

1 donor cornea, 2 patients helped

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German researcher Claus Cursiefen, MD, also affiliated with Harvard School of Medicine, reports good results with a new surgical strategy that uses a single donor cornea to help two patients with differing corneal diseases. In the United States keeping pace with demand for donated corneal tissue for use in transplant surgery is a cause for concern, while in Europe and Asia shortages lead to treatment delays. Dr. Cursiefen's new approach restored good vision to patients who had Fuchs' dystrophy (degeneration of certain corneal cells) or keratoconus (thin, cone-shaped cornea) while also addressing the supply problem. The study appears in February's *Ophthalmology*, the journal of the American Academy of Ophthalmology.

Advanced keratoconus (and other diseases of the anterior portion of the cornea) is often treated with a surgery called deep anterior lamellar keratoplasty (DALK). Fuchs' dystrophy and similar diseases can be treated via several surgical techniques, including the recently developed Descemet's membrane endothelial keratoplasty (DMEK). Dr. Cursiefen and his colleagues noted that, once the tissues needed for DALK were removed from a [donor cornea](#), the precise tissues needed for DMEK remained. They reasoned that scheduling two patients for surgery on the same day, with the DALK patient always scheduled first, would make it possible to use one cornea for two patients. Since about 80 percent of the cornea diseases that require transplants can be treated with DALK or DMEK, this approach might potentially nearly double the available corneal tissue supply and make timely treatment available to many more patients.

"In this exploratory study, we were able to use one cornea to successfully treat two patients, for 10 of 12 consecutive donor corneas," Dr. Cursiefen said. "Only twice during surgery did we find that a full [corneal transplant](#), rather than DALK, was needed. Our early follow-up with all patients shows good visual outcomes and few complications," he added.

At their six month follow up, successful DALK patients achieved, on average, 20/35 vision, and DMEK patients achieved 20/31 vision, on average. The two patients scheduled for DALK who instead received full transplants achieved 20/50 vision, on average. All surgeries were performed at the University Eye Hospital, Friedrich-Alexander University Erlangen-Nurnberg, Germany, in 2009.

Drawbacks of this approach are that both DALK and DMEK are demanding surgeries that at present can only be performed at leading-edge ophthalmic hospitals, and, because both techniques are relatively new, longer-term outcomes and effectiveness remain to be determined. Also, preparation and care of the split corneas requires sophisticated planning and preparation, and access to additional corneas is essential in case full transplants became necessary. Further research will determine whether the approach becomes widely accepted.

Provided by American Academy of Ophthalmology

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