

Innovative technique creates large skin flaps for full-face resurfacing

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Patients with massive burns causing complete loss of the facial skin pose a difficult challenge for reconstructive surgeons. Now a group of surgeons in China have developed an innovative technique for creating a one-piece skin flap large enough to perform full-face resurfacing, reports *The Journal of Craniofacial Surgery*.

Dr. QingFeng Li and colleagues of Shanghai Jiao Tong University School of Medicine describe their approach to creating "monoblock" flaps for use in extensive face [skin](#) resurfacing. In their successful experience with five severely disfigured patients, the full-face tissue flap "provides universally matched skin and near-normal facial contour."

New Technique Grows One-Piece Skin Flaps for Full-Face Resurfacing

Complete destruction of the [facial skin](#) and underlying (subcutaneous) tissues presents "the most challenging dilemma" in facial reconstructive surgery. Multiple skin flaps and grafts are needed to provide complete coverage, creating a "patchwork" appearance. Standard skin grafts are also too bulky to provide good reconstruction of the delicate features and expressive movement of the normal facial skin.

To meet these challenges, Dr. Li and colleagues have developed a new technique for creating a single, large skin flap appropriate for use in full-face resurfacing. Their approach starts with "prefabrication" of a flap of

the patient's own skin, harvested from another part of the body. The skin flap, along with its carefully preserved blood supply, is allowed to grow for some weeks in a "pocket" created under the patient's skin of the patient's upper chest.

Tissue expanders—balloon-like devices gradually filled with saline solution—are used to enlarge the skin flap over time. While skin expansion is a standard technique for creation of skin flaps, Dr. Li and his team used an "overexpansion" approach to create very large flaps of relatively thin skin—ideal for use in the facial area. In some cases, when the skin flap was growing too thin, stem cells derived from the patients' own bone marrow were used as an aid to tissue expansion.

Using this technique, Dr. Li and colleagues were able to create very large skin flaps—up to 30×30 cm—for use in full-face resurfacing. In the new article, they describe their use of their prefabrication/overexpansion technique in five patients with complete loss of the facial skin, caused by flame or chemical burns. All patients had previously undergone facial reconstruction, but were left with severe deformity and limited facial movement.

The "monoblock" allowed the surgeons to perform complete facial resurfacing using a single flap of the patient's own skin. The large flap size avoided problems with a "patchwork" appearance, while the thin flap width was well-suited for reconstruction of the facial features.

Multiple surgeries were needed to refine the results and to manage complications. However, all five patients eventually achieved a more normal appearance and better functioning—including improved emotional expression.

The researchers emphasize that their patients with massive facial burns, while severely disfigured, differ from those with deeper tissue

destruction who are candidates for face transplantation. Patients being considered for face transplantation have destruction not only of the skin and subcutaneous tissues, but also of the underlying facial muscles and organs of the head and neck.

Dr. Li and coauthors believe their technique, although complex, provides a valuable new approach to reconstruction for patients with complete destruction of the facial skin. They conclude, "It is a reliable and an excellent reconstructive option for massive facial skin defects."

Provided by Wolters Kluwer Health

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