

Periorbital transplantation may be promising alternative to protect vision in facial transplant candidates

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Transplantation of the periorbital tissues—the area surrounding the eyes—is a "technically feasible" alternative to protect a functioning eye in some patients being considered for facial transplant, according to a study in *Plastic and Reconstructive Surgery—Global Open*, the official open-access medical journal of the American Society of Plastic Surgeons (ASPS).

The "periorbital subunit"—including the eyelids, underlying neuromuscular structures, and supplying blood vessels—may be transplanted as an isolated procedure or as part of a full [facial transplant](#), report senior author Eduardo D. Rodriguez, MD, DDS, Chair of the Hansjörg Wyss Department of Plastic Surgery at NYU Langone Medical Center and colleagues. They write, "The goal of periorbital transplantation is to re-establish protective mechanisms of the eye, to prevent deterioration of visual acuity, and to optimize aesthetic outcomes."

Periorbital Transplant—Initial Experience and Outcomes

The researchers present their approach to periorbital transplantation in five [patients](#). All patients were being evaluated for [face transplantation](#) due to extensive destruction of the facial tissues—caused by a gunshot, animal attack, thermal or chemical burns, or cancer.

All patients had at least one functional eye, which was considered at high risk of deterioration due to loss of the eyelids and associated structures that protect the eye. The researchers explored the "indications and anatomic feasibility" of periorbital transplantation—transplanting the periorbital subunit alone or as part of a full face [transplant](#).

After thorough evaluation and surgical planning, Dr. Rodriguez and colleagues proceeded to attempt transplantation of six periorbital subunits in five patients (including both eyes of one patient). Four patients underwent partial facial transplant including the periorbital tissues; the other patient underwent periorbital transplantation as part of a full facial transplant.

Transplants including critical periorbital tissues—such as the eyelids, tear ducts, and associated facial nerve branches—were obtained from deceased donors. In five out of six periorbital subunits, the surgeons were able to achieve a dual vascular supply to maximize the chances of tissue survival.

In four out the five patients, periorbital transplantation was successfully performed, reconstructing the lost tissue while restoring critical functions, such as voluntary and reflexive blinking. In the fifth patient, complications occurred.

While still controversial and performed at a small number of medical centers around the world, face transplantation has become an option for carefully selected patients with full or partial destruction of the facial tissues. Patients with intact eyes are at high risk of progressive deterioration due to loss of blinking and other protective functions.

"Periorbital transplantation (isolated or total face) is technically feasible," Dr. Rodriguez and coauthors conclude. They acknowledge some important limitations of their initial experience—especially the

limited range of cases encountered in their single-hospital series.

The authors propose an approach to classifying the types of tissue loss that may be reconstructed by periorbital transplantation, and highlight key technical considerations involved in these complex procedures. They write, "Those patients with retained orbits, orbital nerve function, and early vision changes should be considered optimal candidates for allotransplantation in an effort to reverse the progression to blindness."

More information: Michael Sosin et al. Optimizing Reconstruction with Periorbital Transplantation, *Plastic and Reconstructive Surgery - Global Open* (2016). [DOI: 10.1097/GOX.0000000000000545](https://doi.org/10.1097/GOX.0000000000000545)

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