

# SCIENCE DIGEST



**A lost tongue can be replaced by a flap of live muscle lifted from the chest and passed into the mouth through an opening in the neck. The flap can become somewhat mobile, assisting speech and swallowing**

## REPLACING LOST TONGUES

A new reconstructive procedure designed to replace a patient's diseased or injured tongue has been developed by Dr. Michael Evan Sachs and John Conley of Columbia University. Using a muscle from the chest they have been able to provide a mobile substitute for the original tongue for the first time.

The loss of a tongue can occur in certain accidents or in rare cases, patients suffering from cancer of the tongue or mouth must undergo a glossectomy, in which the diseased organ is surgically removed. Although this may cure the illness, it also prevents normal swallowing and, of course, speech.

In traditional reconstructive work, skin is taken from the patient's forehead or neck, but movement of the graft is severely hindered. In the new procedure, a flap of muscle is cut from the chest with a sheath of skin still attached.

The combination of tissue is rotated into the mouth with the nerve and arterial supply intact. Next a vertical incision is made from the flap to the neck, allowing the free end of the flap to be maneuvered up and through the floor of the mouth cavity where it is anchored to the remaining segment of the natural tongue. The implant is then folded and sewn to approximate the size and appearance of the original. Finally, the chest and neck openings and the skin surrounding the donor area are pulled and sewn shut over the muscle flap, thus concealing it. Since scarring is minimal and the operation interferes little with breast structure, the procedure is available to both men and women.

The most technically challenging part of the operation is the microsurgical attachment of the original hypoglossal tongue nerve to the new nerve going into the muscle flap. This allows for the most important technological breakthrough to take place - the ability of the new tongue to actually move. This in turn allows the patient to speak, eat and swallow.

"The operation", says Sachs, "represents a new frontier in microscopic reconstructive surgery. It allows for the first time a kinetic or mobile part of the body to be actually replaced. It signals a new age in head and neck plastic and reconstructive surgery."

## SURGEONS FREE UP FROZEN FACES

Plastic surgeons are literally putting a smile back on the faces of patients suffering from facial paralysis.

This condition, which afflicts thousands of Americans each year, occurs when one of the facial nerves is injured or partially removed during surgery. The standard surgical method to correct the paralysis can restore movement, but it does not allow the patient proper control of his facial muscles.

Michael Sachs, director of plastic and reconstructive surgery at the New York Eye and Ear Infirmary, explains that the facial nerves are connected to several different muscle groups. "A normal person can move his eyes and mouth separately," he says. "When he blinks, his mouth doesn't go up and down. When he smiles, his eyes don't close." But this is exactly what has been happening in cases of facial paralysis, because traditional reconstructive surgery is not very precise.

By treating the upper and lower zones of the face separately, Sachs has been helping paralysis patients regain a more natural facial expression and more coordinated movements. First, a graft taken from a nerve in the neck is used to reconnect the facial nerve to muscles around the eye. To restore lower-face movement, Sachs takes the masseter muscle, which runs from the cheekbone to the lower jaw and is used for chewing, and divides it into two parts. One part, with its accompanying nerves, is positioned above the mouth; the other, below.

The masseter muscle can function almost immediately after the operation. Eventually the brain will "realize" that the chewing muscle is in a new location and allow the patient to smile or chew at will. When the nerve graft heals, the eye muscles can begin to move.

**Paralysis patients regain facial control when surgeons reconnect the facial nerve with a graft and shift the chewing muscle from the cheek area to around the mouth**

