

## SURVIVAL OF FREE SKIN GRAFTS UNDER CLINICAL AND EXPERIMENTAL CONDITIONS

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(Received April 12, 1958. Presented by Active Member of the AMN SSSR V. V. Parin)

The study of the morphological changes taking place in the free skin graft and in the adjacent tissues has occupied many workers during the period of existence of this form of plastic surgery, starting with its founder — Zh. Reverdin. In spite of this, no unanimity has yet been reached either on certain details of the process of survival of freely transplanted skin or on the problem of whether its true survival is possible.

Recently interest in the mechanism of survival of the free skin graft has increased once again in connection with the introduction of homoplastic operations into the practice of surgery.

### EXPERIMENTAL METHOD AND RESULTS

We made numerous histological examination of free whole-thickness skin grafts at periods of 42 hours to 4½ years after operation on patients and after experimental operations on rabbits. The only method which we used here was autotransplantation of skin.

As a result of our investigations we concluded that the character of the morphological changes in the tissues of a free skin autograft was mainly determined by the nature of its survival. In this respect we observed a direct relationship between the clinical course of the process of survival of the transplanted skin and the degree of the destructive changes and reorganization of its component tissues. If the transplanted skin survived clinically with no complications and if macroscopically it preserved the appearance of normal skin, then its structure as shown by histological examination showed no essential abnormality.

If, on the other hand, the survival of the transplanted skin was accompanied by various complications, even nothing more than maceration of the epidermis, the morphological changes in the graft showed signs of considerable reorganization of all the tissues.

Parallel with the above, we observed complete correspondence between the degree of preservation of viability of the tissues of the graft and the degree of preservation of the network of blood vessels in it. When the skin graft took without complication, its blood vessels — both large and capillaries — in the majority of cases preserved the normal structure of their walls throughout the entire period of survival and at later stages after the operation. In the walls of the arterioles the muscular and connective tissue coats could be clearly distinguished, and for the most part their cells showed no abnormal changes. The endothelial cells also preserved their normal structure. In the composition of the connective tissue coat of the vessels we also found an unchanged network of elastic fibers. The discovery of elastic fibers in the tunica extima of the vessels of the graft was a valid sign that these vessels were not newly formed but belonged to the skin graft itself. The walls of the newly formed vessels growing into the graft from the underlying tissues were without elastic fibers for a long time (up to 3-6 months).

On examination of fragments of transplanted skin whose survival had been complicated by maceration of the epidermis, we observed, besides partial death of the connective tissue, muscle fasciculi and epithelial formations, death of the majority of the vessels. From 4-5 days after operation only remnants of moribund and dis-