

# Study finds new key to corneal transplant success

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Although it is already one of medicine's most successful transplant procedures, doctors continue to seek ways to improve corneal transplants. Now, for the first time, a team of German and British researchers have confirmed that failure and rejection of transplanted corneas are more likely in patients whose eyes exhibit abnormal vessel growth, called corneal neovascularization, prior to surgery. The meta-analysis report appears in July *Ophthalmology*, the journal of the American Academy of Ophthalmology. The findings also suggest a new treatment approach that could improve transplant success rates.

Claus Cursiefen, MD, and colleagues reviewed 19 studies involving nearly 24,500 corneal transplants (called "grafts"). The cornea is the eye's clear outer surface that provides much of the visual power.

"The presence of corneal neovascularization before surgery makes it about 30 percent more likely that the transplant will fail, and more than doubles the risk of graft rejection," said Dr. Cursiefen. "We also found that the risks of failure and rejection rise with the extent of vascularization-the more extensive the corneal neovascularization, the higher the risks."

These findings suggest that patients who have corneal neovascularization might benefit from treatment before [transplant surgery](#) with growth-inhibiting drugs (antiangiogenics) such as [bevacizumab](#) or ranibizumab, or with another type of drug that works at the level of [gene transcription](#) to discourage [vessel growth](#); one such drug, GS101, is now in clinical

trials. This "preconditioning" approach is worthy of thorough testing and assessment, the researchers say.

"In the future, preconditioning a vascularized cornea before transplantation may be a useful strategy to promote survival of the graft," Dr. Cursiefen said.

More than 40,000 transplant surgeries are performed annually in the United States to restore vision in people whose [corneas](#) have been damaged by injury or illness. It is, in fact, the most common form of tissue transplant. In patients whose corneas are nonvascular at the time of surgery, the chance of success is high: up to 81 percent of transplants remain healthy at five-year follow up.

Ophthalmologists (Eye M.D.s) already use a number of pre-surgery measures to encourage corneal transplant success, such as matching donor and recipient tissues as closely as possible and suppressing the immune response in the person receiving the graft. After transplant the doctor monitors the patient closely for signs of failure and treats early and aggressively if warning signs appear.

Dr. Cursiefen's review found that increasing age and male gender appear to be additional, independent risk factors for graft failure, but not for graft rejection; he says further study is needed to confirm these findings. In June 2009 (*Ophthalmology*) the Cornea Donor Study reported lower rates of [corneal transplant](#) success in patients who had corneal edema (swelling) after surgery for cataract removal and intraocular lens implantation, and in glaucoma patients.

Provided by American Academy of Ophthalmology

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