Oral Cancer: Reconstruction and Rehabilitation

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The five-year survival rate of patients treated for oral cancer has improved steadily over the past several decades; today, it approximates 35-40 percent. However, following successful cancer therapy, some of these patients will choose social isolation because of preoccupying melancholy over physical disfigurement which in time erodes the integrity of the personality. These may be patients who have been left with an obvious facial deformity, a speech impediment, inability to swallow, drooling or whose postoperative course has been complicated by sinuses, fistulae or cavities which, because they are difficult to clean, are malodorous.

Management

The concept that reconstruction and rehabilitation should be divorced from excisional cancer therapy because recurrence or persistence of cancer would be masked and that reconstruction should be instituted, if at all, only after several disease-free years have passed is no longer tenable. Such management, which ignores the humanitarian aspects, is changing and for several reasons:

☐ Reconstruction does not cover persistence or recurrence which appears at the junction of wound margin and transplanted tissue;

☐ Reconstructive techniques after radical surgery for oral cancer have improved appreciably;

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More reconstructive plastic surgeons and reconstruction-minded general surgeons are now available on the tumor service of many medical centers and hospitals.

Patients and their families are more aware of advances in reparative surgery developed during World War II, the Korean and Vietnamese wars.

Anesthesiology has improved so that an otherwise well patient with oral cancer can withstand, without incident or increased morbidity, reconstructive surgery which is appreciably prolonged beyond tumor ablation.

Radical surgery or intensive irradiation may be more acceptable to a patient if he knows that function will not be lost and that deformity will be minimized.

Simultaneous or early reconstruction is recommended not only for economic reasons but also because exposure is optimum, scarring which accentuates deformity and dysfunction is decreased and the patient is more comfortable, more optimistic whether cured or not. Even if the patient is not cured, immediate or early reconstruction still provides good palliation.

**Coordinating Reconstruction With Ablation**

The treatment plan for a patient with oral cancer is the responsibility of all members of the health team. If reconstruction is to be achieved, or started, at the time of the primary operation, one or two surgical teams may be needed. One can also use the same surgeon for each procedure, possibly aided by two teams of assistants. Whichever mechanism is selected, these two phases must be coordinated to achieve the following:

1. Tumor ablation and reconstruction, or major steps toward restoration of function, can be achieved with one anesthesia and one convalescence with no increased morbidity.
(2) The best donor sites for reconstruction are spared during ablation and unnecessary scarring is prevented.

**An Effective Plan for Reconstruction**

The reconstruction plan uses the skills of all members of the health team, i.e., the reconstructive plastic surgeon, prosthodontist, oral surgeon, dentist, etc. A balance between function and aesthetics should be achieved and the economic strain imposed on the patient by several operations and hospitalizations should be carefully weighed. The goal of reconstruction is to produce the best result in the shortest time while remaining sensitive to signs of over-treatment and alert to evidence of diminishing return from additional treatment. The success of the plan is enhanced by preoperative hygienic measures, including dental prophylaxis, intramaxillary wiring, skin care, etc., and is facilitated by preparation of a pedicle flap prior to ablative surgery.

**Reconstruction Techniques**

**Lining the Oral Cavity**

Difficult closure of the intraoral wound after excision of the cancer is the greatest deterrent to an adequate resection. The mobile tongue has been used, especially following hemiglossectomy, resection of the floor of the mouth and hemimandibulectomy, to repair the floor of the mouth and buccal defects. However, this produces serious deglutition and speech dysfunction.

The increasing use of partial-thickness skin grafts to surface the defect of the tongue, line the floor of the mouth and the alveololabial or alveolo-buccal sulci, is an important reconstructive technique and the bolus tie-over dressing has insured its success. The graft is sutured at the margins of the defect. The sutures are left long and uncut and are then tied over a bolus of foam rubber, cotton or polyurethane which keeps the graft in intimate juxtaposition to the bed, thus reducing the possibility...
of hematoma formation and the risk that the graft will be lost due to movement or shearing.

Local mucosal flaps from the buccal surface or mucoperiosteal flaps from the hard palate may be useful in smaller resections. The use of the tongue to develop pedicle flaps may occasionally prove helpful, as will a pedicle flap (pharyngeal flap) from the posterior or lateral pharyngeal walls to surface defects of the velum or tonsillar region. Pedicle flaps brought from a distance are very useful for lining the oral cavity and providing soft tissue beneath which bone grafts may be used to restore mandibular continuity. The most useful of the common pedicle flaps which can be transported without previous preparation by either the incision and resuture procedure (the so-called ‘‘delay’’) or by formation into a tube pedicle, are the temporal flaps and the deltopectoral flaps.

The temporal flap is the safest of these pedicles since it is supplied by end-arteries and veins of the superficial temporal vessels, obviating the need to cut underlying collateral circulation as the flap is elevated. Since the pedicle base is adjacent to the oral cavity, the flap is not endangered by movements of the neck.

The deltopectoral flap, raised obliquely upon the chest from the deltoid to the midline, incorporating the pectoral branches of the thoracoacromial artery laterally and the internal mammary medially, may be raised at either end and transplanted immediately. The vascular dependability of this flap is somewhat less than the temporal flap.

The problem of drooling, due to paralysis of the marginal mandibular branch of the facial nerve or to loss of lip or cheek, may be helped by a prosthetic dam or by dissecting out and transplanting Stenson’s duct into the tonsillar fossae. (Figure 1.)
Mandibular Replacement

Loss of mandibular continuity in the region of the body is not seriously deforming; ankyloglossia will be avoided if the tongue is not used to correct the loss of lining.

Much more disfiguring and posing a serious respiratory problem is the loss of the symphysis mentis. Here the anterior fixation of the tongue is lost, producing posterior glossoptosis. The strong medial pull of the pterygoid muscles will produce severe displacement of the proximal mandibular fragments which, in time, will make repositioning impossible.

The use of pins of inert metal to maintain the proper relationship of the bony fragments is another important advance in reconstruction of this region. These malleable pins may be bent to conform to the normal contour of the mandible and are incorporated into the wound closure, whether or not a pedicle flap is used. (Figure 2.)

Primary or secondary bone grafts may be employed. Although surfacing the graft with a temporal flap has increased the success rate of a primary bone graft, oral sepsis still militates against this procedure, making secondary bone grafts the procedure of choice.

Newer prosthodontic materials applied by a skilled prosthodontist will immeasurably enhance rehabilitation in the treatment of oral cancer. An imaginative solution to total glossectomy was the combination of an alveolar saddle for the lower jaw with a soft silastic "tongue" affixed, which, by jaw movement, could propel the food bolus posteriorward.

These are but a few of the available techniques which can be varied to suit the special needs of each patient. They may be applied at one operation by several teams working cooperatively so that three or four major procedures may be accomplished in sequence during one prolonged anesthesia.