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## Preface



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Recall the homunculus with its enormous hands. When you examine the *Homo sapiens* brain map you will notice that the space devoted to the hand is larger than that allocated to any other organ. Aristotle proclaimed over 2000 years ago that the hand brought the human being to his unique place in nature. It is no wonder that loss of this remarkable organ is a terrible tragedy—not only from a physical, but also from a psychological point of view.

The incidence of injuries of the upper extremities, including traumatic amputations, is quite significant. Notably, prevalence of these injuries is highest in the young, society's most productive age group. Not surprisingly, traumatism is called a plague of our era.

For centuries, people dreamed of being able to reattach or restore the amputated hand. One old legend brought to us the story from the 3rd century AD about twin brothers, Saints Cosmas and Damian, who tried to replace the diseased leg of a wealthy parishioner with that of a black slave. Unfortunately, the patient died. The legend was depicted by some Renaissance artists, and museums in Italy and Spain portray some of these works. The

ill-starred surgeons were ultimately decapitated for refusing to renounce their faith.

The idea of restoration of a lost extremity became a reality only in the 20th century after A. Murphy in 1897, E. Payr in 1900, and A. Carrel in 1902 elaborated a technique of vascular anastomosis. In 1903, E. Hopfner performed the first replantation of a dog's extremity in the laboratory. In 1954, A. Lapchinsky of Russia reported remarkable long-term replantation results in dog experiments. Finally, in 1962 the dream came true when American surgeons R. Malt and C. McKhann of Boston, Massachusetts performed the first successful human replantation of the upper extremity in a 12 year-old boy after complete amputation of the arm. Evolution of microsurgical technique gave a powerful new momentum to replantation surgery. Following the first successful replantation of a digit (the thumb) by Komatsu and Tamai of Japan in 1968, this revolutionary surgery has been successfully elaborated worldwide, with extensive work being done in Japan, China, the United States, Australia, Germany, and Russia.

Advancements in another rapidly developing area of surgery, transplantology, have changed the

transplantation of internal organs from being a surgical marvel to a common operation in many hospitals worldwide. Recently the surgical community made another giant step forward: on September 23, 1998 in Lyon, France, and on January 24, 1999 in Louisville, Kentucky, the first successful hand allotransplantations were performed. At present, 24 hand transplantations have been reported in 18 individuals (6 double hand transplants). Finally, in November 2005, we all heard breaking news from France: a partial face allotransplantation was performed on a 38-year-old female.

Where are we now in replantation and transplantation? What are the major problems to be solved in hand and facial transplantations? Those topics are covered by this issue of *Clinics in Plastic Surgery*. The authors are all recognized experts in plastic surgery and allied specialties who are imparting their knowledge and experience in their articles.

Despite encouraging initial results, this emerging field within reconstructive surgery—hand and facial allotransplantation—remains controversial, providing more questions than answers. Obviously, careful review of long-term results will help to

answer many questions of interest. Nevertheless, one may still ask: has the initial enthusiasm regarding replantation surgery somewhat subsided and shifted more toward hand transplantation? Was a thorough clinical analysis performed in those 24 cases of hand transplants; namely, why was replantation not performed (or was unsuccessful) at the time of primary injury? Are we depriving replantation surgery of an appropriate level of attention by directing our excitement toward much more expensive and controversial hand transplantation? Would our efforts be better served by organizing more specialized regional replantation centers, capable not only of performing complicated extremity replantations with favorable functional results, but of excelling in other areas of reconstructive microsurgery as well? There are positive experiences of such centers in the United States, Germany, Australia, and Russia.

Questions, questions, questions. Nevertheless, it is clear that despite all controversies and uncertainties we are now in the midst of an exciting era of reconstructive surgery in the ever progressing art and science of medicine.