The Treatment of Oral Cancer*

Richard H. Jesse, M.D.

The treatment of patients with cancer of the oral cavity is the responsibility of all members of the health team. Initially, the primary care physician performs an adequate examination and either establishes a diagnosis or refers the patient to a secondary individual or group. He then checks to make sure that the patient has arrived at the referred area since frightened patients sometimes fail to enter into the next echelon of investigation, even though referral avenues have been correctly outlined to them. Ultimately, the surgeon, radiotherapist, dentist (surgeon and prosthodontist), chemotherapist and related allied health professionals combine their skills in order to attain the optimal treatment for each patient.

Surgical excision and/or adequate radiotherapy remain the most effective means of treating the patient with oral cancer; present-day chemotherapy, whether administered systemically or intra-arterially, has not proven curative. However, experimental studies utilizing chemotherapy as an adjunct to surgery or irradiation are in progress and preliminary reports indicate that some benefit may accrue to the patient. For the present, however, the surgeon and radiotherapist must plan the treatment jointly, deciding whether one or both modalities of treatment are indicated, and, if both are used, predetermining the exact function of each.

The Advantages and Disadvantages of Surgical and Radiation Therapy

Exirpative surgery when used as the only mode of therapy in patients with oral cavity cancer has several basic advantages: (1) It can accurately determine the extent of the lesion and its routes of spread; (2) The surgical procedure, even though radical, is usually well tolerated by the patient; (3) Surrounding normal tissues are unaffected by surgical therapy; (4) Although the patient has maximal pain, discomfort and disability during the immediate postoperative period, these problems are usually minimized rather quickly; (5) The necrotic, hypoxic, central portion of the lesion can be easily removed.

However, surgical excision also has two major disadvantages: (1) Microscopic cancer cells at the periphery of the surgical resection may not be removed and may later proliferate into a clinical recurrence; and (2) The cosmetic and sometimes functional results of radical surgery are at times undesirable.

On the other hand, radiation therapy has two major advantages: (1) No tissue is removed and thus a good cosmetic result is usually obtained; and (2) Radiation therapy can often cover a wide area, therapeutically eradicating microscopic cancer cells at some distance from the obvious primary lesion. Its major disadvantages are the following: (1) The central, necrotic, hypoxic portions of large lesions usually respond only to a large ultraradical dose of irradiation and sometimes do not respond at all; (2) Ra-

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Dr. Jesse is Chief, Head and Neck Service, Department of Surgery, M. D. Anderson Hospital and Tumor Institute at Houston, Texas.
Radiation therapy often disturbs many of the surrounding normal cells, thus causing such conditions as dry mouth, easy traumatization by heat, cold, dentures and tobacco smoking, and the possibility of bone and soft tissue necrosis; (3) Lesions of certain cell types, i.e., adenocarcinoma of salivary gland type and soft tissue sarcomas, appear to be somewhat radioresistant.

A combination of radiotherapy and surgical treatment produces a maximal attack on the cancer with minimal complications. For example, less than ultraradical doses of irradiation can be administered to the cancer and its surrounding area, securing the periphery which contains microscopic disease but not attempting to destroy every single malignant cell within the tumor. Radiobiologic studies show that an irradiation dose of approximately 5,000 rads in five weeks will accomplish this purpose. Surgical extirpation of the central portion of the lesion can then follow, accomplishing surgically what radiotherapy does least well. Employing this approach, the extent of the surgical procedure can often be reduced, thereby preserving tissues which, if removed, would give a less desirable functional and cosmetic result.

Factors Affecting Choice of Treatment

When deciding on the optimum treatment for each patient, a number of factors must be taken into consideration. First, one must consider the origin, size, shape, attachments, extensions, cell type, probable biologic behavior of the tumor and whether there is regional metastasis.

Then, one must take the patient into account. What is his general medical condition? His wish and desire regarding treatment, his work record, his socioeconomic status, his drinking and smoking habits? Another extremely important consideration is his psychological attitude toward both his cancer and the possible method of treatment.

In any given community, the skills of the various members of the treatment team must also be considered. Is the surgeon as skilled as the radiotherapist or vice versa? Does the radiotherapist possess the proper equipment to adequately treat this particular patient and does he have access to a competent physicist who will help him calibrate his machine and calculate the proper dosimetry?

These decisions require critical judgment based on perceptive experience. For the sake of the following discussion, we will assume that the skills of all members of the treatment team are equal, leaving us only to consider the type of tumor and the patient involved.

Treatment of Benign Lesions

Surgical excision, with or without skin or mucosal graft, is the only recommended method of treating all patients with benign, soft tissue lesions in the oral cavity. Radiation therapy, while an excellent treatment for small malignant lesions, has no place in the treatment of noninvasive oral lesions—even those suspected of being precancerous. Although a certain number of leukoplakic lesions can be eradicated with radiotherapy, the same dose is required as if a cancer were present. Also, since precancerous lesions usually cover a wide area of the oral mucosa, the radiotherapy field would, by necessity, be large and a great number of normal cells in the submucosal, muscular and glandular areas would be destroyed by irradiation.

Treatment of Squamous Carcinomas

Patients with squamous carcinoma—who comprise 85 percent of patients with oral cavity cancers in most series—
may be treated by one of two basic modalities. The treatment team may administer ultraradical combined treatment both to the primary cancer and all possible areas of regional metastases regardless of how the cancer presents in the patient. This plan will assure the greatest regional arrest of the disease, but it may cause poor functional, cosmetic and psychological results. For example, administration of 5,000 rads of irradiation to the entire intraoral area and both sides of the neck, followed by a combined intraoral resection, resection of the mandible and radical neck dissection would probably cure the greatest number of these cancer patients if it were applied to all individuals regardless of the clinical presentation of the cancer. This ultraradical treatment, while perhaps very proper for patients with large cancers, is entirely unnecessary for many patients with small lesions.

The second choice available to the team is to select only one method of treatment or to blend the less than ultraradical doses of irradiation and extensive surgical procedures sequentially as indicated by the individual's clinical situation. This less radical approach, if properly chosen, will usually result in regional control equal to that achieved by combining radical doses of irradiation with extensive surgical procedures.

If all patients with oral cavity cancer arrived at the treatment facility with a primary oral squamous cancer less than 1 cm in diameter, without clinical evidence of cervical metastasis, few treatment problems would ensue. Treatment results with adequate intraoral excision or localized high-dose radiotherapy are the same. However, at most treatment facilities in the United States, a surgical extirpation would have a slight preference in treatment for these very small lesions since it can be done quickly and easily, and the patient loses little time from his normal life.

Moderate-sized primary squamous lesions (1-3 cm in diameter) without cervical metastasis, can also be controlled (equally well) with radical surgical procedures or radical radiotherapy. Radiation therapy is usually recommended here since the radical removal of larger lesions often necessitates the sacrifice of large amounts of bone and soft tissue. Radiation therapy techniques which utilize a combination of external irradiation and interstitial irradiation are usually preferred to external irradiation alone since less normal tissue is affected.

However, sometimes the size of the lesion is not the only determining factor; the patient influences the type of treatment employed. For instance, surgical treatment, rather than radiotherapy, is preferred for a patient who is in poor nutritional status, who will not stop smoking or drinking and who will not use proper dental hygiene. The choice of radiotherapy in this type of patient would carry a very high possibility of necrosis of the mandible. There is also a high probability that a second primary cancer will subsequently occur in such a patient and that radiation therapy may mask its appearance or may interfere with the necessary, subsequent treatment. If cancer directly involves the mandibular or maxillary bone, surgical treatment is usually mandatory, although radiotherapy pre- or postoperatively may be included as part of the treatment.

Patients with primary lesions larger than 3 cm usually have extension of the cancer to more than one anatomical site
within the oral cavity. Statistical studies indicate that eradication of local disease is best accomplished by combining radiotherapy and surgical resection. The decision regarding the proper sequence of combined treatment is, and must be, the prerogative of the treatment team and not of the referring physician or dentist.

The larger the primary lesion in the oral cavity, the greater the possibility of cervical node metastasis. If cervical metastasis is not clinically discernible at the time of therapy for the primary lesion, most treatment teams do not advocate elective treatment to the clinically negative neck, particularly if the primary lesion is small. However, some teams advocate elective treatment of the clinically negative neck when the primary lesion is large. Radical neck dissection or radiation therapy (5,000 rads in five weeks) are both extremely effective in preventing the future appearance of ipsilateral cervical metastasis in patients whose primary lesion is under control. Radiotherapy (5,000 rads in five weeks) prevents the future appearance of contralateral neck nodes and is preferred to surgical procedures in patients in whom this possibility is high.

Recent studies have shown that radical neck dissection is an adequate procedure to eradicate nodes up to 3 cm in diameter lying in the first level of metastasis for a given primary cancer; it is not as effective in preventing recurrence in the dissected neck when dealing with multiple nodes at different levels or large fixed nodes. In patients with multiple or fixed nodes, the addition of moderate doses (5,000 rads) of irradiation therapy to the radical neck dissection decreases recurrences in the neck.

**Treatment of Adenocarcinoma**

Adenocarcinomas of the salivary gland type which occur within the mucoous glands of the oral cavity are usually excised since they have a reputation of being radioresistant. Radiation therapy, while perhaps not an adequate treatment for the large adenocarcinoma, is nevertheless worthwhile in certain patients as an immediate, postoperative, adjuvant treatment to prevent recurrent cancer in the bed of the excision, at the periphery of the excision where it kills microscopic cancer and in nerves (a favorite site of spread for these cancers).

**Treatment of Malignant Lymphoma**

Most patients with malignant lymphoma in the oral cavity and oropharynx should have radiotherapy as their primary local treatment. Chemotherapy is a useful adjuvant to local treatment and is important in controlling systemic lymphomas.

**Treatment of Melanoma**

Surgical excision of intraoral melanomas in conjunction with systemic chemotherapy is the current method of treatment for this usually highly lethal disease.

**Palliative Treatment of Patients with Oral Cancer**

Determining the fine line where treatment for cure ends and therapy for palliation begins is usually difficult for members of the treatment team. Even for patients with a poor statistical probability of cure, the team may find it desirable to eradicate the primary lesion and its regional metastases in an attempt to prevent the symptoms of local disease. A patient with persistent cancer, whether manifested by residual local disease after definitive treatment, local recurrence or regional or distant metastasis, enters a phase of his life when his cancer must be considered a chronic illness. One can define two periods of life under these circumstances: that period in which palliative treatment will alleviate symptoms so that the patient can return to society in a normal or near
## Treatment of Oral Cancer

| Type of Lesion | Treatment |
|----------------|-----------|
| Benign         | Excision with or without skin or mucosal graft. |

### Squamous Carcinoma

| Primary Lesion | Treatment |
|----------------|-----------|
| Less than 1 cm | Excision or localized high dose radiotherapy. (Excision which is easily done and causes little time loss for patient may be preferred.) |
| 1-3 cm         | Radical surgery or radical radiotherapy give equal results. (Radiotherapy preferred unless patient’s nutrition is poor, he smokes, drinks or has poor dental hygiene or if cancer involves the mandible or maxilla.) |
| Larger than 3 cm with extension to other sites in the mouth | Combined excision and radiotherapy. |

| Neck | Treatment |
|------|-----------|
| Clinically negative | Elective radiotherapy or surgery not advised for small primary lesions. Some physicians advocate such treatment for large primary lesions. |
| Clinically positive | Radical neck dissection for nodes up to 3 cm in the first level of metastasis. For large fixed nodes or multiple nodes at different levels, add radiotherapy (5,000 rads in 5 weeks) to the radical neck dissection. Irradiate the opposite neck, if clinically negative, to prevent nodal metastases. |

### Adenocarcinoma

| Treatment | Excision, possibly combined with immediate, postoperative radiotherapy. |

### Malignant Lymphoma

| Treatment | Radiotherapy, chemotherapy as adjuvant (to local treatment). |

### Melanoma

| Treatment | Excision and regional or systemic chemotherapy. |
normal capacity and that period in which he becomes hospital- or home-bound and requires regular care.

The surgeon, radiotherapist, chemotherapist, prosthodontist and family physician who comprise the treatment team should always consult the patient or his family in matters pertaining to palliation and keep one goal in mind, namely, what can be accomplished for the patient. Symptom complexes such as pain, fistula, ulceration with secondary infection and odor, obstruction which causes difficulty in swallowing and breathing and excessive salivation are, of course, disturbing both to the patient and his family. Cosmetic defects may also trouble the patient, but the alleviation of this problem is usually a long-range goal. Surgical procedures, radiation therapy, chemotherapy, maxillofacial prosthesis and supporting care can all be used for palliative therapy. A list of helpful surgical procedures for specific problems might include: tracheostomy for respiratory obstruction or for bronchial toilet; a nasogastric tube, cervical pharyngotomy, cervical esophagotomy or gastrostomy for patients who cannot swallow; surgical excision, electrocautery or cryosurgery for ulcerated, sloughing, infected wounds; excision of painful soft tissue ulcers or bone sequestra; or neurological procedures to interrupt the pain pathways.

If the patient has not had previous irradiation therapy, a short, intensive course of treatment or single treatments with a dose of some magnitude, administered at intervals spaced sufficiently far enough apart to allow the recovery of surrounding cells, are often useful. Chemotherapy administered either intra-arterially or systemically will result in measurable improvement of function and diminution of pain in approximately one third of the patients. Short courses of chemotherapy may be administered at the treatment center but, if possible, the home environment is usually preferred.

Family physicians, family members and friends often hesitate to recommend or allow surgical treatment during the early palliative period, particularly when the suggested therapy seems radical. However, they fail to recognize the relatively long-term benefits of some of the procedures.

When the patient enters the period where he is home-bound or hospitalized, the palliative procedures outlined above change from long-term to short-term goals. Here the major emphasis is on keeping the patient comfortable. The importance of instructing the patient and his family on nursing procedures necessary to keep him at home cannot be over-emphasized. This is the combined responsibility of the representatives of the treatment center, the home physician and home health agencies. Equipment, medication and drugs necessary to maintain the patient in the home environment should be provided. Power-spray equipment or irrigation equipment with solutions of salt and soda, boric acid or hydrogen peroxide should be provided to cleanse the involved area of dried secretions and debris. Suction machines are important to eliminate saliva. Debriding the wound with wet dressings, which are regularly changed, and administering topical antibiotics to minimize bacteria, reduce odor and secondary infection are necessary. Weak solutions of commercial bleaching agents are a cheap, effective way of decreasing odor.

Dietary information regarding the type and consistency of the food the patient can tolerate, instructions on the use of a blender and the fundamentals of indwelling nasogastric tube feeding are all important. Antimuscarinic agents may be employed if necessary to decrease the flow of saliva. Non-narcotic analgesics should be used as long as
possible; narcotics should be judiciously used only if pain is severe and may be necessary initially only at night. Codeine given orally is the drug of choice since it produces little euphoria and drug addiction is less likely to occur than with morphine or the other opium alkaloids.

Great care should be taken that the patient is not given too much narcotic before his need becomes acute. Often, because of the demands of the patient and the sympathy of the family, the real need of the patient will go unrecognized and the effect of the drug will be diminished because of the patient's increasing tolerance to the medication. A toxic psychosis manifesting itself in the same symptomatology that the cancer produces may occur because of such an overdose.

Utilizing the principles described above, an occasional patient may be materially improved for a surprisingly long period of time and most patients may, at least, be made more comfortable.

Addendum:

In the article, "Biopsy: Definitive Diagnosis of Oral Cancer," by Harvey W. Baker, M.D., (Ca—A Cancer Journal for Clinicians, May/June 1972, pages 159-162) the drawings in Figures 2 and 3, page 160, were adapted from illustrations by Mary V. Gardineer in a manual, "Oral Biopsy Techniques," by Drs. P. A. Pullon, A. S. Miller, J. J. Aleo and R. L. Ellison, Department of Pathology, Temple University School of Dentistry, published by the American Cancer Society's Philadelphia Division in 1969.