

# The medical Prometheus: Frankenstein in the era of facial transplantation

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*Frankenstein, or The Modern Prometheus* (1818), is a novel by English author Mary Shelley.<sup>1</sup> The first example of gothic literature, it narrates the story of physician Victor Frankenstein and his ultimate undertaking: creating life out of disjointed body parts. After successfully assembling and giving life to his creature, Frankenstein abandons it, triggering the creature's contemplation of its own nature and physique amidst an ostracizing society. As the creature comes to terms that society would never embrace him, he rebels and descends into an avenging murdering spree. Finally, the creature turns to suicide as an escape from self-hatred and isolation. By creating such a catastrophic character, Shelley explores how society defines the identity of the individual based solely on their appearance, neglecting their values and inner persona. While this novel was written more than 200 years ago, the societal ideals

that Shelley tackled still resonate within current society. Individuals with severe facial disfigurement still face social prejudice and outcasting for diverging from what is deemed "normal appearance."<sup>2</sup>

The concept of human identity is thought to be intrinsically and extrinsically constructed, oscillating between one's self-concept and what society recognizes it as.<sup>2</sup> While fictitious, the main criticism woven in Shelley's novel mirrors modern psychology data demonstrating the possible negative impacts of physical characteristics and image on psychosocial integration and well-being.<sup>3</sup> Certain defects, such as cleft lip and palate, can be easily corrected with surgery, improving the patient's wellness. Yet, for patients with disfigurements beyond traditional reconstructive repair, their suffering stems from the initial cause of disfigurement as well as the physical inability to ever overcome it.

In Shelley's narrative, the creature is initially taken in by a blind man that shows him compassion and assimilates with his values. Yet, after the man became aware of the creature's deformity, he rejects him as non-human and neglects all previously created rapport. Patients with severe facial disfigurements often share such feelings of dehumanization. From constant teasing and questioning to staring and commenting, patients with facial disfigurements become defined by their trauma.

Reflection on their lives after the accident that led to disfigurement, individuals often describe it as a state of constant suffering and shame. Their diminished self-esteem pushes them toward self-isolation, avoiding

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uncomfortable future interaction. In *Reading Faces: A Window to the Soul?* (1997), Zebrowitz mentions that the face is a window to our inner selves; the center of social interactions, and a vehicle for communication and first impressions.<sup>4</sup> From the pretenses of the beauty-is-good stereotype, attractive individuals are more readily perceived as more friendly, trustworthy, and approachable, imparting social advantage to them.<sup>5</sup> As such, individuals with disfigurement are baseline disadvantaged.

Similar to how the Shelleyan society is incapable of looking at the creature past its appearances, face transplantation (FT) recipients account how prior to surgery children would run away from them scared.<sup>5</sup> In addition, these patients are often dependent on caretakers as they have lost most of the primitive biological functions of the face, including mastication, eye lubrication, and production of normal speech. Functionally and socially, patients with severe facial disfigurement, even post-conventional reconstructive interventions, may still be seen with a different eye.

FT has since emerged as an alternative to previously hopeless cases, allowing individuals to regain their lost social standing. While numerous centers have successfully performed the surgery and reported improvements to the well-being of face recipients, numerous concerns regarding the surgery have been raised.

As FT is theoretically not lifesaving in the same sense as a kidney transplant, it is often thought of as aesthetic-only in nature. Nevertheless, FT is innately a reconstructive surgery focused on re-establishing form and function to facial structures, including the oral cavity, the eyelids, and the external nares. In addition, social isolation has been proven to negatively affect the individual and increase rates of mortality. Similar to Frankenstein's creature

and his plea to be given a companion, facial transplant recipients also desire to regain their social lives.

Personal accounts of FT recipients allows for an understanding of their psyche before, and after, surgery. Patrick Hardison, a 41-year-old firefighter who had his scalp, lips, nose, ears, and eyelids burnt while on duty, wished prior to surgery to "make it through this day without the stares and the questions."<sup>6</sup> For Robert Chelsea, a 68-year-old man that had more than 60 percent of his face burnt after a car crash, the surgery empowered him "to address a person without intimidating them."<sup>7</sup> Central to both comments is the desire to participate in society more fully—an impossible thought before surgery. Yet, the same society that inherently marginalizes individuals with facial disfigurements curiously shows resistance to a surgery capable of re-establishing the individual's identity and appearance.

To understand the social reaction to FT recipients and the societal hesitation toward the intervention, there is the concept of the uncanny valley. Coined by Japanese roboticist and philosopher Masahiro Moto, the theory of the uncanny valley describes the relationship between a figure's resemblance to a human and the emotional response it produces.<sup>8</sup>

While facial allograft is intrinsically a human tissue, the transposition of one individual's facial identity to another human is unfamiliar to many, and creates a sense of eeriness. Following the deeply religious notions developed in Shelley's book, the face is seen as the fingerprint of a human—to give it away is unnatural and a bizarre concept for many.

Those who see Frankenstein's creature are, thus, nervous and taken aback by its presence. Even centuries after



Facial transplant recipient, pre- and post-operative. Copyright Eduardo D. Rodriguez, MD, DDS

the novel's publication, such notions of identity uniqueness based on the facade remain. Similarly, reactions to face transplant recipients are not far from the reactions described in *Frankenstein*. Isabelle Dinoire, a 38-year-old woman who in 2005 became the first transplant patient after her dog mauled her face, came to admit feeling like a "circus animal" after surgery as children would laugh at her, and people in her village would constantly point fingers.<sup>9</sup> The unfamiliarity with the procedure led to a second wave of harassment akin to before the transplant, indicating social resistance to the procedure. Even with reconstructed facial features, the patient still felt like an outcast.

The dichotomy between pre-surgical ostracization and post-surgical resistance places facial transplant candidates in a limbo-like social space. Society pushes for appearance acceptance, but fails to embrace and support the disfigurement. At the same time, it is reluctance to accept facial donation and transplantation, precluding individuals from socially interacting or having fully functional facial features.<sup>10</sup> The first patient undergoing FT continued to face harassment after surgery.

Subsequent recipients provided antagonistic accounts of their post-transplant selves. Robert Chelsea expressed after surgery how "overwhelmed with gratitude" he was, feeling "very blessed to receive such an amazing gift."<sup>11</sup> While improvements in techniques may partially account for this change in self-concept, with more than 48 FT recipients worldwide, FT is becoming more familiar to the public.<sup>12</sup>

With increased appearance in the media of FT recipients, more patients and physicians started to contemplate this new alternative. As these patients' severe disfigurement may not have viable reconstructive solutions apart from FT, the goal is to educate social groups on the benefits and normalcy of the surgery. Rather than focus on the issue of personifying a deceased person, FT should be seen as giving an individual a second chance at life.

With the hopes of advances in immuno-therapy and understanding of rejection mechanisms, facial transplantation is becoming a viable reality for many. Instead of creating life and a new identity, facial transplant aims to re-establish what was previously lost. Through facial transplantation, individuals with major disfigurement may divert their attention from past trauma back to their own selves. In doing so, transplantation also allows society to focus back on the individual's qualities, moving past their physical appearance.

As the field of vascular composite allotransplantation evolves to encompass hand, penile, uterine, and

abdominal transplantation, the prospects of safely utilizing allogeneic tissue exponentially increases reconstructive options. Thus, unlike *Frankenstein*, facial transplantation is just the beginning of a new chapter in the individual's life, and an entryway to new alternatives in reconstructive medicine.

## References

1. Shelley M. *Frankenstein, or the Modern Prometheus*. First published 1818. Project Gutenberg. <https://www.gutenberg.org/cache/epub/84/pg84-images.html>.
2. Harter S. *The Construction of the Self: A Developmental Perspective*. New York: The Guilford Press; 1999.
3. Pop CL. Physical Activity, Body Image, and Subjective Well-Being. In: Mollaoğlu M, editor. *Well-being and Quality of Life—Medical Perspective*. Rijeka (Croatia): InTech; 2017.
4. Zebrowitz L. *Reading Faces: Window to the Soul?* Boulder (CO): Westview Press; 1997.
5. Griffin AM, Langlois JH. Stereotype Directionality and Attractiveness Stereotyping: Is Beauty Good or is Ugly Bad? *Soc Cogn*. 2006; 24(2): 187-206.
6. A New York University Langone Health. Year After His Landmark Surgery, A Face Transplant Recipient Reflects on His New Life. News Hub. August 24, 2016. <https://nyulangone.org/news/year-after-his-landmark-surgery-face-transplant-recipient-reflects-his-new-life>.
7. Thompson D. World's First Face Transplant in a Black Patient Brought Special Challenges. *HealthDay.com*. March 17, 2021. <https://www.healthday.com/health-news/public-health/3-17-worlds-first-face-transplant-in-black-patient-brought-special-challenges-2651034272.html>.
8. Mori M. *The Uncanny Valley: The Original Essay by Masahiro Mori*. Robotics. June 12, 2012. *Spectrum.IEEE.org*. <https://spectrum.ieee.org/the-uncanny-valley>.
9. Lanchin M. Isabelle Dinoire: Life after the world's first face transplant. November 27, 2012. *BBC.com News Magazine*. <https://www.bbc.com/news/magazine-20493572>.
10. Plana NM, Kimberly LL, Parent B, Khouri KS, et al. The Public Face of Transplantation: The Potential of Education to Expand the Face Donor Pool. *Plast Reconstr Surg*. 2018 Jan; 141(1): 176-85.
11. Brigham and Women's Hospital. Brigham Surgeons Perform First Full Face Transplant for Black Patient. October 24, 2019. <https://www.brighamandwomens.org/about-bwh/newsroom/press-releases-detail?id=3464>.
12. Diep GK, Berman ZP, Alfonso AR, Ramly EP, et al. The 2020 Facial Transplantation Update: A 15-Year Compendium. *Plast Reconstr Surg Glob Open*. 2021 May; 9(5): e3586.

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