

# Courage and character, leaders and legends: an interview with Maria Siemionow, MD, PhD, DSc

*We don't hear much about individuals with facial deformities due to birth defects, burns, trauma, cancer or violence. That's because the stigma of severe facial deformity is so enormous, so staggering, that many simply withdraw from society.<sup>1</sup>*

In December 2008, a landmark case was reported in the United States as Dr Maria Siemionow, head of plastic surgery at The Cleveland Clinic, and colleagues performed the first full facial transplantation. The Cleveland Clinic's institutional review board (IRB) had approved Dr Siemionow's protocol for facial transplantation in 2004. Four years later, after years of research and practice on cadavers in the anatomy laboratory, Dr Siemionow found herself in the operating room with 7 other surgeons, 4 anesthesiologists, and 20 nurses applying their expertise to the first full facial transplantation during a 22-hour procedure. However, there was one notable difference between their practice sessions and this surgery; the practice sessions on cadavers were bloodless, this surgery was not. Consequently, the anatomic landmarks looked different and were challenging to identify.

Restoring function to the face seems even more complex than transplanting a heart, kidney, lungs, or liver. Muscle, bones, vessels, and nerves must all be joined to obtain the most optimal functional outcomes. Microsurgery is necessary to provide magnification of the small nerves and vessels that are connected. The skin must be aligned with openings for the eyes, nose, and mouth. Dr Siemionow describes 18 functions of the face that she categorizes into 4 major roles: physiologic, expressive, aesthetic, and identity. The physiologic functions include those of the eyelids, nose, and lips as well as the skin, which performs functions such as heat regulation and sensation.<sup>2</sup> Reconstructing normal physiologic functioning of the facial units, including for eyelids to open, close, and produce moisture for the eyes; for the mouth to smile and enunciate words; and for the nose to filtrate inspired air, requires surgical preciseness and expertise.

## Perceptions of Facial Transplantation

Many transplant professionals had not given much thought to facial transplantation until the first partial facial transplantation was performed in France

in 2005.<sup>3</sup> In a study published in 2007, Clarke et al<sup>4</sup> reported that 76% of transplant professionals in the United Kingdom supported facial transplantation. These investigators also found a significant association between knowing someone with facial disfigurement and being in favor of face transplantation.

During the 4 years between the time of IRB approval and the first full facial transplantation, Dr Siemionow found opportunities to educate both the public and her colleagues. She won the support of ethicist Dr Arthur Caplan, who did not initially support facial transplantation. However, after learning of the success in France, listening to Dr Siemionow, and talking to people with severe facial disfigurement who suffered physically, emotionally, and socially, Dr Caplan determined that facial transplantation made ethical sense.

## Years of Preparation

Dr Siemionow was born and raised in Poland; her medical degree is from Poznan University of Medical Sciences. The University, voted the best medical college in Poland,<sup>5</sup> proudly announces on its Web site that Dr Siemionow, a graduate of the University, has performed the first full facial transplantation.<sup>5</sup>

Performing a facial transplantation was not something Dr Siemionow considered as she completed her medical training in Poland. She began her surgical career as an orthopedic surgeon, then focused on hand and microsurgery. In 1980 she went to study in Finland where she had an opportunity to work with an expert hand surgeon and to reconnect a patient's severed hand. Stimulated by this experience she applied for a fellowship at Jewish Hospital in Louisville, Kentucky, where she studied hand and microsurgery. In 1990 she accepted a position in Salt Lake City, Utah, where she had the opportunity to establish the department of plastic surgery. This is where she began to study the effects of hypothermia on tissues and to consider facial transplantation as an option.

Dr Siemionow and the facial transplant team practiced on weekends for several years before receiving the call that a donor was available. They learned from their work with deceased donors that the surface area for a face required as much as 184 square inches of tissue.<sup>6</sup> It was clear that the tissue had to cover the area

to prevent scarring patches as is often seen in skin grafting. The team determined that the donor would have to have a similar skin color and be of a similar age as the recipient. The local organ procurement organization was included in the training. After all, it would be the procurement coordinators who would approach a family with the delicate question of donating the face of a loved one. The coordinators also would be responsible for the challenges of donor management, which would include more than solid organs.

### Candidate Selection

One question most transplant professionals ask about facial transplantation is “What are the criteria for selecting candidates?” When preparing questions for this interview, issues surrounding candidate selection were a major focus for me. However, once I began reading Dr Siemionow’s published articles and her book, *Face to Face*, I could see that the selection criteria were carefully considered in her work.<sup>6,7</sup> When asking colleagues about questions they would have for Dr Siemionow, all expressed concerns about identity issues, psychological stability, and support for the patient. Dr Siemionow was quite prepared for this question because it had been presented to her in many interviews. Although questions of identity will be evaluated over time, candidates are provided with counseling and support in making their decision.

Once the press announced that The Cleveland Clinic’s IRB had authorized Dr Siemionow to perform facial transplantations, potential candidates began to call to obtain information. These candidates had suffered extensive facial disfigurement and were ready to take a chance on a procedure that could improve their quality of life.<sup>7</sup> They were counseled by the department of psychology and offered the option of continuous counseling throughout the waiting and post-transplant periods. The clinical eligibility for a facial transplantation was easier to define than the psychological eligibility. Those of us working with transplant candidates and recipients understand the difficulty of evaluating the psychological stability of patients requiring solid-organ transplantation. There is no litmus test to predict the psychological coping abilities of patients and their families.

The Cleveland Clinic recognized the need to develop a strong and solid system for evaluating candidates for facial transplantation. Dr Meit, a psychologist, was charged with implementing tools and instruments to help with the evaluation of an individual’s ability to understand, analyze, and evaluate the clinical procedures involved in the transplant process.<sup>6</sup> Testing candidates soon involved the evaluation of their intellect and their ability to understand the nature of benefits and the degree of risk. The following characteristics were defined as important for coping with facial transplantation: psychological stability, resilience, responsibility, and self-reliance.

The United Network for Organ Sharing does not have a facial transplantation category listing for patients. Each patient is listed in collaboration with an institution’s organ procurement organization.

### Conclusion

The first full facial transplant recipient at The Cleveland Clinic was not a burn victim but a victim of a gunshot wound to the face. Bones in her face were shattered and the bony structure from nose to cheeks and chin had to be rebuilt as part of the process. Dr Siemionow’s dedication to this process has paved the way to change and improve the lives of individuals suffering from severe facial disfigurement. She has made her University in Poland proud of their prodigy. Her perseverance, quest for learning, and forthright leadership have truly made her a present day legend.

### References

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