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Five-year outcomes for Brigham face transplant recipients

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Brigham surgical teams have performed face transplants for people who have suffered from severe facial injuries. The surgery holds the promise of improving physical and mental health for patients who have been severely disfigured and have no other treatment options. Today, in the *New England Journal of Medicine*, a Brigham team presents the longer-term outcomes for six patients who had been followed for up to 5 years after surgery, representing the largest cohort of patients in the U.S. Overall, patients had a robust return of motor and sensory function of their face, and all but one patient reported improvements in quality of life.

"From the data, you can see the clear benefits that our patients have obtained. It is important to keep in mind that there are no functional prosthetic options for face." said co-senior author Bo Pomahac, MD, the Roberta and Stephen R. Weiner Distinguished Chair in Surgery and director of Plastic Surgery Transplantation at the Brigham, who led teams that performed both partial and full face transplant procedures. "In our previous studies, we reported that patients can speak better, eat better, breathe better. These aspects are important as well. Here, we report that the return of motor function is in line with what you would see if you reconnected a severed nerve, and that sensory function appears to improve to near normal. Face transplants have given these patients enough functionality to be able to socially reintegrate in a way that would not have been possible before."

The team reports that motor function improved significantly both during

and after the first post-transplant year, reaching an average of 60 percent of maximal motor function at five years of follow-up. The team also found improvements in the patients' ability to distinguish between hot and cold stimuli on their skin and respond to pressure testing in the first year after surgery.

The team observed a trend toward improvement in patient-reported quality of life, while no changes were seen in depression scores. Pomahac notes that the immunosuppressant medications which patients must take after face transplantation and related complications can place a burden on patients. Investigators are pursuing new ways to improve the patients' experience and address these challenges.

"The first partial face transplant occurred in 2005, almost 50 years after the first kidney transplant was performed here at the Brigham," said co-senior author Leonardo Riella, MD, Ph.D., the Medical Director of the Vascularized Composite Tissue Transplant Program at the Brigham. "Therefore, it is important to realize how young the field of face transplantation really is. While we had used knowledge gained from other solid organ transplants, the face transplant is a complex structure that includes one of the most immunologically challenging tissues of all: the skin. While we have witnessed great success so far, the challenges to minimize immunosuppression toxicity and reduce rejection rates continue."

Each patient experienced between two and seven acute rejection episodes that required treatments. Immunosuppressive drugs can have metabolic side effects, but the patients did not experience new cases of diabetes mellitus, hypertension or lipid disorders post-transplant, with the exception of one patient who was diagnosed with hypertension 2.5 years after transplantation.

"We are moving beyond the point of asking whether a patient in need

will survive receiving a face transplant—we have seen that we can do this safely. We are now asking can we quantify how much our patients benefit, and what challenges do we need to work on?" said Pomahac. "This is the next phase of evolution for this work—like any new transplantation procedure, we first ask how we can make this safe, and we next ask, how can we make this better."

More information: Sotirios Tasigiorgos et al. Five-Year Follow-up after Face Transplantation, *New England Journal of Medicine* (2019). DOI: 10.1056/NEJMc1810468

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