

# **Transplantation in Reconstructive Surgery.**

## **Abstract.**

### Introduction

The medical profession comprehensively focuses on two aims: to prolong the patient's life and to increase the quality of life, meaning, to add years to life and to add life to years. Transplant medicine addresses both. By performing successful organ transplants it prolongs the patient's life and simultaneously increases its quality. In the case of reconstructive allogeneic transplantations it increases the practical quality of life (hand, leg, face transplantation etc.), which results in improved and enhanced practical abilities (grasping, walking, speaking and eating etc.). However it also offers a significant improvement to the psychological and social quality of life. According to evolutionary psychologists' research, presentation with a symmetric face and body is attractive for all known cultures and ethnicities.

The basic principle of reconstructive surgery is to replace like for like, to restore appearance and function. If it is not possible to use tissues from the same subject the logical step in thinking is to use tissues from other subjects.

### Aim and methodology.

The aim of principal author was to condense the complexity of vascularised composite allotransplantation and its place in modern medicine by summarizing clinically important conclusions. In the monograph all authors have disclosed the principal findings of their experimental work. Each was given the digression to weigh the importance of their findings both with a view to the current literature and their most recent scientific discoveries.

The Monograph is divided into two parts – general and special. In the general part there are chapters about history, transplant terminology, immunology, immunosuppressive therapy, rejection, transplant tolerance, immunosuppression and oncology, experimental reconstructive transplantations, transplantation in childhood and the perspectives of reconstructive transplantations in future. Attention is also given to chapters focusing on ethical, psychological, social and forensic aspects of the

procedures. The quality of life is a value that is impossible to measure objectively and the opinions on its importance differ significantly.

In the second section (the special part) the monograph describes comprehensively a variety of reconstructive transplantations that demonstrate current capabilities, namely hand, face, tongue, larynx, trachea, scalp, neck, abdominal wall, bones and joints, lower extremity, uterus, penis, tendons, nerves, vessels, the anorectal unit and complex rare transplantations. The most commonly performed transplantations are those of one or both hands followed by the face. Other transplantations are more-or-less rare.

Results and conclusions.

After twenty years of uncertainty and controversy reconstructive transplantations have been accepted by the scientific community as a fully-fledged reconstructive procedures. In 2014 reconstructive allogeneic transplantation materials were officially included in the USA's transplant programme (OPTN – Organ Procurement and Transplantation Network) and in the national transplant registry (UNOS – United Network for Organ Sharing) classified as “Vascularized Composite Allotransplants” (VCA).

Clinically important conclusions from the monograph can be summarized as:

1. Transplantation in reconstructive surgery has been a clinical reality for more than 20 years.
2. These transplantations are still rare and they are performed in highly specialised centres.
3. The procedure is applicable only to a very narrow group of excessively mutilated and highly motivated patients.
4. These methods are not routine, they continue to be performed as a clinical experimentation with detailed pre-planning, prudent follow-up and a strict evaluation of results.
5. The surgical procedures have been well mastered and proven in both experimental and clinical settings.
6. The effectiveness of immunosuppressive drugs and their regimes as used in organ transplantation has been demonstrated in experiments and clinical use.

7. All surgical, microsurgical and also immunological complications occurred including multiorgan failure, malignant tumours etc.
8. Though from technical point of view the procedure is realistic and performable, combined transplantation of more body parts often led to serious complications, necessitating graft reamputation or even death. It would seem that our current understanding of the science is still inadequate to perform such complex procedures safely.
9. Because VCA's are a high benefit procedure where there is no alternative for procedures involving face, abdominal wall and complex rare transplantations, the risks may be deemed acceptable.
10. These procedures may also be a very advantageous option in cases, where there is a need for complex reconstructive surgery and concurrently the patient is already on immunosuppressive therapy due to a previous organ transplantation.
11. Some treatments are already considered to be obsolete, or have a minimal expectation of good results (e.g. lower limbs, bones and joints, trachea and nerves).
12. Some VCA procedures will be most likely replaced by sophisticated technical devices, such as myoelectric prostheses of the upper and lower limbs in the future.
13. All VCAs are characteristically united by unsolved controversial of using the immunosuppressive therapy; with its considerable risks and side effects many think it only justifiable in patients where saving or prolonging life is the deciding factor.

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