

Where is the need in clinical practice

Lars-Peter Kamolz

Medical University of Graz, Austria

Abstract

Today split or full thickness skin grafts are still the gold standard in the treatment of skin defects. Such results can be seen, for example, in the therapy for burn patients. However, in patients with more than 50% burned skin area, donor sites are limited. Likewise in chronic wound patients inferior take rates of skin grafts as compared to burn wounds are observed. This may be attributed, for example, to accompanying or underlying chronic diseases or a higher rate of local infections. These phenomena also lead to a lack of availability of transplantable skin grafts. Hence the need for cost effective and user friendly synthetic or engineered skin grafts, which can serve for acute and chronic wounds and which can be also used in critically ill patients, is at hand. During the last 30 years a huge number of biological and synthetic skin graft materials and products based on the patient's own cells were launched on the market. Researchers and clinicians are constantly working on further improvements. One possibility is the engineering of skin grafts in vitro, which have to be integrated into the wound bed after transplantation. Another approach is the fabrication of biocompatible and bioresorbable matrices, which can attract host cells and stimulate a wound-healing process without scars. However, the skin graft materials available today cannot yet replace split or full skin grafts completely because of their inherent limitations such as insufficient take rates and/or the lack of mechanical stability and differentiated structures of the grafted artificial skin. Thus researchers in the field of skin tissue engineering are still working on the final goal of developing a skin graft which has all the features of healthy human skin and is capable of replacing human skin completely. This presentation gives an overview of the currently available solutions and products in the field of skin tissue engineering.