Short Communication

Face Transplantation: What You Need to Know?

Sri Harsha Boppana, L. V. Simhachalam Kutikuppala[1], Ponnaganti S. V. Kalyani[2]

Visiting Research Scholar, Division of Regional Anesthesia & Pain Medicine/Division of Perioperative Informatics, Department of Anesthesiology, University of California, San Diego, La Jolla, CA, USA, [1]Department pf Surgery, Konaseema Institute of Medical Sciences and Research Foundation (KIMS&RF), Amalapuram, [2]Department of General Medicine, Rangaraya Medical College, Kakinada, Andhra Pradesh, India

Abstract

Since the 1990s, face transplants have gotten a lot of press and public attention across the world. After a transplant was disclosed in November 2005, the first recipient, Isabelle Dinoire, found herself at the center of a spectacular event of surgical innovation. Up till August 2020, 47 transplants have been performed globally (including two retransplants), all of which have received substantial media attention. Hundreds of publications addressing the procedure's medicinal, physical, psychological, and ethical ramifications have been published in the scholarly literature, far outnumbering the procedure's occurrence. Face transplants have also appeared in films, television shows, and novels, indicating a desire to explore the social and interpersonal consequences of face variance. This is an attempt to present a comprehensive context of face transplantation progress and practice, based mostly on extant documentary sources. It traces the history of face transplants, identifying major milestones and themes along the way and focusing on its development as a therapeutic option for individuals with severe facial abnormalities. There are still important questions to be asked about the patient's perspective, as well as the complex philosophical and sociological meanings of the face, but this article focuses on the institutional and cultural factors that have allowed for such an ethically complex and radical surgery to take place. Opportunity and financial feasibility are among them, as are expertise, ambition, and an awareness of patient needs.

Keywords: Ethics, face transplantation, graft rejection, surgery

Introduction

Face transplants have a long and illustrious history in medicine and surgery.[1] The first face transplant took place in 2005, and there have only been 46 since then till August 2020. Face transplants as a small-scale and a global phenomenon provide a useful entrance point into the history and practice of contemporary medicine, particularly the progress and expectations of surgery in the late 20th and early 21st century.[2] This encompasses geographic, professional, and ethical limits, as well as the meanings of innovation and the interaction between surgeons and patients, as well as the complex economic, political, and ideological frameworks in which surgical teams operate.[3]

Although there is a growing and important body of sociological and philosophical work that sits alongside clinically-informed psychosocial investigation, most approaches to face transplants are concerned with the evolution of skill, recorded clinical outcomes, and future research direction, rather than these broad themes.[3] Since the start of the 20th century, when financing, clinical, and professional practices were compartmentalized by various disciplinary borders, research agendas have been a result of medical specialty. By paying attention to how changing social and cultural environments impact behaviors and perceptions across time, a historiographical, multidisciplinary approach can give vital new insights into these tendencies.[3] A global history not only clarifies the conditions behind the introduction of face transplants into surgical practice, but also serves as a case study for how personal and institutional ambition, social structures, and media involvement impact biological breakthroughs.[4]

This article mostly uses available documentary sources to present an international overview of years' practice of face

Access this article online

Quick Response Code:

Website: www.jcasonline.com

DOI: 10.4103/JCAS.JCAS_45_22

Address for correspondence: Dr. L. V. Simhachalam Kutikuppala, Department of Surgery, Konaseema Institute of Medical Sciences and Research Foundation (KIMS&RF), Amalapuram, Andhra Pradesh 533201, India.
E-mail: simhachalam.kutikuppala@gmail.com

How to cite this article: Boppana SH, Kutikuppala LVS, Kalyani PSV. Face transplantation: What you need to know? J Cutan Aesthet Surg 2023;16:232-6.

transplantation. It traces the history of face transplants, identifying major milestones and themes along the way and focusing on its development as a therapeutic option for individuals with severe facial abnormalities.[5] There are still important questions to be asked about the patient's perspective, as well as the complex philosophical and sociological meanings of the face, but this article focuses on the institutional and cultural factors that have allowed for such an ethically complex and radical surgery to take place. Opportunity and financial feasibility are among them, as are expertise, ambition, and an awareness of patient needs.

What Is a Face Transplant?

A face transplant is a sort of vascularized composite allograft (VCA), which is an experimental transplantation technique used largely in a cosmetic and reconstructive surgery. VCA can be used on the hands, upper limbs, womb, abdominal wall, and penis, in addition to face transplants. Transplants of multicomponent tissues and structures, such as skin, fat, muscle, nerves, bone, teeth, and hair, are used in these procedures. Tissues from a brain-dead donor are used to repair damaged or missing sections of the recipient's body. They can include the face, neck, tongue, and scalp in the event of a face transplant. Although public attention has focused on the cosmetic consequences of face transplants, the major therapeutic goal of the procedure is to restore motor, sensory, and communication skills.

The aim is to enable the recipients to eat, talk, blink, and create facial expressions, as well as to improve the quality of life through psychological well-being and social reintegration. Unlike solid organ transplants, VCA transplants are usually regarded as life-enhancing rather than life-saving (with the exception of the abdominal wall). Their visibility distinguishes them. VCA transplants, with the exception of the womb, which has its own set of moral, ethical, and emotional implications, are usually visible and touchable.[4] They are a part of a person's interface with the social environment as sensory and affective organs.

Face transplants, like other transplants, are fraught with dangers. To prevent the graft from rejecting, recipients must follow a stringent immunosuppressant treatment regimen for the remainder of their lives, similar to that of solid organ transplant patients. The risks of infection, malignancy, and renal failure are all well-documented adverse effects of this medicine. Repeated instances of rejection are likely despite immunosuppression. As a result, despite technological, immunological, and surgical advancements, VCA transplants have long been the topic of ethical discussion. It was only recently proposed that they be recognized as a standard of treatment rather than a last resort surgery.[5]

Methodology

It is difficult to write about face transplants in a clear manner. For example, for political and geopolitical reasons, credible and validated information on surgery rates and results is not always available. For example, transplants have performed in China, Russia, and Turkey, although in mostly unreported situations. Second, the absence of data sharing beyond clinical papers has resulted from the sponsorship of field research by the military and other competitive grant-making authorities. Because of the fierce competition for limited resources and the necessity of being unique, some of the world's best surgeons are reluctant to share knowledge or credit. As a result, as in much scientific study, unfavorable results are reported less frequently than the good ones. Although there have been hints of growing collaboration among face transplant programs in recent years as prospects for competitive funds have decreased, the majority of face transplants are still performed in isolation.

Although the number of known receivers is small enough to allow for a thorough examination of each person's background, circumstances, and results, the quality of the information provided varies greatly throughout the cohort. This article's evidence comes from two main sources: peer-reviewed scientific articles and case studies. Only brief anonymous reports or Internet news pieces are accessible in some cases. Some transplant patients have been prominently featured, notably in the United States. They have produced autobiographies, spoken on talk programs, and been the focus of substantial press coverage, in addition to studies in scholarly journals regarding the technical elements of their operation, outcomes, and prognosis. Details of their lives and experiences before and after surgery have been given, sometimes over a long period of time. However, in a third of cases, recipients were nameless, as in Finland, France, Belgium, and Russia, as well as two transplant cases in the United States. We are completely reliant on published biomedical facts supplied from the perspective of the surgical team in these situations. These articles are short on facts, typically with the sake of maintaining patient confidentiality, making it impossible to gain more than a rudimentary understanding of the circumstances surrounding the transplant and the recipient's background.

In other circumstances, public information regarding a specific transplant is unavailable, and English-language information is only available via Internet news sources. Furthermore, the reporting of information concerning transplant recipients, such as their age, the reason of their damage, and their current situation, is frequently contradictory. Basic facts, such as the date of a transplant, are not agreed upon by medical journals and the media. This might be owing to transplant centers providing restricted information in order to safeguard the privacy of the recipient, donor, and their families. Because news articles are published before formal scientific studies, inaccurate information can swiftly propagate. As a result, in certain places (e.g., the United States), it is feasible to draw

more detailed conclusions on face transplantation than in others. To some extent, this obscures the multinational, interrelated character of face transplantation's progress, resulting in a saturation of interest in a few high-profile instances rather than a worldwide picture.

The First Face Transplant

On November 27, 2005, the first face transplant was performed in Amiens, France. Three days later, photographs of the recipient, Isabelle Dinoire, a 38-year-old woman, made international news. Following years of public speculation about when and where a transplant might take place, the case was widely publicized as a medical breakthrough. Since then, 46 face transplants have been performed in 11 countries (including two retransplants) by surgical teams at 21 different hospitals and medical institutions (up to August 2020). The idea and outcomes of face transplantation continue to pique public attention 15 years later, as seen by a coverage of 68-year-old Robert Chelsea's face transplant at Brigham and Women's Hospital in Boston in 2019, and Carmen Tarleton's retransplant in July 2020.[6] Chelsea was the first African-American recipient in the United States,[7] reflecting lower rates of African-American and ethnic minority organ donation in the United States and abroad, and Tarleton was the first individual in the United States to get a second retransplant.[8] Although the focus of this article is on the adoption of face transplants between Dinoire's and Tarleton's surgeries, the surgery had been in the works for many years prior to 2005.

The Ethics of Facial Transplantation

By this point in the development of face transplants, the argument was almost entirely centered on ethical and psychological problems, rather than the technical or clinical viability. The method was subjected to "prophylactic ethical debate," as defined by Arthur Caplan: an open and public discussion of the ethical and social consequences of a novel technology.[9] This argument took place in the front of the media in both professional and public venues. In July 2004, the American Journal of Bioethics published a special issue containing articles from the leading worldwide experts in face transplant research, including surgeons, bioethicists, psychologists, and media scholars, who contributed to the special issue.[10]

The lead piece firmly established face transplantation as a discipline that "has always pushed the bounds of medicine forward" in the history of transplantation in general.[11] Hand transplants were once again hailed as a watershed moment in the history of organ procurement and distribution, shifting the focus away from the procurement and distribution of organs and toward the risk-benefit analysis for patients who received organs that were not required to save their lives but could improve their quality of life significantly. Although the authors admitted that facial transplantation exacerbated social and identity concerns, they were eager to draw parallels with other forms of transplantation and medical advancement. Despite the fact that bioethicists emphasized the face as a distinct situation, surgeons campaigned for face transplants to be included in a well-established surgical procedure. Delaporte emphasized the significant challenge that facial transplantation posed to both sides of the debate, requiring a rethinking of transplantation and plastic and reconstructive surgery concepts "between the grave, noble, and useful surgery on internal organs and the superficial surgery on surfaces."[12]

Wiggins *et al.* used Francis Moore's four criteria for ethical medical innovation to help them work through the bioethical challenges.[13] These were some of the criteria:

1. Adequate scientific preparation for the invention;
2. A skilled and experienced team;
3. An ethical atmosphere in the institution where the innovation takes place;
4. Open presentation, public and professional discussion, and appraisal before advancing.

At Louisville, the same approach was used to support human hand transplantation.[12]

The assumptions regarding the need for a face transplant as a therapy with psychological advantages were called into doubt. In terms of appearance, eating, speaking, and facial expressions, surgeons could define and assess prospective functional and esthetic benefits, but the promised psychological outcomes were unquantifiable. This problem is not limited to face transplants; modern medicine is built on the quantitative rather than the qualitative methods of study, and mental wellness is especially difficult to measure. Because the face is a "predominant anatomical feature," and severe facial deformity may lead to depression and social isolation, supporters could only claim that replacing it with a "'normal' looking and functioning face" would have "significant psychological advantages."[13]

The emotional and personal aspects of the surgeon–potential-transplant–recipient interaction were clear. Siemionow's support for face transplants is based on her own personal experiences with patients.[14] Only plastic and reconstructive surgeons who have a direct contact with seriously deformed patients should weigh the risks and advantages of the treatment, according to Lantieri, because "they deal with patients' suffering due to physical and aesthetic limitations on a daily basis."[15] For them, the decision to proceed with the experiment was not just an ethical one, but also one that forced everyone engaged to "examine his or her own soul and conscience."[6] The notion that surgeons' "soul and conscience" were somehow the best predictors of treatment highlights the contradictions that exist in medicine as an avowedly dispassionate but nevertheless subjective activity, as seen by the Hippocratic Oath's regular recitation.

Philosophers and other humanities experts joined surgeons and bioethicists in discussing the challenges of face transplants in 2005. They emphasized the importance of the face in the construction of identity in society, drawing on the work of famous sociologist Erving Goffman, and asked for greater awareness of the social and cultural connotations of the face in the discussion.[13] These meanings were significant not just to beneficiaries and their families but also to potential donors' families. Because the face was more visible than other "dead donation" organs, donor families were more likely to recognize the deceased and the receiver and even wish to keep in touch with the face's new owner.[14]

Surgeons and, to some extent, bioethicists avoided some assumptions about facial difference by neglecting to deal with the distinctive ontological character of the face as a social and cultural phenomenon. Although Goering applauded attempts to relieve the pain of severely damaged patients, he pointed out that face transplants did not address the causes of that misery.[15] To put it another way, the quest of face transplants continued to portray the problem of facial diversity as an individual shortcoming when the problem was a social one. Face transplants were inextricably linked to worries about innovations in cosmetic surgery and the beauty market, as well as the complicity of experimental surgeons in perpetuating harmful cultural habits, in such a debate of social norms.[16]

Conclusion

An international history of face transplantation as a novel kind of surgery sheds light on how it has been practiced in various biological, ethical, economic, cultural, and social settings. It also reveals important details. Military financing stimulated employment and research programs, as well as an inflow of potential patients, in the United States, during the Gulf War in the early 1990s, which was exacerbated by the conflicts in Afghanistan and Iraq in the 2000s. Injuries sustained in warfare, such as gunshot wounds or explosive impact injuries, are ideal candidates for repair through VCA transplants of hands and faces.

The Department of Defence's significant investment in American innovation resulted in a rise in face transplants starting in 2008, which was later mirrored in other regions of the world. The effect was exacerbated by the privatized, competitive medical industry, which prompted institutions to sponsor high-risk, long-term treatment programs in order to improve their national and international reputations. A limited number of high-profile surgeons who have been including face transplants into their professional portfolios are often the center of media attention during this procedure.

This helps explain the ongoing discourse of competition and rivalry that has characterized VCA's growth, as well as the media's portrayal of a face race. Being the first to perform a breakthrough therapy earns surgeons, institutions, and nations praise and recognition. That is not to argue, though, that invention cannot be used as a healing tool. After all, the history of modern medicine is one of experimenting, with complex political, economic, personal, and professional incentives.[17] However, compared with pharmaceuticals and medical gadgets, novel surgery draws a distinct level of media and public scrutiny. The working group of the Royal College of Surgeons of England, the "prophylactic ethical discussion," and public speculation about face transplants all had a role in assessing whether or not the treatment was feasible. In risk-averse societies, such as the United Kingdom, what has been characterized as massive public scrutiny may have stifled innovation, notwithstanding a willingness to proceed.[18] As a result, the institutional, professional, emotional, economic, and international settings must take into account the media's and public opinion's different roles.

This context of face transplantation can help us better understand its influence on health and well-being, as well as its future as a surgery and the situations in which it occurs. Ethics, skill, necessity, creativity, and opportunity have all been defined and negotiated in intricate ways. Though debate might be polarized, defining patient benefits via the ethical and psychological guidelines is unavoidably fundamental to discussions. Despite the fact that face transplants are a one-of-a-kind process, there is a lot to be gained from other professions. In face transplants, for example, assessing patient-reported quality of life outcomes is relatively new, but standard practice in other types of facial surgery.[19]

It is wonderful to see some of the country's top surgical teams forming multidisciplinary collaborations to address crucial concerns such as psychological damage and try to figure out how to measure patients' emotional health. This is critical in terms of helping to characterize successful results in a historical and culturally appropriate manner.[3] As life-prolonging transplantation becomes more common, ethical frameworks will need to be built to track the outcomes. More sophisticated ethical discussions are surfacing, acknowledging the need of result disclosure, addressing competitiveness and conflicts of interest, and acknowledging the procedure's emotional impact on beneficiaries, their families, and donor families. These are continuing issues regarding the long-term effect and social implications of face transplants, which necessitate cross-disciplinary cooperation and multinational teams.

However, there are also practical and economical concerns. This might be explained by the variety of problems that the procedure currently faces, including as ethics, outcome assessment, recipients' poor long-term prognosis, and the difficulty in locating donors.[19] Without financial support, face transplantation will have to become a standard of

treatment, with at least a portion of the cost paid by medical insurance or public health care. Otherwise, the procedure's popularity may continue to decline until it is surpassed by other cutting-edge therapies, such as tissue regeneration, which is still a few years away.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Thomas S, Paolo SR, Philip J, Kim YB. The history and future of plastic and reconstructive surgery. Arch Plast Surg 2015;42:515.
2. Carosella ED, Pradeu T. Transplantation and identity: A dangerous split? Lancet 2006;368:183-4.
3. Heather Laine Talley. Saving Face: Disfigurement and the Politics of Appearance. New York: New York University Press; 2014. p. 29-30.
4. Alberti FB. Face transplants as surgical acts and psychosocial processes. Lancet 2020;395:1106-7.
5. Caplan AL, Parent B, Kahn J, Dean W, Kimberly LL, Lee WPA, *et al*. Emerging ethical challenges raised by the evolution of vascularized composite allotransplantation. Transplantation 2019;103:1240-6.
6. Vercler CJ. Ethical issues in face transplantation. Virtual Mentor 2010;12:378-82.
7. Ducharme J. Meet the first African-American Face Transplant Recipient; 2019. Available from: https://time.com/5709294/first-african-american-face-transplant/. [Last accessed on 28 Jan 2022].
8. NHS Blood and Transplant. Organ Donation and Transplantation Data for Black, Asian and Minority Ethnic (BAME) Communities, Report for 2017/2019; 2019. Available from: https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/19753/bame-report-201920.pdf. [Last accessed on 31 Jan 2022].
9. Caplan A. Facing ourselves. Am J Bioe 2004;4:18-20.
10. Llull R. An open proposal for clinical composite tissue allotransplantation. Transplant Proc 1998;30:2692-6; discussion 2697-703.
11. Barker JH, Breidenbach WC, Hewitt CW. Introduction: Second International Symposium on Composite Tissue Allotransplantation held at Jewish Hospital in Louisville, Kentucky. Microsurgery 2000;20:357.
12. Wiggins OP, Barker JH, Martinez S, Vossen M, Maldonado C, Grossi F, *et al*. On the ethics of facial transplantation research. Am J Bioeth 2004;4:1-12.
13. Moore F. Three ethical revolutions: Ancient assumptions remodelled under pressure of transplantation. Transplant Proc 1988;20:1061-7.
14. Clarke A, Butler P. Face transplantation: Psychological assessment and preparation for surgery. Psychol Health Med 2004;9:315-26.
15. Petit F, Paraskevas A, Lantieri L. A surgeons' perspective on the ethics of face transplantation. Am J Bioeth 2004;4:14-6.
16. Agich GJ, Siemionow M. Facing the ethical questions in face transplantation. Am J Bioeth 2004;4:25-7.
17. Rumsey N. Psychological aspects of face transplantation: Read the small print carefully. Am J Bioeth 2004;4:22-5.
18. Agich GJ, Siemionow M. Until they have faces: The ethics of facial allograft transplantation. J Med Ethics 2005;31:707-9.
19. Ziegelmann JP, Griva K, Hankins M, Harrison M, Davenport A, Thompson D, *et al*. The Transplant Effects Questionnaire (TxEQ): The development of a questionnaire for assessing the multidimensional outcome of organ transplantation. Br J Health Psychol 2002;7:393-408.