

THE TREATMENT OF CERVICAL METASTATIC CANCER

HAYES MARTIN, M.D.

NEW YORK, N. Y.

THE TREATMENT of cervical metastases is a problem which confronts every surgeon and radiologist who deals with intra-oral and pharyngeal cancer. Since the results of all methods of treatment fall so far short of a complete solution, the question of treatment must be approached open-mindedly, in its broadest aspects. In order to discuss this problem intelligently, one must first know what is meant by the term "cervical metastases." For this purpose, a few years ago, 500 consecutive cases of cervical metastases were tabulated at the Memorial Hospital according to the site of the primary lesions. These data were not taken from the clinical records but were tabulated at the time the metastases were first noted, either when the patients were admitted to the clinic or when the involved nodes were discovered at a later examination. This particular study was made only to determine the distribution of the primary sites and was not used in any of the other calculations given in this paper. The statistics are given in Table I.

TABLE I

LOCATION OF PRIMARY LESION IN 500 CONSECUTIVE CASES	
Tongue.....	127 (25%)
Floor of mouth.....	44 (9%)
Extrinsic larynx.....	44 (9%)
Nasopharynx.....	40 (8%)
Lip.....	35 (7%)
Tonsil.....	34 (7%)
Mucosa of cheek.....	28 (6%)
Metastatic from undetermined primary.....	28 (6%)
Jaws.....	27 (5%)
Pharyngeal wall.....	24 (5%)
Palate.....	20 (4%)
Skin of face.....	11 (2%)
Thyroid.....	11 (2%)
Miscellaneous.....	27 (5%)
	500(100%)

Table I demonstrates that no single anatomic variety of intra-oral or pharyngeal cancer can be taken as representative of all cervical metastasis. It will be noted that cancer of the tongue causes 25 per cent (one in four) of all cervical metastases, and that cancer of the lip, upon which the majority of published reports concerning cervical metastases have been based, produces only one in about 15 cases, sharing only fifth place with cancer of the tonsil. A broad view of the problem of cervical metastasis, therefore, necessitates a consideration of all forms of intra-oral and pharyngeal cancer in all stages of the disease.

There is wide divergence of opinion as to the best methods of treatment for cervical metastatic cancer. Surgery and radiation both have their exponents, while some radiologists and surgeons of considerable experience doubt the

possibility of cure by any method. It is my purpose in this report to present evidence that no single treatment method is indicated exclusively; that both surgery and radiation have definite fields in the treatment of cervical metastases; and that in a considerable number of cases a combination of the two is better than either used alone. It would simplify the discussion of this proposition if the method of treatment could be selected according to a set formula, depending only upon the anatomic characteristics of the involved nodes themselves. Unfortunately, this is not possible. There are several factors relating to the primary lesion which are also of importance in the determination of the proper treatment of metastases. Although closely related, the management of the primary lesion and of the cervical metastases should be considered as separate problems, dealt with in most cases by separate procedures. I shall base my discussion on that premise, omitting any reference to the treatment of the primary lesion except as it affects the treatment of the metastases.

From the practical standpoint, the problem may be considered under two headings: (1) Prophylactic treatment, or that which is given in the absence of clinically demonstrable metastases; and (2) curative treatment given for clinically positive metastases.

Prophylactic Treatment.—At the Memorial Hospital it has been the policy for the past several years to apply no prophylactic treatment of any kind to the neck in intra-oral cancer. The patients are reexamined at regular intervals, and only if and when metastases become clinically demonstrable is treatment given, and then with curative intent. The logic of such a conservative plan is based upon a statistical analysis of the subsequent clinical behavior and the eventual results in those patients who applied without cervical metastases and who were treated according to this plan.

Even though prophylactic treatment were highly efficient in dealing with clinically undemonstrable cervical metastases, nevertheless the justification for its routine use would depend also upon the percentage of cases in which it could be of actual value. It must be admitted that prophylactic treatment could be of ultimate value only in patients who apply without clinically demonstrable nodes, whose primary lesions are permanently controlled, and who then later develop cervical metastases. In other words, prophylactic treatment would be futile if the patient succumbed to an uncontrolled primary lesion or if he never developed cervical metastases in his untreated neck.

The hypothetical limit of the value of prophylactic neck dissection in cancers of the lip, cheek, and tongue is shown in Table II. Of 128 consecutive determinate cases of cancer of the lip without metastases on admission, in which the primary lesions were controlled for at least five years, only four patients (3 per cent) later developed metastases. In this group, therefore, prophylactic neck dissection could not have had even a theoretic value in 125, or 97.5 per cent, whereas under the higher reported mortality rates following neck dissection, over 10 per cent of the patients would have died of postoperative complications, about four times the number which the procedure could possibly have cured. In any case, even under the lower reported mortality rates, would

it have been worth while to perform 128 neck dissections in order to anticipate metastases in three patients, when as a matter of fact these three were all cured by subsequent treatment? There is a similar trend in cancer of the tongue and of the cheek. If one accepts the proposition that prophylactic neck

TABLE II

HYPOTHETIC LIMIT OF THE VALUE OF PROPHYLACTIC NECK DISSECTION

Prophylactic treatment to the neck could have been of actual value only in those cases admitted without palpable metastases, in which the primary lesion was, eventually, permanently controlled and in which clinically demonstrable metastases appeared at a later date

	Patients Admitted Without Palpable Cervical Metastases in whom the Primary was Permanently Controlled	Patients who Later Developed Cervical Metastases
Cancer of tongue (1931-1934).....	40	5 (12%)
Cancer of lip (1928-1932).....	128	4 (3%)
Cancer of cheek (1930-1934).....	12	2 (17%)

dissection can be of value only when the primary lesions remain cured and when metastases would eventually appear, then only about one in 33 prophylactic neck dissections in cancer of the lip can be of value, one in six in cancer of the cheek, and one in eight in cancer of the tongue.

In the case of radiation, prophylactic treatment as ordinarily given (one to two skin erythema doses to each side of the neck) does not carry with it any mortality, but if it cannot be demonstrated that such radiation is beneficial, then it must be conceded that it is at least wasteful from an economic standpoint even though otherwise harmless. Since such small dosage has never been observed (or at least reported) to sterilize a proven focus of epidermoid carcinoma, why should it be assumed capable of sterilizing an impalpable focus (the actual existence of which cannot be proved) simply because the patient survives and does not subsequently develop metastases?

In the final analysis, it seems to me that the evidence, both theoretic and statistical, fails to provide any justification for prophylactic treatment in intra-oral and pharyngeal cancer. On this basis, treatment is administered only if and when cervical nodes are clinically involved.

Choice of Treatment Methods for Clinically Positive Cervical Metastases.—The selection of the particular form of treatment for clinically demonstrable cervical metastases should be based upon the clinical features of the given case rather than on any partisan preference for one or another method. The special indications for radiation and for surgery in cervical metastatic cancer differ widely. It is fortunate for surgery that radioresistance is often associated with the more slowly developing, orderly metastasizing, and less malignant forms of cancer. It is equally fortunate for radiation therapy that the more malignant, rapidly and widely metastasizing lesions not suitable to surgery tend to be among the more radiosensitive. The clinical behavior of a given case of intra-oral or pharyngeal cancer may be predicted with a fair degree of accuracy from the site of the primary lesion and from the histologic type of the growth.

For instance, cancer of the lip is usually squamous carcinoma Grades I or II. The rate of growth is moderate, metastases develop relatively late in the course of the disease, in an orderly manner, and often after permanent control of the primary lesion. For such cases, neck dissection is suitable.

At the other extreme are the highly malignant, rapidly progressing anaplastic growths of the base of the tongue or of the nasopharynx which metastasize early, bilaterally, and widely throughout the neck. While these cases are unsuited to surgery, both because of the location of the primary lesion and because of the histologic character and distribution of the cervical nodes, nevertheless these growths are highly radiosensitive and respond favorably to radiation treatment.

In assaying the relative values of radiation and surgery for cervical metastases, one must admit that each has its own limitations and disadvantages. Little is gained by an attempt to prove the superiority of one method over the other. The two need never be considered as competitive, but rather as complementary, and the selection of the exact treatment procedure in the individual case depends on the experience and ability of the surgeon. An outline of the conditions influencing the selection of treatment methods for cervical metastases is given in Table III.

TABLE III

CONDITIONS INFLUENCING SELECTION OF TREATMENT METHOD IN CERVICAL METASTATIC CANCER

Favorable to Surgery	Metastases Clinically Evident	Favorable to Radiation
(1) Primary controlled		(1) Primary uncontrolled or under treatment
(2) Nodes operable		(2) Nodes inoperable
(3) Metastases unilateral		(3) Metastases bilateral
(4) Radioresistant, histologically differentiated tumors		(4) Radiosensitive, anaplastic tumors
(5) Primary lesions of lip, mucosa of cheek, anterior tongue, floor of mouth or gums		(5) Primary lesions of base of tongue, tonsil, nasopharynx, extrinsic larynx, pharyngeal walls

A combination of radiation and surgery is usually the best solution when an individual case fails to conform in more than one respect to either set of conditions.

Treatment by Radiation.—When all primary sites are considered, radiation is undoubtedly more useful—that is, applicable in more cases—than surgery for the treatment of cervical metastases. A combination of protracted fractional x-radiation through narrow skin portals limited to the area immediately adjacent to the node and supplementary implantation of radon gold seeds has proved to be the most efficacious radiation method in the Head and Neck Clinic at the Memorial Hospital. The essential factors in this radiation technic are: First, to deliver a cancer lethal dose to the immediate vicinity of the metastatic nodes with as little damage as possible to the surrounding normal tissues; and, second, to conserve the general tolerance of the patient. The greatest avoidable cause of failure of radiation therapy in any part of the body is the irradiation of unnecessarily large volumes of tissue, so that even though the growth may be destroyed, the patient cannot survive the effects of the treatment.

Aspiration biopsy of at least one involved node should be made in each patient treated by radiation. Such confirmation of the diagnosis is essential for purposes of record. When a node is clinically involved, radiation treatment if otherwise intended should not be withheld or even delayed because of the failure to obtain a positive aspiration biopsy, but the accuracy of the surgeon's clinical diagnosis will be improved if he subjects himself to the discipline of an attempt at histologic confirmation in all cases, and if he limits his claimed cures to those cases which have been so proved.

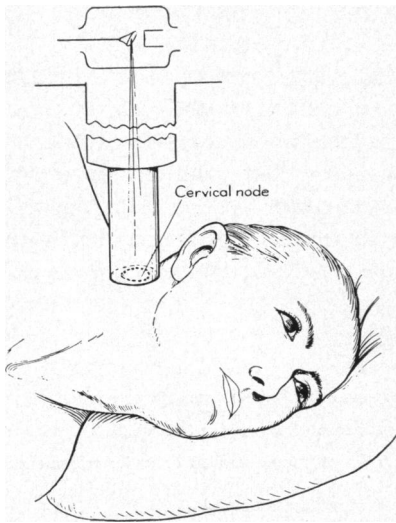


FIG. 1.—External radiation of a single cervical node. In order to deliver a cancer-lethal dose of x-radiation to a single cervical node, the beam must be small and directed to the immediate vicinity of the node itself rather than to the entire lymph-node-bearing area of the neck. Limitation in size and accurate positioning of the skin portal are favored by the use of metal cylinders in direct contact with the skin.

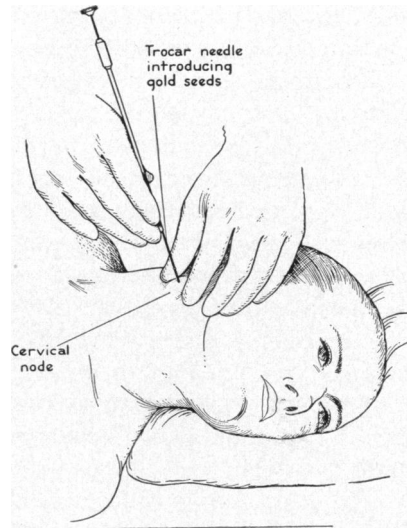


FIG. 2.—Implantation of radon seeds through the skin. Radon gold seeds may be implanted into a cervical node or into a subcutaneous mass through puncture wounds in the skin—a convenient and time-saving method if the node is not situated under too deep a layer of subcutaneous fat.

Fractionated X-Radiation.—To localize the external radiation, circular portals are used, limited in size so as to include only the node and a margin of 1–1.5 cm. (Fig. 1). In the average case, for the treatment of individual nodes such portals will vary between 3 and 5 cm. in diameter (the smallest 2.5 cm.). Separate portals are used for widely separate nodes. Immediately adjacent nodes are treated as single masses. Depending upon the size of the portal a total of 4,000–8,000 r. or even more is given by daily divided doses over a period of two to three weeks. Immediately on the completion of this external dose, radon seeds in a tissue dose of five to ten S.E.D. (skin erythema doses) are implanted either through a puncture wound in the skin (Fig. 2), or after surgical exposure of the outer surface of the node.

Surgical exposure is indicated when the node lies deeply under a thick layer of subcutaneous fat, where the accurate placement through skin punc-

tures is not possible by palpation alone. In these cases, it is advisable to anticipate the radiation skin reaction by performing the surgical exposure at the end of about two weeks of x-radiation.

Such a plan of localized irradiation of individual nodes, based upon the principle of treating cancer only when and where it is at least clinically present, makes it possible to treat several separate involved nodes in the same case. One of the difficulties in the way of the general acceptance of this plan of treatment by surgeons is that it contravenes an accepted principle which is entirely reasonable when applied to surgery alone; namely, that in neck dissection the entire mass of lymph node bearing tissues of one side of the neck should be removed. In radiation therapy the opposite holds true—radiation of the entire neck in cancer lethal doses is dangerous, and far better results will be obtained by local and individual treatment of each separate involved node.

Interstitial Radiation.—When radium emanation is available, there can be little question but that radon gold seeds are the most useful form of interstitial applicator for supplementing fractionated x-radiation. In the small nodes, the supplementary seeds in a single tissue dose of five to six S.E.D. are implanted after about two to three weeks of fractionated x-radiation. In the larger more resistant masses the dose of radon seeds is also fractionated, and the series of external treatments is interrupted at about seven- to ten-day intervals, and two or even three fractions of radon seeds are given. In the more difficult cases the total doses of both x-radiation and seeds should approach the local and general tolerance. The dosage in such cases is empiric and so variable as to be learned only by experience. Radon seeds alone are sometimes satisfactory for small or moderate-sized nodes up to 1.5 cm. in diameter.

Treatment by Surgery.—The only justifiable surgical method for the treatment of cervical metastases is neck dissection, which implies the complete removal in a given area of all lymph-node-bearing tissues between the superficial subcutaneous fat and the fascia covering the deep muscles of the neck. The extent of such an operation may vary from a local dissection of the submental and submaxillary triangles to a complete or block dissection extending from the lower edge of the mandible and the mastoid to the clavicle, and from the anterior border of the trapezius forward to the midline. A form of incision, usually a variation of the crucial or the trifurcate, should be selected which will permit adequate exposure of the operative field. Details of block neck dissection as performed in the clinic at the Memorial Hospital are given in Figures 3-6, inclusive.

Local is preferable to general anesthesia. The highest mortality rates are usually reported from those clinics where general anesthesia is used routinely. At the Memorial Hospital, in 210 neck dissections performed on the Head and Neck Service over a ten-year period from 1930-1939, inclusive, there were five postoperative deaths, a mortality of 2.4 per cent in the whole group (Table IV). In 196 operations performed under local anesthesia, there were only three deaths, a mortality of only 1.5 per cent. Two of the deaths occurred

in the 14 operations performed under general anesthesia, a mortality of 14.3 per cent. In extenuation of the higher mortality in the latter group, it should be stated that general anesthesia was used only for the most difficult and complicated situations where the nature of the procedure would have rendered

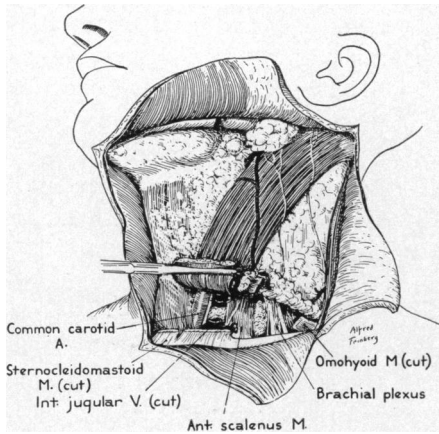


FIG. 3.—A form of incision is selected (trifurcate, crucial, or a modification) which will permit of adequate exposure of the operative area. The skin flaps are dissected back. A complete or block dissection begins at the clavicle where the sternomastoid muscle, the internal jugular vein and the omohyoid muscle are cut across.

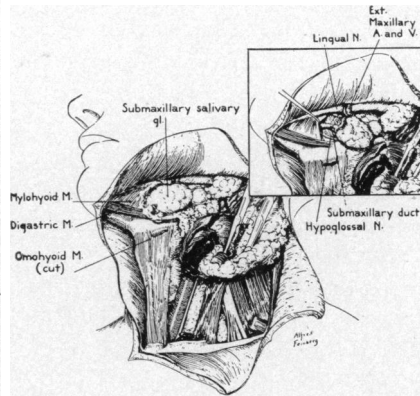


FIG. 4.—The limits of a complete unilateral block dissection are the midline anteriorly, the border of the trapezius muscle posteriorly, the clavicle below, and the submental space and the lower border of the mandible superiorly. The deep level of the dissection is the fascia overlying the pretracheal and lateral cervical muscles. The common carotid artery, the vagus and the phrenic nerves, and the origin of the brachial plexus are exposed. The submaxillary salivary gland and the contents of the submaxillary triangle are removed down to the level of the mylohyoid and hyoglossus muscles. The sensory branches of the cervical plexus are excised. The accessory nerve is sacrificed.

local anesthesia inadequate. At the present time, it is rarely necessary to employ the more dangerous general anesthesia for this operation.

TABLE IV
NECK DISSECTIONS FOR CERVICAL METASTATIC CANCER
January 1, 1930 to December 31, 1930

Total Neck Dissections.....	210
Local anesthesia.....	196
Postoperative deaths.....	3
Postoperative mortality.....	1.5%
General anesthesia.....	14
Postoperative deaths.....	2
Postoperative mortality.....	14.3%
Total postoperative mortality.....	5 cases..... 2.4%

Treatment by Combinations of Radiation and Surgery.—The value of preoperative and postoperative radiation in small doses is often brought up for discussion. Until about 1930 it was a common practice in all cancer clinics to apply small doses (one to two S.E.D.) of radiation to the operative field either immediately before or immediately after practically all operations for cancer (neck, breast, pelvis, extremities, etc.). The theory for giving preoperative radiation was that the malignancy of the tumor and its tendency

toward dissemination during the operation would thereby be reduced. The theory for giving postoperative radiation was that if any cancer cells had been missed or had been spilled into the operative wound, these small doses of radiation would destroy them so that subsequent recurrence would not take place. From what is now known of cancer-lethal radiation dosage, one

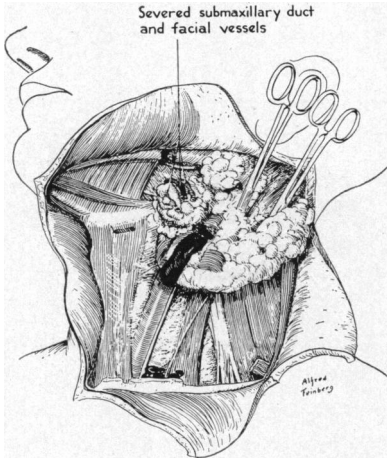


FIG. 5.—In order to remove the submaxillary salivary gland, the submaxillary duct and the facial vessels are cut and ligated.

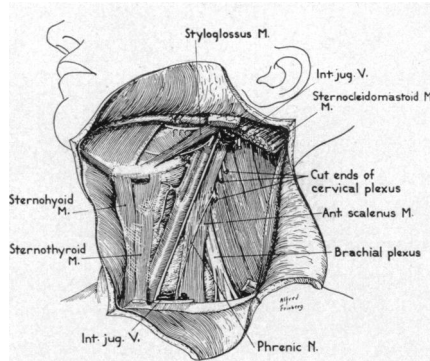


FIG. 6.—The dissection is completed by cutting across the tip of the parotid gland and across the upper portion of the sternomastoid muscle. Great care is taken to remove completely the subdigastric lymph nodes which lie just below and under the inferior edge of the posterior belly of the digastric. At this point, the internal jugular vein is ligated and cut across.

to two S.E.D. will not sterilize epidermoid or adenocarcinoma, and in my opinion there is no sound evidence that it can produce even a deterrent effect which will in any way modify the pre- or postoperative course. The attempts to apply cancer lethal doses pre- or postoperatively usually result in rather tragic failures of wound healing.

I mention such pre- and postoperative radiation measures only to point out that I do not include them under the definitely worth while and effective combinations of radiation and surgery which will be discussed in the following paragraphs.

Combinations of Surgery and Heavy Radiation.—The conditions under which effective combinations of surgery and radiation are useful can best be illustrated by citing examples. Metastatic nodes from cancer of the tongue, cheek, or lip are sometimes infected and centrally necrotic with perforation of the node capsule and invasion of the adjacent tissues. With surgery alone, the possibility of complete removal of such nodes is rather remote. With radiation alone, a lethal dose to the entire volume of the necrotic node will invariably bring on a further breakdown of the tissues and a discharging sinus which is slow to heal. Such patients may often be successfully treated by applying a dose of radiation (radon seeds alone or combined with external radiation),

following which the height of the radiation reaction is anticipated by surgically excising the condemned mass of tissue.

The two methods may also be effectively combined during neck dissection when a metastatic node, thought to be operable, is found to infiltrate beyond its capsule into a structure which cannot be widely excised. In such a case, a small remnant of the tumor, 1-1.5 cm. in diameter, may be left and a heavy dose of radon seeds inserted immediately, the remainder of the neck dissection proceeding as usual. At the Memorial Hospital, it is a routine practice to have radon gold seeds available for such a contingency in all neck dissections.

Prognosis.—The prognosis in cervical metastatic cancer is by no means hopeless, despite the rather discouraging opinions sometimes expressed by both surgeons and radiologists. The chance of cure is best in those patients who develop metastases late in the course of the disease, especially after control of the primary lesion (Table V). It is worst in those who already have metastases at the time of their first examination. The chance of cure in the bilaterally metastasizing, highly anaplastic tumors, such as cancer of the nasopharynx, hopeless heretofore by surgical treatment alone, has been so much improved by the advent of modern radiation therapy as to approach the results by surgery in the highly differentiated radioresistant and slowly metastasizing tumors such as cancer of the lip. The cure rates shown in Table V are calculated on consecutive cases of patients in all stages of the disease treated by radiation or surgery or combinations of the two. From these statistics, it is apparent that the capacity to metastasize and the presence of metastases at some time during the course of the disease are the most significant factors in the prognosis of any form of cancer.

TABLE V
THE INFLUENCE OF METASTASES ON THE PROGNOSIS
OF INTRA-ORAL AND PHARYNGEAL CANCER

Site of Primary Growth	Total No. of Cases	Five-Year Cure Rate		All Cases Percentage
		With Metastases %	Without Metastases %	
Lip.....	313	27	95	70
Cheek.....	78	21	30	27
Tongue.....	208	12	45	25
Floor of mouth.....	87	22	29	25
Gingiva.....	85	8	42	24
Palate.....	57	6	54	21
Tonsil.....	148	10	38	18
Nasopharynx.....	80	20	47	25

ILLUSTRATIVE CASE REPORTS OF CERVICAL METASTASES
FROM INTRA-ORAL CANCER

Case 1.—Cancer of the Tongue: J. A., male, age 67, admitted November, 1932, complaining of sore on tongue of two months' duration, which had gradually increased in size. The patient gave a history of having been a heavy cigar smoker until six months before admission. The Wassermann was negative. The lesion, 2 cm. in diameter, raised and partly ulcerated, was located on the left side of the dorsum of the tongue, 2.5 cm.

back from the tip. The biopsy showed squamous carcinoma Grade II. There was no palpable adenopathy.

After implantation of 15 mc. of radon gold seeds, the lesion regressed and the patient remained well until March, 1933, when an enlarged node, 2.5 cm. in diameter, appeared over the left upper, deep cervical region. An aspiration biopsy was positive for metastatic cancer. In April, 1933, the outer surface of the node was surgically exposed, and 27 mc. of radon gold seeds were implanted. After healing, a scarred, indurated mass remained in this region, but the patient has been otherwise free of disease for seven years.

Case 2.—Cancer of the Floor of the Mouth: J. C., male, age 67, admitted November, 1932, complaining of soreness in the floor of the mouth of one year's duration. He had been treated by his family physician with repeated applications of silver nitrate. Three weeks before admission, following severe pain, the patient examined his mouth and found an ulcer. He gave a history of having smoked a pipe excessively for years. The Wassermann was negative. The lesion was located in the midline of the floor of the mouth, partly ulcerated, indurated, 2 cm. in diameter and infiltrating to a depth of about 1 cm. The biopsy showed squamous carcinoma Grade II. There was no cervical adenopathy.

Treatment was given by roentgenotherapy through portals, 5 cm. in diameter, one directed to the submental region and one to each side of the chin, for a total dose of 2,400 r. x 3. There was apparent complete regression, but residual disease was proved by biopsy three months later, and 8 mc. in radon gold seeds were implanted. This treatment was followed by localized radium necrosis which did not heal entirely for one year.

In July, 1933, enlarged nodes appeared over both submaxillary regions, overlying the submaxillary salivary glands. Aspiration biopsy of the node on the right was diagnosed as metastatic cancer. Radon seeds were implanted in both submaxillary nodes through the skin, 26 mc. on the left and 10 mc. on the right. The patient remained well until October, 1935, when a biopsy from a suspicious area in the floor of the mouth was positive. The recurrence was treated by actual cautery in November and again in December, 1935. Since that time the patient has remained free of disease—in the neck since 1933, and in the floor of the mouth since 1935.

Case 3.—Cancer of the Tongue: H. R., male, age 58, admitted in June, 1936, with an ulcer on the tongue of two months' duration, accompanied by some pain. The patient gave a history of white spots on the lips and tongue for 25–30 years, and stated that he smoked five to six cigars daily. The Wassermann was positive. The lesion, centered 4 cm. back from the tip of the tongue, was 3 cm. in diameter, infiltrating to a depth of 1 cm. The biopsy showed squamous carcinoma Grade II. There were no palpably enlarged lymph nodes.

The lesion was treated with peroral x-radiation (3,500 r., cone 4 cm., T.S.D. 65 cm.) and 8 mc. of radon gold seeds. In September, 1936, an enlarged node appeared over the right submaxillary salivary gland. An aspiration biopsy showed squamous carcinoma. The node was treated with 5,500 r. through a 4 cm. portal. It became fluctuant and was obviously liquefying. In October, 1936, a neck dissection was performed. The node was found to be an abscess about 4 cm. in diameter on the mesial aspect, infiltrating the mylohyoid and hyoglossus muscles; the latter area was not considered surgically removable since it extended into the tongue. Twenty-six millicuries of radon gold seeds were implanted into the residuum which could not be removed, and the neck dissection proceeded as usual. The patient has remained well for three and one-half years. A lesion on the lip which was a papilloma and leukoplakia only was treated by radiation and regressed completely.

End-Results.—It is difficult to gather any very definite data from the medical literature concerning the actual cure rate in cervical metastatic cancer. A few pessimistic surgeons and radiologists report that they have never ob-

tained cures once intra-oral or pharyngeal cancer has spread to the neck. Most investigators, however, report cures, but the statistics, for the most part, are based upon series of neck dissections for lip cancer only and have, therefore, only a limited significance in regard to the whole problem, since cancer of the lip is the most easily cured of all forms of intra-oral cancer, both at the primary site and in the cervical nodes. Some of these authors have not separated the cases with histologically positive nodes from those with negative nodes, and the actual cure rate for metastatic cancer is, therefore, obscured.

TABLE VI
NECK DISSECTIONS FOR CANCER—JANUARY I, 1930 TO APRIL I, 1934
Successful Results in Cases with Histologically Positive Nodes

	Total No. of Cases	Five-Year Survivals	Lost, Without Recurrence
Cancer of lip	21	5	2
Cancer of tongue	18	2	0
Cancer of floor of mouth	5	3	0
Cancer of buccal mucosa	6	3	1
Cancer of tonsil	4	1	1
Cancer of salivary gland	2	1	1
Cancer of cervical lymph nodes (primary undetermined)	1	0	0
Cancer of skin of head and neck (including melanoma of skin and orbit)	8	0	0
Cancer of lung	1	0	0
Cancer of extrinsic larynx	1	0	0
Lymphosarcoma of neck	1	1	0
Hodgkin's granuloma	2	1	0
	<hr/>	<hr/>	<hr/>
	70	17	5
Total number of cases			70
Lost without recurrence			5
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Total determinate group			65
Five-year survivals			17
Net cure rate (17/65)			26%

Using only proven nodes, end-results could be calculated in more than one way. The efficacy of neck dissection in selected, early, operable cases, all histologically positive (Table VI) is proved by the fact that 26 per cent have survived for over five years. Since all cervical nodes not treated by surgery, including the inoperable and hopelessly advanced and palliative cases, receive radiation, no cure rate percentage can be calculated for any significant comparison with neck dissection. It has been stated, however, by some authors that there is no authentic case of a five-year cure of proven cervical metastases treated by radiation alone. In answer to such statements, I wish to place on record the data given in Table VII. At the Memorial Hospital, 46 patients with histologically proven metastatic cancer treated by radiation alone survived for five years or more. These cases do not necessarily represent all the cures, but only those in which aspiration biopsies were made. To-day aspiration biopsy is part of the routine in all cases; it will be noted that the numbers of proven successes have increased in the later years.

CERVICAL METASTATIC CANCER

TABLE VII
HISTOLOGICALLY PROVED CASES OF CERVICAL METASTATIC CANCER
TREATED BY RADIATION ALONE

Free of Disease March 1, 1939

Five Years or More		Less than Five Years	
Prior to 1930.....	4	1935.....	12
1930.....	5	1936.....	13
1931.....	5	1937.....	19
1932.....	12		
1933.....	10		
1934.....	10		
	-----		-----
Total.....	46	Total.....	44

DISCUSSION.—DR. WILLIAM F. MACFEE (New York) : Doctor Martin's approach to the study of cervical node metastasis is somewhat different from that to which some of us are accustomed. Ordinarily, one thinks of the various primary lesions as producing certain percentages of metastases, whereas Doctor Martin presents the percentages of cervical metastases which have been produced by the various primary lesions. Cancer of the floor of the mouth, for example, presents an incidence of cervical metastasis amounting to something like 30 or 40 per cent, if the cases are taken in series as they enter the hospital. As seen from the reverse point of view, 9 per cent of cervical node metastases are produced by cancer of the floor of the mouth.

When one attempts to determine clinically whether the cervical nodes are involved in a particular case he is confronted with a considerable chance of inaccuracy. When the nodes erroneously considered involved are added to those erroneously thought not to be involved, the total error is about 40 per cent.

The simplest solution of the problem of node invasion is either to consider all nodes involved and treat them accordingly, or to regard them as uninvolved until proven to be involved. The first point of view will, undoubtedly, lead to many unnecessary node dissections, as Doctor Martin has indicated, but the opposite point of view will, just as certainly, lead to delay in the treatment of many cases with involved nodes. It may be reasonably questioned whether the uncompromising adoption of either attitude is to the best interests of the patient.

One of the difficulties in statistical presentations on the subject of cancer is the notable lack of uniformity in the selection of cases; one series is often not truly comparable to another. A real advance will be made when statistics on cancer of any part of the body, the tongue or breast, for example, are based upon all the cases observed in a particular clinic over a definite period of time. Subgroupings could then be considered in relation to the whole experience.

It is very encouraging to see that so many patients with cervical node metastases treated by radiation alone have survived the five-year period. Many physicians have acquired the belief that cancer in lymph nodes cannot be destroyed by radiation and it is gratifying to be shown that such is not the case. It cannot be doubted that radiation has a definite usefulness in the treatment of cervical node metastasis, particularly in the group of undifferentiated tumors which occur so frequently in the region of the tonsil and pharynx.

DR. JOHN M. HANFORD (New York) : Doctor Hanford said that ten years ago a Head and Neck Neoplasm Clinic had been started at the Vanderbilt Clinic and the Presbyterian Hospital with Dr. A. P. Stout, the pathologist, Dr. Maurice Lenz, the radiotherapeutist, and himself, as surgeon. During

those ten years, Doctor Hanford said, he had become very much impressed with the value of radiation therapy.

To-night certain things were brought out. Doctor Martin did not mention external irradiation by radium; but roentgenotherapy alone apparently cannot be counted upon to cure squamous cell metastatic carcinoma in the cervical lymph nodes. Interstitial treatment by radon, however, has been demonstrated to bring about five-year cures in certain cases. These are real contributions.

There is a great difference between the anterior part of the tongue and the posterior part, as there is, also, between the lip and the tongue. In carcinoma of the posterior part of the tongue, radical neck dissection is rarely indicated. Carcinoma of the anterior two-thirds of the tongue is much more likely to need radical neck dissection, even though no nodes are palpable. Carcinoma of the lip rarely needs treatment of the neck.

Another phase of this subject mentioned by Doctor Hanford was the fact that occult metastases may be present when no nodes are palpable, or when nodes are slightly palpable. One must assume, for example, that in carcinoma of the tongue, there is a high percentage of cervical metastases. Should one await the appearance of a node sufficiently large to be identified as feasible to treat with interstitial radon? This delay and this treatment of only such palpable disease court disaster for the patient. This sort of treatment is a makeshift, and while valuable in certain patients, such as those unsuited to withstand a radical neck dissection, it is not the ideal or the standard method of protecting the patient who has carcinoma of the anterior part of the tongue. The ideal is radical neck dissection, preferably before and certainly after nodes become suspected. The very presence of a node sufficiently large to treat with radon presupposes, even more, the presence of occult metastases. Therefore, the treatment by radon, interstitially, of this palpable metastatic disease must be admitted as incomplete.

The same principles hold in carcinoma of the lower lip, but because cervical metastases from the lip are less common than from the tongue, the indications for treating the neck in lip carcinoma are less compelling.

Doctor Hanford also referred to nodes which are large, firm, extensive or adherent, and recalled that three years ago he presented before the N. Y. Surgical Society a series of patients representing an advanced stage of cervical metastases treated by radical neck dissection. There were more than 7 per cent five-year cures in a few such patients, which means that this "stage three" of Lacassagne is not necessarily hopeless. These patients were treated mainly by surgery. Some had roentgen or radium therapy; but without the surgery any good radiotherapist would have admitted they could not have been cured. Surgery, therefore, may play a part in very extensive disease. Even though adherent to the muscle or vein, it is still possible that radical surgery may cure the patient.

Finally, Doctor Hanford felt that the average surgeon using rectal ether anesthesia, in a long neck dissection, with careful hemostasis, gentle manipulation, and with true cancer surgery, is going to do better work than with local or regional anesthesia.

DR. HAYES MARTIN, in closing, said that both Doctor MacFee and Doctor Hanford have called attention to the fact that it is sometimes difficult to diagnose metastatic nodes by palpation. Doctor Martin admitted this difficulty, but said he believed that the surgeon's accuracy of clinical diagnosis will steadily improve if he makes a definite preoperative diagnosis in each case, records this diagnosis in writing on the chart, and checks it with the postoperative histologic examination. Aspiration biopsy is useful in doubtful cases, especially where neck dissection would be attended by considerable risk

because of the patient's general condition. In any case, the surgeon should hold himself responsible for the accuracy of his preoperative clinical diagnosis and should consider it a reproach to find too many of his neck dissections negative on histologic examination.

In the diagnosis of metastatic cervical cancer, it is not particularly illuminating to state that the lymph nodes are "not palpable" in a given case. He stated that in his experience, normal lymph nodes are palpable in practically all healthy subjects. The problem is to decide whether or not the palpable nodes have been invaded by cancer.

The question as to whether prophylactic neck dissection is justifiable in the treatment of cancer should, and he said that it seemed to him to be settled only after an analysis of the clinical behavior of large series treated, on the one hand, and by prophylactic neck dissection and, on the other, by a "watchful waiting" policy. Prophylactic neck dissection could benefit only those patients who are admitted without nodes and later develop them. According to such analyses prophylactic neck dissection can be of value in only one case in eight (12 per cent) in cancer of the tongue, and in only one case in 33 (3 per cent) in cancer of the lip. It seemed to him that this percentage was too small to justify routine dissection, especially when the procedure is accompanied by a definite mortality. Under the higher mortality rates for neck dissection (10 per cent), this procedure would kill as many as it could possibly cure—and in some cases more. In any event, it is too serious and costly an operation to be undertaken when the percentage of patients benefited is so small.

DOCTOR MARTIN stated that since, from a consideration of his own and other published figures it is obvious that general anesthesia almost quadruples the operative mortality in neck dissection, he failed to see how Doctor Hanford could reasonably maintain his advocacy of rectal ether for this procedure.

Read before the New York Surgical Society, April 24, 1940.