



Facial reconstruction – The impact of facial allograft transplantation on surgery

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1. Introduction

Ever since the astonishing replantation of a nine-year-old's face by Dr Abraham George Thomas' surgical team at the Christian Medical College and Hospital in Ludhiana, India, the possibility of a full facial transplant has become an aspiration for the advancement of surgery and science. Research into facial transplantation culminated in the French transplant team led by Professor Bernard Devauchelle and Professor Jean-Michel Dubernard successfully carrying out the world's first partial facial allotransplantation in Amiens.¹ Facial allograft transplantation subsequently produced a great impact on surgery with regards to novel surgical techniques, identity, and on biomedical ethics.

2. Impact on surgical techniques and research

The strengths and struggles of facial transplantation have led researchers further afield to animal modelled osteocutaneous face transplantation² and progressions in bioengineering, as it is believed by some that building faces from stem cells is where the future lies.³ Such progression may be decades away, whereas doctors have been technically ready for some time to perform facial transplants but unable to implement the technology and science due to ethical considerations.⁴ The transferability of transplant surgical skills, as epitomised by pioneering Professor Jean-Michel Dubernard's first successful hand and double forearm transplants, represents the broad spectrum of opportunity in the field and the inspirational potential of facial allograft transplantation on surgery.⁵ The alteration in the position of the Royal College of Surgeons of England following the publication of "The Facial Transplantation - Working Party Report, 2003" three years after rejecting the issue symbolises not only the speed at which research is advancing,⁶ but also its effect on the professional opinion of surgeons.⁷ France's Biomedicine Agency clarifies that the procedure must be a last resort after conventional methods have not been successful, and the Royal College of Surgeons of England referral to facial transplantation as a "leap in the dark" clearly echoes Albert Einstein's warning that "as our circle of knowledge expands, so does our circumference of darkness surrounding it". Nevertheless, although some doctors believe more research into the psychological impacts of facial transplantation need to be undertaken,⁸ novel techniques in

medicine are often met with a conservative approach. It is natural to fear change as it may be synonymous with the unknown. One must not however, focus solely on the risks of the unknown, as it may obscure sight of the potential benefits of novel techniques in medicine.

3. Impact on identity

Facial allotransplantation generates specific questions on identity,⁹ such as whether the donor "lives on" and the psychological impact of seeing the organ transplant. The face's role in identity is paramount.¹⁰ However, the results of facial reconstructive surgery and facial skin grafting do not produce a face identical, or often even similar, to the face prior to surgery. The impact of the face "in transition" over several operations from disfigurement to post-surgical reconstruction may be considered more traumatic than a facial transplant, especially as the result of facial transplantation is a face different to both the donor's and the recipient's. As there is a possibility that the patient may not like their new face (whether reconstructed or transplanted), there is also a consideration that they may see it as acceptable in the circumstances.¹¹ The crucial distinction to make therefore with regards to the impact on identity is whether the patient would prefer a reconstructed face over a transitional period of time, or a transplanted face over a limited period of time. Facial allotransplantation may in fact allow a patient to "regain an identity" as they are free from social stigma derived from their disfigurement or unsatisfactory facial reconstruction.¹²

4. Impact on biomedical ethics

Advances in transplantation research are leading biomedical ethics to intricate dilemmas, which may vary with regards to partial face transplant versus full face transplant.¹³ Due to the pace at which the scientific and clinical practice has advanced, society has not been given the time to catch up ethically. The application of the principle of non-maleficence proposed by Beauchamp and Childress¹⁴ for instance is ambiguous when applied to facial allotransplantation, as doctors are required to balance the psychosocial benefits of surgery versus the biophysical harm of long term immunosuppressants.¹⁵ Facial disfigurement is not usually life-threatening, and facial allotransplantation may be most closely compared to hand transplantation due to the effects on quality of life, as opposed to life support, and involvement of several tissue types needing to be attached by intricate surgery.¹⁶ The question of

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quality of life versus quantity of life however is a question of value, not of fact. Facial allotransplantation therefore requires particularly stringent methods of patient selection and informed consent, as seen with the model on informed consent proposed by the UK Face Transplant team at the Royal Free, London,¹⁷ based on the organ transplantation model by Marteau et al.

5. Conclusion

On reflection, the impact of facial transplantation on surgery, although early in its development, has been profound. Facial transplantation has provided an inspirational push for innovations in medicine in areas such as bioengineering and stem cell research, as well as an impact on the improvement of surgical techniques. The progression of science has also opened a new frontier to biomedical ethics and led to intricate questions regarding the face and identity. The landmark surgery could even mark a paradigm shift with regards to the significance of quality of life versus quantity of life.

References

- Dubernard J-M, Lengelé B, Morelon E, Testelin S, Badet L, Moure C, et al. Outcomes 18 months after the first human partial face transplant. *The New England Journal of Medicine* 2007;**357**:2451–60.
- Follmar K, Baccharani A, Das R, Mukundan S, Levin L, Erdmann D, et al. Osteo-cutaneous face transplantations. *Journal of Plastic, Reconstructive and Aesthetic Surgery* 2008 March 7;**61**(5):518–24.
- White C. Building people's faces from stem cells may be possible in two decades. *BMJ* 2008 March 8;**336**(7643):526.
- Hettiaratchy S, Butler P. Face transplantation – fantasy or the future? *Lancet* 2002;**360**:5–6.
- Johnson D, Whitworth I. Recent developments in plastic surgery. *BMJ* 2002;**325**:319–22.
- O'Dowd A. Royal college of surgeons give cautious approval for face transplants. *BMJ* 2006 November 18;**333**(7577):1035.
- Clarke A, Murphy F, White P, Brough V, Renshaw A, Butler P. Transplant professionals' attitudes toward facial transplantation in the United Kingdom. *Progress Transplantation* 2007 September 17;**17**(3):228–33.
- Kmietowicz Z. Face transplants should not be done without more research. *BMJ* 2003;**327**:1184.
- Barker J, Brown C, Cunningham M, Wiggins O, Furr A, Maldonado C, et al. Ethical considerations in human facial tissue allotransplantation. *Annals of Plastic Surgery* 2008 January;**60**(1):103–9.
- Sokol D. Medical frontiers: the ethics of face transplants. *The International Herald Tribune*; 2004 June 16.
- Spurgeon B. Surgeons pleased with patient's progress after face transplant. *BMJ* 2005 December 10;**331**(7529):1359.
- Swindell J. Facial allograft transplantation, personal identity and subjectivity. *Journal of Medical Ethics* 2007 August;**33**(8):449–53.
- Wiggins O, Barker J, Martinez S, Vossen M, Maldonado C, Grossi F, et al. On the ethics of facial transplantation research. *The American Journal of Bioethics* 2004;**4**(3):1–12.
- Beauchamp T, Childress J. *Principles of biomedical ethics*. USA: Oxford University Press; 1994.
- Mandani H, Hettiaratchy S, Clarke A, Butler P. Immunosuppression in an emerging field of plastic reconstructive surgery: composite tissue allotransplantation. *Journal of Plastic, Reconstructive and Aesthetic Surgery* 2007 December 20;**61**(3):245–9.
- Hettiaratchy S, Randolph M, Petit F, Lee W, Butler P. Composite tissue allotransplantation – a new era for plastic surgery? *British Journal of Plastic Surgery* 2004;**57**:381–91.
- Renshaw A, Clarke A, Diver A, Aschroft R, Butler P. Informed consent for facial transplantation. *Transplant International*; 2006 July 18.