

Meeting abstract

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## The biotechnologies in the treatment of neuro-vascular ulcers in the elder. Cultivated autografts of skin: fibroblasts and/or cheratinocytes

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### Background

In Italy, about 600,000 patients are affected by ulcers of neuro-vascular origin, 50% of which are represented by venous chronic ulcers, inveterate and painful. (Surveying of the Ministry of Health – 2001). Of these approximately 60% are constituted by elderly patients.

### Objective

To verify the results obtained in 240 elderly patients, age ranged between 70 and 92 years-old (66.9% females – 31.1% males), affected with ulcers of the lower limbs, treated by cultivated autografts of skin, from April 2001 to August 2008.

### Materials and methods

The biotechnologies are based on the drawing of a small fragment of skin (2–3 cmq), at the elbow. Subsequently, the skin fragment is sent to a specialized laboratory in cellular cultivated membrane, where it is divided into its two essential components: dermatocytes and cheratinocytes.

These, after having been separated, centrifugated and implanted on an adapted medium which consists of modified three-dimensional jaluronic acid, develop in vitro an extended layer of tissue (dimensions 100–200 cmq), which then will be grafted separately (after 4 weeks from the biopsy) on the surface of the ulcer.

For the correct execution of such procedure are necessary four surgical steps, in sequence:

1. The debridement of the ulcer, the elasto-compressive bendage of the leg and the drawing of the skin.
2. The grafting of the layer of dermatocytes (called Hyalograft 3D) after 22–30 days.
3. The grafting of the layer of cheratinocytes (called Laser-skin), after others 22–30 days.
4. The surgical treatment of the venous or arterial insufficiency after 1–10 months.

### Results

We have performed a total of 520 autografts (234 dermatocytes – 286 cheratinocytes). Approximately half of the ulcers treated, were venous chronic ulcers, inveterate and painful secondary to chronic venous insufficiency of the lower limbs and/or post-thrombotic syndrome.

A clinical follow-up was performed on 186 out of the 240 cases, medially for 26 months (ranging between 3 months – 7 years and 4 months). In reference our experience, on the 240 cases treated, we have obtained 207 cases (86.25%) of complete healing, 27 cases (11.25%) of partial healing, with a reduction of the ulcerated area >50%, 6 cases (2.5%) of therapeutic failure, with a reduction of

the ulcerated area <50%, 2 cases (0.83%) of amputations and 18 cases (7.5%) of relapses. The mean time for the complete closing of the ulcers has been of 13.4 weeks calculated by the date of the first graft (range 4.1–33.2 weeks). Data on line to the more recent literature, in which is described a percentage of 95% of good clinical results (ulcers partially and completely closed) and stable in the time.

### Conclusion

The advantages of this surgical method, by now universally accepted, are, therefore, of remarkable clinical and social relief and we can summarize them as follows:

1. The proved clinical effectiveness;
2. The security of the biotechnological procedure in terms of microbiological pollution of the samples;
3. The long-lasting results;
4. A positive relationship between cost and benefits.

In addition, we completely agree in asserting that such a procedure is easy and fast in execution, well-tolerated and able to replace the traditional and very more complex surgical methods.

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