First near-total face and upper-jaw transplant appears successful

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More than a year and a half following the first near-total face and upper jaw transplant, the donor tissue appears successfully integrated, according to a report in the November/December issue of *Archives of Facial Plastic Surgery*. The recipient has experienced no long-term rejection and has regained some functional abilities, including her senses of smell and taste.

Three previous facial transplants were completed prior to this procedure, performed at Cleveland Clinic in December 2008, according to background information in the article. Unlike these, the current procedure was performed on a patient who had already undergone 23 major reconstructive procedures following a gunshot wound to the face. The extensive damage from postoperative scarring and depletion of blood vessels added a complexity to this surgery.

Therefore, a complete vascular workup of the recipient (a 46-year-old woman) was completed before the procedure, report Daniel S. Alam, M.D, and colleagues at Cleveland Clinic, Ohio. A computed tomographic angiogram of the patient's neck was performed to determine which arteries were intact and which were damaged and could not be used to supply blood to donor tissue. These vascular considerations and other anatomical characteristics of the recipient—for instance, that she had no nasal septum or structure, and no upper jaw—guided the surgeons' plan for removing the donor facial tissue.

Initially, it was unclear whether the entire donor tissue (including the

upper jaw) could be supplied with blood through only facial arteries, as this approach has not previously been described. However, the microscopic intersections of blood vessels in the jaw made it difficult for the surgeons to dissect and connect them. The authors report that due to the bleeding from the donor tissue during surgery, they were confident that the blood supply from the facial arterial system was more than sufficient.

The procedure involved transferring bone and ligaments so that the patient would not experience facial paralysis in the future and would also not require further procedures to elevate facial tissues. As of July 2009, the patient had experienced no surgical complications, has tolerated the immunosuppressive therapy required to keep her body from rejecting the transplant and has obtained significant functional benefits. She can breathe through her nose, eat by mouth and has had significant improvement in her speech. "Sensory and motor recovery is progressing appropriately but will require time to further evaluate final outcomes," the authors write.

An additional procedure to remove extra glandular tissue was planned for late 2009, after the patient regains function of the facial nerve.

The successful procedure raises the possibility that future transplants with such large areas of tissue are possible, the authors note. "On the basis of our findings, we believe this may be feasible with the facial arterial arcade [blood vessel system] alone," they conclude. "While this is a notable distinction, it may not be the clinically most important one. Unlike the other transplants performed to this point, this patient had undergone multiple failed prior reconstructions and had significant recipient vascular depletion. This raises the important potential role of facial transplant as a salvage procedure in cases in which other operations are unavailable and/or suboptimal."

"As with any novel surgical innovation, information gathered in the nascent stages of the procedure will be vital to define the indications and appropriate patient selection," they conclude. "Our findings will hopefully contribute to this active discussion."

More information: Arch Facial Plast Surg. 2009;11[6]:369-377.

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