

Better outcomes using cultured, self-donated, epidermal cells for serious burn victims

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The use of meshed split skin autographs (SSGs) is a standard treatment for large, deep burns. However, serious scarring is often a result. In an effort to improve wound healing and reduce scarring, a team of researchers in The Netherlands tested a treatment technique on patients with serious, deep burns that employed SSGs along with autologous cultured proliferating epidermal cells (ECs) compared to SSGs alone. In a multi-center, 40-patient clinical trial they found that using SSGs in combination with autologous cultured proliferating epidermal cells provided better wound healing and less scarring than SSGs alone.

Their study will be published in a future issue of *Cell Transplantation* and is currently freely available on-line as an unedited early e-pub.

"The rate of epithelialization in the experimental treatment was statistically significantly better when compared to the standard treatment," said study co-author Dr. Esther Middelkoop of the VU University Medical Center in Amsterdam. "We also established improved pigmentation for the wounds treated with cultured ECs."

The primary outcome was wound closure after five to seven days, said the researchers. Secondary outcomes were safety and scar quality, which were measured at three and 12 months.

To enhance standard treatment, researchers used autologous (self-donated), cultured proliferating [epidermal cells](#) that were "harvested" from a small donor site, and "seeded" in a collagen carrier that could, in

theory, enhance the wound healing rate and improve scar quality. "The carrier solved the problem of dealing with fragile sheets of cells during transport and operation," reported the researchers. "The carrier was grafted EC side down, resulting in direct contact of the ECs with the wound. Additionally, the carrier functioned as a wound dressing."

The researchers concluded that ECs applied to a carrier system could, in fact, reduce [wound healing](#) time and improve both short-term and long-term functional as well as cosmetic scar quality.

"Scar quality impacts patients' lives in many ways due to cosmetic and functional concerns," said Dr. Middelkoop. "Additionally, there is a high economic burden on patients due to extended hospital stays and the cost of rehabilitation and reconstructive therapies. Because of this, additional research in burn wound treatment and the improvement of scar quality will always be of the highest priority."

"Using autologous undifferentiated cells, researchers were able to reduce culture time and rejection of allogeneic (other donor) cells was avoided," said Dr. Shinn-Zong Lin, vice superintendent for the Center of Neuropsychiatry, professor of Neurosurgery at China Medical University Hospital, and coeditor-in-chief for *Cell Transplantation*. "This study offers a promising, improved therapeutic method for treating severe burns."

More information: Gardien, K. L. M.; Marck, R. E.; Bloemen, M. C. T.; Waaijman, T.; Gibbs, S.; Ulrich, M. M. W.; Middelkoop, E.; Dutch Outback Study Group. Outcome of Burns Treated with Autologous Cultured Proliferating Epidermal Cells: A Prospective Randomized Multicenter Intra-Patient Comparative Trial. *Cell Transplant*. Appeared or available on-line: September 28, 2015.

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