



Perioperative Nursing Management of Donor and Recipient Patients Undergoing Face Transplantation

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ABSTRACT

Individuals with debilitating facial injuries and deformities have achieved significant improvement of aesthetic form and function after undergoing a face transplantation. The involvement of surgical technologists and perioperative nurses in the care of the recipient and donor plays a critical role in the success of these procedures. There are unique challenges that staff members may be presented with when caring for a donor and recipient undergoing a face transplantation, including less comfort with and knowledge of the surgical procedure and instrumentation, an increased amount of equipment and personnel in the OR, donor and recipient admission and discharge care, and increased shift length. At New York University Langone Medical Center, New York, we have developed a comprehensive process to prepare staff members to care for patients undergoing face transplantation. *AORN J* 106 (July 2017) 8-19. © AORN, Inc, 2017. <http://dx.doi.org/10.1016/j.aorn.2017.05.004>

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In 2005, the first clinical face transplantation occurred in Amiens, France, and since then, approximately 35 face transplantations have been performed worldwide.¹⁻⁴ Face transplantation, a form of vascularized composite allotransplantation (VCA), is the process of identifying a compatible donor and transplanting multiple tissues—including bone, muscle, nerves, and skin—as one subunit to repair the aesthetic form and function of the recipient's face

during a single procedure.^{5,6} Traditional reconstructive surgery for patients with craniofacial and maxillofacial deformities caused by congenital anomalies, trauma, or cancer typically involve multiple staged procedures resulting in less-than-ideal outcomes, which may include inadequate corneal protection; deficient oral competence; and unfavorable aesthetics, including scarring as well as mismatched skin color, texture, and thickness.^{2,7}

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Previous recipients of face transplants have sustained injuries from animal attacks, ballistics, or burns, or have congenital deformities such as neurofibromatosis.⁸ Face transplantation has provided patients with the chance to achieve social reintegration with improved facial aesthetics, motor function, and sensation via a single-stage procedure. Although research has shown this procedure to be technically and ethically feasible, concerns remain related to the potential complications because this is considered a life-improving rather than life-saving transplantation.^{1,9} Complications from face transplantation may include loss of the transplanted graft, infection, acute or chronic rejection, and metabolic disorders.⁹

Similar to solid organ transplant recipients, patients receiving a face transplant are required to undergo immunosuppressive therapy for life, thus placing an otherwise healthy individual at risk for developing complications associated with the corresponding medications. These risks may include infection, malignancy, hyperglycemia, hypertension, and renal insufficiency.¹⁰ Immunosuppression can be divided into induction and maintenance therapies.¹¹ Induction therapy is used to prevent acute rejection in the immediate postoperative period and is usually achieved with a combination of thymoglobulin, tacrolimus, and low-dose prednisone.¹² If appropriate, the transplantation team at New York University Langone Medical Center (NYULMC), New York, adds rituximab to the immunosuppression induction therapy protocol. Rituximab is a monoclonal antibody that has successfully demonstrated prevention of rejection in kidney transplant recipients.¹² The team makes this decision based on the level of recipient and donor compatibility determined through histocompatibility testing.

A postoperative immunosuppressive maintenance regimen may include use of a low-dose steroid such as prednisone, calcineurin inhibitors (eg, tacrolimus), and an inhibitor of T- and B-cell proliferation (eg, mycophenolate).¹³ Although episodes of acute rejection are common, it is crucial for patients to maintain medication compliance for life to prevent chronic rejection and ultimate allograft failure.

To identify an appropriate candidate, the patient selection process must be rigorous and should involve a comprehensive evaluation by members of a multidisciplinary face transplantation team that includes surgeons; nurses; immunologists; infectious disease specialists; ethicists; social workers; psychologists; psychiatrists; and respiratory, speech, physical, and occupational therapists.^{5,14} Donors and recipients must meet certain criteria to be considered for face transplantation. These criteria may vary from institution to institution and from patient to patient. For instance, at

NYULMC, facial VCA donors must be declared to have died from brain death rather than cardiac death to maintain oxygenation and blood flow to the organs and tissues being considered for transplantation.¹⁵ A potential donor also must be compatible with the recipient in terms of gender and approximate age, height, weight, facial measurements, and skin tone.¹⁶ To be a candidate, a recipient must have extensive tissue damage and have exhausted all conventional reconstructive surgical options. Recipient exclusion criteria may include

- significant comorbidities;
- pregnancy;
- risk of malignancy from immunosuppression therapy; or
- high likelihood of noncompliance with postoperative requirements, especially immunosuppressive medications.⁸

Only a small number of face transplantations have been performed to date, so literature addressing the perioperative nursing care of patients undergoing face transplantation is limited. After receiving institutional review board approval in 2014, personnel at NYULMC developed a face transplantation program. Perioperative personnel created a multidisciplinary team and an outline of donor and recipient patient nursing care that encompasses preadmission, admission, intraoperative discharge, and postdischarge care. Using the perioperative personnel's breadth of knowledge about caring for patients undergoing solid organ transplantation and head and neck, microvascular free-flap, and craniofacial surgery, the team formulated a plan that focused on all phases of perioperative care for the donor and recipient patients.

PERIOPERATIVE TEAM PREPARATION

Nursing staff members from both the postanesthesia care unit (PACU) and the OR participated in monthly face transplantation team meetings and contributed to defining patient flow as well as preoperative, intraoperative, and postoperative protocols and clinical pathways for caring for donor and recipient patients. Managers asked nurses and surgical technologists to volunteer to take part in the care of these patients, and they selected team members based on their level of expertise. For example, PACU nursing staff members required flap management, cardiovascular care, and critical-care experience. After the team placed the recipient on the transplant waiting list, the perioperative nursing teams had an opportunity to meet with the patient. This meeting established the nurse-patient relationship, an integral partnership needed to guarantee safe and effective management of the physical and psychosocial challenges that might arise during the patient's postoperative recovery.

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