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EDITORIAL

TWO DECADES OF FACE TRANSPLANTATION – A JOURNEY OF INNOVATION AND CHALLENGES

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In 2005 face transplantation emerged as a beacon of hope in reconstructive surgery, transcending the boundaries of what was thought possible [1]. Over almost two decades, this field has significantly evolved, culminating in remarkable milestones, including the world's first combined face and whole-eye transplant performed in 2023 [2]. This pioneering achievement is a testament to the relentless innovation, showcasing how far vascularized composite allotransplantation (VCA) has progressed [3]. Performed by a multidisciplinary team at NYU Langone Health, the combined face and whole-eye transplant exemplifies the pinnacle of modern surgical ingenuity. While restoring sight was not the immediate objective, the transplantation of a vascularized, viable eye marks a significant leap toward making whole-eye transplants a reality. The innovative surgery proved the feasibility of restoring perfusion of the transplanted eye – using a novel bypass technique involving the superficial temporal artery and vein – ensuring its viability along with the transplanted facial tissues. However, the possibility of restoring vision through a whole-eye transplant remains a debated challenge, not yet fully within the reach of current knowledge [4].

As we approach the 20-years of face transplantation, it is key to acknowledge that the challenges of such procedures cannot be overstated [5]. Unlike organ transplants, VCA encompasses an intricate interplay of tissues and presents unique challenges that extend beyond technical surgical complexities [6]. One of the foremost concerns is immunological rejection, as the transplanted tissue, comprising multiple components like skin, muscle, bone, and nerves, is highly immunogenic. This necessitates lifelong immunosuppressive therapy, which carries significant risks, including infections, metabolic disorders, and organ toxicity, leading to a careful balance between preventing rejection and minimizing side effects. Furthermore, VCA patients often face considerable psychological challenges, such as adapting to the new face and managing the emotional burden of potential failure. Compliance with immunosuppressive regimens and regular follow-ups is critical yet challenging, particularly given the long-term nature of the commitment. These issues underscore the multidisciplinary efforts required to optimize outcomes in VCA, integrating surgical expertise, immunological monitoring, and robust psychosocial support.

Given the multitude of challenges face transplantation entails, international collaboration among multidisciplinary teams is indispensable. As face transplantation remains a relatively nascent field – with about 50 procedures performed worldwide over the past 19 years – pooling knowledge and sharing experiences across institutions on a global scale can accelerate the refinement of surgical techniques, immunosuppressive protocols, and long-term patient management strategies. An important first step in

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this direction was represented by the first consensus recommendations on face transplantation published this year [7]. These recommendations, developed by international experts, address critical topics such as patient selection, indications, clinical and surgical aspects, and the psychological support required for transplant recipients. Their implementation marks an effort to establish shared guidelines, promoting a more uniform approach and improving long-term success rates in these complex surgical procedures. Even though it may still seem far from achievable, a significant milestone in advancing face transplantation could be the development of international registries. These registries would serve as a centralized resource for collecting and analyzing data from diverse cases worldwide, providing invaluable insights into complications and long-term outcomes. As highlighted, international registries and research networks enable robust data collection and analysis, which is essential for identifying trends and challenges that might go unnoticed in isolated cases.

In conclusion, face transplantation represents a profound milestone in reconstructive surgery, merging technical innovation with a commitment to enhancing the quality of life for patients with severe facial defects. It offers a viable solution for reconstructing extensive defects involving functional facial units, particularly when conventional methods using autologous tissues are either unfeasible or yield suboptimal outcomes [8-10]. Despite its challenges, including the risk of rejection, the burden of lifelong immunosuppression, and the psychological hurdles patients face, the progress achieved over the past two decades is undeniable. Collaborative international efforts, supported by consensus guidelines and the potential development of centralized registries, will be instrumental in addressing existing barriers and refining techniques. By fostering global cooperation and leveraging shared knowledge, the field of face transplantation has the potential not only to enhance outcomes but also to push the boundaries of what is surgically and medically possible, offering new hope to patients worldwide.

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