

Cancer

OF THE HEAD AND NECK

*Second of a Series on the
Early Recognition of Cancer*

HAYES MARTIN, M. D.

Attending Surgeon, Memorial Hospital,
New York, N. Y.

Assistant Professor of Clinical Surgery,
Cornell University Medical College

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American Cancer Society, Inc.

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PREFACE

THERE are many vital structures in the head and neck which are situated anatomically in close proximity to one another in a relatively small volume of tissue. Numerous specific morphologic types of tumors, corresponding to these anatomic structures, occur in this region. Several of these anatomic parts are of diverse embryologic origin and are concerned with a variety of physiologic functions. Since most of these structures are small, a number of organs and a variety of tissues may be frequently involved by extension of the tumor early in the course of the disease. It is essential, therefore, from a standpoint of clinical analysis that the anatomic site, histogenetic origin and extensions of a given tumor be accurately established at the beginning since it would be otherwise difficult, if not impossible, to predict the clinical course and plan for proper treatment.

The medical profession in general and the family physician in particular should be familiar with the early symptomatology, diagnostic criteria and clinical course of cancer of the head and neck. The main objective of such knowledge is to promote early diagnosis and prompt referral for treatment. The physician should be familiar with the general program of treatment so that he can cooperate in advising the patient and family properly. It is with this purpose in mind that the present brochure has been prepared.

A detailed description of treatment has been deliberately omitted since such a discussion would necessarily be so lengthy as to confuse and obscure the over-all perspective. The author has avoided controversial issues as much as possible, especially where such differences of opinion would not materially affect the general policy of treatment. Nevertheless, at the risk of appearing dogmatic definite recommendations relative to treatment have been made (radiation therapy versus surgery) in those instances where past experience and critical examination of accumulated data overwhelmingly support the use of one method or another. These conclusions are based on the observations of one who has employed both radiation therapy and surgery (alone or in combination) in the treatment of these diseases for a period of more than 25 years.

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Pioneer Clinicians in the Study of Cancer of the Head and Neck



MORELL MACKENZIE (1837-1892)

Morell Mackenzie achieved world-wide publicity when in 1887 he opposed laryngectomy in the case of the famous patient, Frederick III, Emperor of Germany. His dictum was that laryngectomy should not be performed in the face of a negative biopsy report from the pathologist. He was the author of numerous treatises and books on diseases of the larynx, as for example, "*Diseases of the Pharynx, Larynx and Trachea.*"

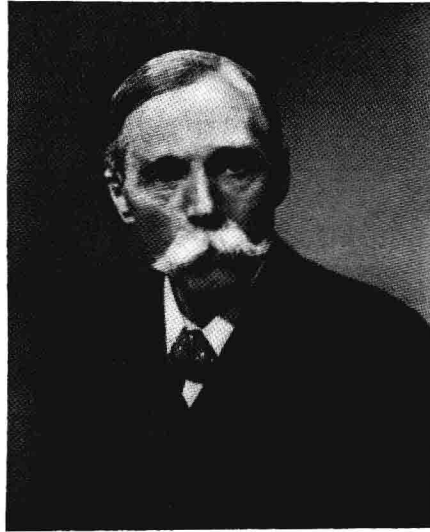
NICHOLAS SENN (1844-1908)

Over 50 years ago this pioneer American surgeon, Professor of Surgery at the Rush Medical College, performed well-planned surgical procedures for head and neck cancer (glossectomy, resection of the mandible and maxilla, etc.) In his "*Pathology and Treatment of Tumors*" Senn described aspiration biopsy. This diagnostic procedure never came into general use until rediscovered about 30 years later.



HENRY T. BUTLIN (1845-1912)

In 1885 Butlin, surgeon to the St. Bartholomew's Hospital of London, published the monograph, "*Diseases of the Tongue*," in which he discussed in considerable detail cancer of that organ. He performed resection of the tongue for cancer, pointing out that involved cervical lymph nodes must be included in the dissection. Butlin emphasized the frequent association of syphilis and tongue cancer.



JOHN BLAND-SUTTON (1855-1936)

Sutton worked in the Cancer Charity of the Middlesex Hospital in London. His clinical experiences were described in a comprehensive monograph, "*Tumors, Innocent and Malignant*." This investigator warned that the diagnosis of branchiogenic carcinoma was too loosely made, and called attention to the fact that in this disease the primary lesion in the mouth or pharynx was often overlooked. He advocated neck dissection as the proper treatment for cervical metastasis.

Cancer of the Mouth

THE term *mouth cancer* is commonly used to define those malignant tumors which arise in the mucous membranes of the oral cavity beginning anteriorly at the muco-cutaneous junction of the lips and extending posteriorly to the level of the free edge of the soft palate, the tonsil, and the base of the tongue. Cancer of the mouth may be divided into several varieties based upon the anatomic site of the origin of the tumor—*viz*: lip, cheek, gum, floor of the mouth, tongue, palate, and tonsil. From the practical standpoint growths arising in these different areas present distinct clinical problems especially with regard to treatment, and in the evaluation of an individual case it is essential that the primary site of origin of the tumor be definitely established.

ETIOLOGY

Cancer of the mouth comprises about 4 per cent of all human cancer, and about 70 per cent of all cancer in the upper respiratory and alimentary tracts. Males are affected about five times as frequently as females (cancer of the lip and floor of the mouth—98 per cent in males; cancer of the tongue, gum, tonsil, palate, and cheek—80 to 90 per cent in males). Intra-oral cancer is mainly a disease of middle and old age, although it may occur in the young, and even in infants.*

Causative Factors.—The prime cause of cancer in any part of the body has not been established, but several forms of chronic

*The occurrence of malignant tumors in the mouth is frequently recorded in domestic animals, such as cows, horses, dogs, cats and in monkeys.



FIGURE 1. LEUKOPLAKIA OF THE LIP

Diffuse atrophy and patchy leukoplakia of the mucosa of the lower lip in a 42 year old male patient who had been excessively exposed to sunshine and weathering for many years. These lesions should be systematically observed since many are precancerous.

irritation are known to be important contributing factors in the causation of mouth cancer. The form of chronic irritant is of less importance than its chronicity.

In cancer of the lower lip over-exposure to sunshine over a period of many years is a significant etiologic factor, and the disease is found most often among outdoor workers such as farmers, sailors, etc. A frequent source of chronic irritation within the mouth is luetic glossitis. About 20% of all male patients with cancer of the tongue have chronic syphilis, as contrasted with about 4 per cent of syphilis in males of similar age groups without cancer of the tongue. Chronic glossitis and stomatitis may also be due to nutritional deficiencies (avitaminosis B).

Tobacco, especially smoking, can be demonstrated statistically to be among the causative factors. The incidence, especially of excessive smoking, is higher in persons with mouth cancer

than in the normal. The so-called "pipe smoker's cancer of the lip" is not as frequently seen now as formerly, when clay pipes were in common use.

Leukoplakia of the oral mucous membranes occurs as a tissue response to chronic irritation and is often found to precede or to be associated with cancer. These two conditions have a common etiology so far as chronic irritation is concerned (fig. 1).

The etiologic significance of chronic irritation from sharp or broken teeth and ill-fitting dentures has undoubtedly been greatly over-emphasized.

PATHOLOGY

The most frequent histologic type of cancer of the mouth is epidermoid carcinoma (about 90 per cent). This is to be expected since malignant tumors of the oral cavity for the most part arise from mucous membrane of the squamous variety. Adenocarcinoma is occasionally found in this portion of the

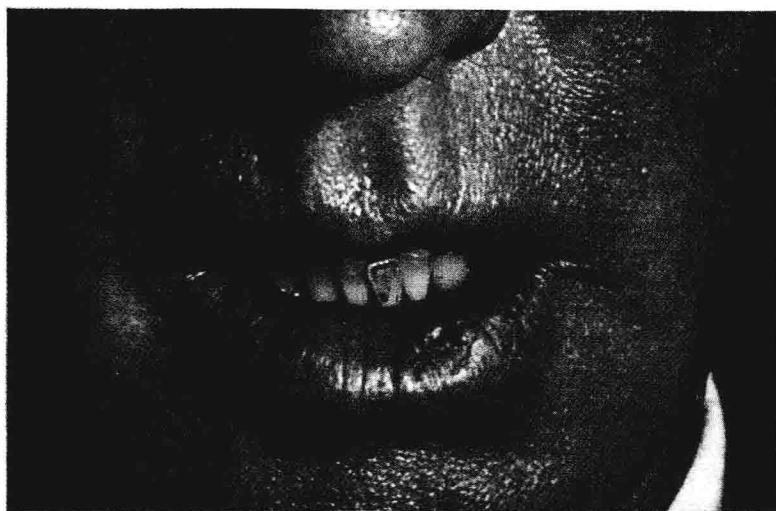


FIGURE 2. CANCER OF THE LIP

A relatively small chronic indurated ulcer of the lower lip of 6 weeks duration. Biopsy revealed epidermoid carcinoma, grade II. Such early growths may be treated successfully either by surgery or radiation therapy.

upper alimentary tract and is most often seen in the palate; such a morphologic type of cancer has its origin either from minor salivary glands or from mucous gland tissue. Melanoma, spindle-cell sarcoma, malignant muco-epidermoid tumors, and malignant lymphoma occur, though rarely, in the mouth.

About 75 per cent of oral cancer is well differentiated (grade I and II) and the more malignant (less differentiated) varieties of epidermoid carcinoma are more frequently found in the posterior part of the oral cavity (tonsil and base of tongue). Other highly malignant cancers, such as anaplastic and transitional cell carcinoma, also have an affinity for structures in the posterior oral cavity, particularly in the tonsillar region.

SYMPTOMS, MORBID ANATOMY, AND CLINICAL COURSE

The first or early subjective symptoms of mouth cancer vary according to the location of the primary lesion. When this disease occurs on the lower lip, the first sign noted by the patient is always the visual presence of the growth, since this portion of the anatomy is under daily self-observation (fig. 2). Within the oral cavity, especially in the anterior portions of the tongue, floor of mouth, or cheeks, the first symptom of cancer may be either the discovery of a "lump," "sore," or an area of irregularity detected by the tactile sense of the tongue. In about an equal proportion of cases the first symptom is slight pain or tenderness. It should be emphasized at this point that such pain or tenderness is not a symptom of the cancer itself but rather of secondary infection in and about the ulcerated tumor. Pain or tenderness in a cancerous ulcer is seldom as marked as in a benign or inflammatory lesion of equal size.

Further back in the mouth cavity (tonsil, base of tongue and palate), where tactile and pain sensations are less acute, the primary lesion rarely produces any symptoms in its early stages and

the growth usually reaches the size of 2 to 3 cm. before subjective manifestations arise. At this stage of the disease the lesion becomes infected so that the first symptom of the local growth is slight pain on swallowing or speaking. In this locality, moreover, the tumor may remain silent, and in such cases the first symptom will be the discovery by the patient of an enlarged (metastatic) lymph node in the neck.

Early cancer of the mouth is characterized objectively by the appearance of an indurated plaque or ulcer which infiltrates the mucous membrane for a varying distance. Upon examination, the primary lesion of mouth cancer may appear as a small, smoothly granular ulcer; a fissured patch of leukoplakia; a slightly ulcerated, papillary tumor; an excavated ulcer with indurated edges; or a necrotic ulcer covered with slough. The most common and characteristic picture is a coarsely granular ulcer with indurated, raised, rolled edges (figs. 3 & 4).

As mouth cancer progresses, ulceration and deep infiltration become more apparent, accompanied by extensive secondary infection, and only at this time do pain and disability become marked. The later stages are characterized by steadily increasing infiltration of the tongue, the cheeks, the floor of the mouth, the tonsil, and the palate, and very often, depending upon the site of origin of the primary growth, invasion and erosion of the mandible and maxilla occur. As the normal structures are invaded and destroyed by the growth, the movements of the tongue and jaws are restricted (trismus) and speech becomes less distinct. The swallowing of food and drink is often both difficult and painful, and in some cases the patient may not even be able to swallow his saliva, which must then be spat out (salivation). In other cases, the expanding growth and edema may encroach upon the lumen of the pharynx or larynx to cause both dysphagia and dyspnea. Repeated hemorrhages may result from



FIGURE 3. CANCER OF THE TONGUE

A moderately advanced ulcerated indurated growth of the lateral edge of the tongue. Biopsy revealed squamous carcinoma, grade II. In this case the growth is clinically confined to the tongue (no local extension or distant metastasis) and may be treated successfully by surgery or radiation therapy.

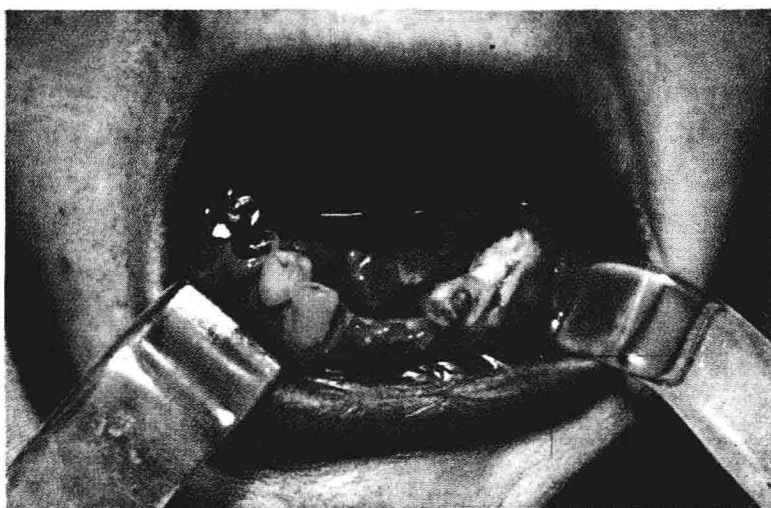


FIGURE 4. CANCER OF THE GUM

A case of moderately advanced cancer of the lower gum. Although the patient was aware that the condition might be serious since the ulceration in the mouth was chronic and later "sore," numerous physicians were consulted prior to biopsy. Note the extensive leukoplakia in and about the lesion.



FIGURE 5. CANCER OF THE FLOOR OF THE MOUTH

An ulcerated infiltrating growth situated in the floor of the mouth and extending for a short distance onto the under surface of the tongue. The patient (a dentist) noted that his lower denture, which he had worn for about 10 years, became uncomfortable. After grinding down the dental plate over a period of many months, he finally consulted a physician. A clinical diagnosis of carcinoma was confirmed by biopsy.

the erosion by cancer of large blood vessels. Death in uncontrolled mouth cancer usually occurs from one or more of the following complications: sepsis, malnutrition and dehydration, pneumonia, hemorrhage, respiratory obstruction and metastasis.

Metastasis.—The cervical lymph nodes may be involved by metastasis early in the course of the disease, while the primary lesion is only a few millimeters in diameter, but such spread almost invariably takes place during the advanced stages. At first there is barely discernible enlargement of one or more lymph nodes but as the disease progresses, the metastatic cervical mass, (sometimes multiple and bilateral) may reach a size of 10 to 15 cm. in diameter. Such cancerous lymph nodes frequently become infected, producing bulky, fluctuating, liquefied abscesses.

If the malignant growth in the mouth and in the neck is not controlled and if the patient survives long enough, metastasis almost invariably occurs to some viscus below the clavicle, such as the lungs or the liver, or to the bones.

DIAGNOSIS

It can be stated without any hesitancy that mouth cancer is more serious and more important to the patient than any other condition with which it might be confused. Therefore, in any suspicious lesion of the mouth, the physician should consider cancer first, and should rule out such a possibility before waiting "to see what happens" or proceeding with treatment on the basis of a benign diagnosis. If the possibility of a malignant growth is considered at the beginning, few harmful errors in diagnosis will be made.

One significant fact to establish in the history of patients with suspected mouth cancer is that the lesion is chronic and progressive. If the patient can recall that the abnormality has been present for several weeks or months, and is steadily increasing in extent, this fact alone suggests a diagnosis of malignant tumor. Failure to establish a history of long duration of symptoms is of negative value only, for it is not uncommon that a patient suffering from a cancerous growth several centimeters in diameter will consult a physician insisting that his symptoms appeared only a day or two previously. It is curious that many persons are so unobservant of purely objective symptoms.

Adequate examination of the mouth cavity is not difficult provided the physician has proper illumination, a finger cot or rubber glove, and a tongue depressor. Palpation of the buccal vestibule, the floor of the mouth, and the tongue should be made in all cases. The only region of the oral cavity not accessible to direct vision is the base of the tongue. This area is readily palpa-