS in both patients - Diffuse limbus-to-limbus corneal edema, fibrin, marked AC cells, no vitritis

Management: Intensive topical cos + cycloplegics → Complete resolution after gradual tapering

DISCUSSION

The patients underwent different surgical procedures, using **separate instrument sets** under **strict pre- & intraoperative precautions**. Both surgeries were uneventful.

The distinguishing common factor was the **shared donor source** of the endothelial grafts.

The simultaneous development of TASS in two recipients of endothelial grafts from the same donor shifts the focus from surgical factors toward **eye bank tissue preparation and preservation processes**.

Potential mechanisms include: **toxic residues from microkeratome** preparation of the lamellar graft, **endotoxin contamination** during donor tissue handling or storage, **imbalance in preservation medium composition** and **inflammatory mediator accumulation** within the donor corneal tissue.

CONCLUSIONS

These findings suggest that post-DSAEK TASS may represent an under-recognized **eye bank–associated inflammatory phenomenon** rather than being solely attributable to perioperative surgical factors.

Vigilance must extend beyond the operating room to **eye bank processing and graft preparation protocols.**

Recognition of procedure- and tissue-related risk factors is critical to protect graft survival and visual outcomes.

REFERENCES

1. Verma L, Malik A, Maharana PK, Dada T, Sharma N. Toxic anterior segment syndrome (TASS): A review and update. *Indian J Ophthalmol*. 2024 Jan 1;72(1):11-18. doi: 10.4103/IJO.IJO_1796_23. Epub 2023 Dec 22. PMID: 38131565; PMCID: PMC10841787.
2. Sorkin N, Varssano D. Toxic Anterior Segment Syndrome following a Triple Descemet's Stripping Automated Endothelial Keratoplasty Procedure. *Case Rep Ophthalmol*. 2012 Sep;3(3):406-9. doi: 10.1159/000345531. Epub 2012 Sep 21. PMID: 23275797; PMCID: PMC3531938.
3. Cutler Peck CM, Brubaker J, Clouser S, Danford C, Edelhauser HE, Mamalis N. Toxic anterior segment syndrome: common causes. *J Cataract Refract Surg*. 2010 Jul;36(7):1073-80. doi: 10.1016/j.jcrs.2010.01.030. PMID: 20610082.
4. Ozcelik ND, Eltutar K, Bilgin B. Toxic anterior segment syndrome after uncomplicated cataract surgery. *Eur J Ophthalmol*. 2010 Jan-Feb;20(1):106-14. doi: 10.1177/112067211002000114. PMID: 19927269.
5. Maier P, Birnbaum F, Böhringer D, Reinhard T. Toxic anterior segment syndrome following penetrating keratoplasty. *Arch Ophthalmol*. 2008 Dec;126(12):1677-81. doi: 10.1001/archopht.126.12.1677. PMID: 19064848.