

II.

REMARKS ON THE MACROSCOPIC DIAGNOSIS AND GENERAL INDICATIONS FOR TREATMENT OF CANCER OF THE LARYNX.*

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There is no chapter in the book of laryngology that needs more careful revision than the chapter on cancer of the upper air passages. Indeed, it will have to be entirely rewritten. We are passing through a crisis in the history of this subject in which the same old battle is being fought that has raged around every other organ of the body where cancer dwells. Here, as elsewhere, we have much to learn, much to unlearn.

In responding to your courteous invitation to take part in this symposium I think I can perhaps best utilize the limited time (twenty minutes) which has been placed at my disposal by calling attention as briefly as possible to two phases of the problem of cancer in the larynx, which, in view of the unsettled state of the question, seem to me of most pressing and immediate importance.

In the present state of our knowledge there are three principal methods of diagnosis in laryngeal cancer. These are, in the order of their practical usefulness and importance: 1. The naked-eye method, or diagnosis by direct inspection, supplemented by clinical phenomena. 2. Thyrotomy. 3. The microscope. Of the three methods the second is often included in, and therefore ancillary to, the first. Take it all in all, the first method is by far the most practicable and satisfactory of the three. I shall consider briefly only one of its different phases.

For some time past, inspired by the work in the surgical department of the Johns Hopkins Hospital and guided

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by my own personal observation in the matter, I have become more and more impressed with the possibilities of naked-eye inspection, or macroscopic diagnosis, in malignant disease of the upper air passages. Although for a long time entertaining strong convictions on the subject, I first gave definite and public expression to them in some remarks made at the opening of the debate on "Cancer of the Larynx" at the Congress of the American Laryngological Association held in the city of Washington in 1900. My object then, as it is now, was to stimulate study in the direction of the macroscopic diagnosis and pathology of laryngeal growths, and the examination of the fresh specimen or material with the naked eye.

Much has already been accomplished by this method in the field of advanced surgical pathology, so that the general surgeon is to-day coming less and less to rely upon the pure pathologist for diagnosis, and to seek the aid of the microscope, except as a court of the very last resort. To use the words of Bloodgood, who has done most excellent and painstaking work in this field, the surgeon must, in the majority of cases, make the correct diagnosis of tumors, "not on the clinical history and examination, but in all those cases which are not clinically positive, he must base his diagnosis on the naked-eye appearance of the diseased tissue, exposed by the knife at the exploratory operation."¹ This observer, in a careful analysis of over 1300 cases of tumor in Halsted's clinic at the Johns Hopkins Hospital (in which the benign stood to the malignant in the proportion of 1 to 3), comes to the conclusion that it is possible, in the majority of cases, to recognize the character of the growth by the naked-eye appearance alone. From this study, also, it is shown that it is not only possible, as a rule, to differentiate the benign tumors from the malignant at the exploratory incision, but to recognize in the malignant the different groups of varying malignancy, and in the benign, growths which have a tendency to become malignant.

In Halsted's clinic at the Johns Hopkins Hospital more reliance is placed on the naked-eye diagnosis than on the frozen section. It is claimed that even with the use of recent improved methods of preparing the latter, the naked-eye method furnishes more accurate diagnostic information; and although the frozen section undoubtedly holds its own as a most valuable means of diagnosis, still it is often misleading and more con-

(1) International Clinics, 1904, fourteenth series, vol. 1, p. 237.

fusing than the macroscopic image of the cut surface.

It is difficult, if not impossible, to satisfactorily depict the macroscopic appearances of tumors by means of language. A's description would be perfectly unintelligible to B, B's account would have little or no meaning for C, while C's picture would be utterly bewildering to D — and so on to the end of the alphabet. I cannot possibly emphasize this point better than by quoting the words of Halsted in his illuminating address on the "Training of the Surgeon," delivered last year at Yale.¹ "I am sure that much of the material for surgical pathology can be correctly described only when it is perfectly fresh. It cannot be painted, because in less than a minute, in a few seconds often, the appearance of a freshly cut surface is greatly changed. Only those who are well trained as macroscopic pathologists, who have naturally a discriminating eye for color, a good sense for form, and some talent for expression can properly describe the fresh material. Many, if not most, of the descriptions are worthless or at best serve only as reminders to those who can distinctly recall the case. The descriptions, by two trained men, of ordinary fresh material may differ so greatly, that one could not believe they pertained to the same specimen. Color photography might be employed, it seems to me, with great benefit, for recording the appearance of fresh specimens."

I cannot insist too strongly on the application of the naked-eye method of diagnosis in the case of malignant tumors of the larynx. Every resource and refinement of clinical diagnosis, including the exclusion of syphilis by the iodides and tuberculosis by tuberculin, should be resorted to before an appeal to the microscope is made. By following the lead of the general surgeon, with the means of clinical diagnosis already at our command, together with more exact information concerning the naked-eye appearances of the cut surface of laryngeal neoplasms, we will soon be in a position where we will be more and more independent of the pure pathologist for help in diagnosis.

Every tumor of the larynx, no matter how benign it may appear, should be examined with the greatest possible care. Some of the most fatal diseases known to man make their first appearance in the larynx in the guise of great benignity. Thus the presence of cancer and tuberculosis in the individual is often first proclaimed by the discovery of an apparently simple papil-

(1) Bulletin of the Johns Hopkins Hospital, Sept., 1904.

lomatous excrescence in the larynx. By the careful study of *every* case coming under our observation, we will some day, among other things, clear up the mystery which surrounds the genesis of papilloma and approach more closely the earliest possible recognition of some of the most deadly diseases of the larynx.

This brings me to the consideration of the question of the partial extirpation of laryngeal cancer for microscopic diagnosis.

The objections which I have repeatedly urged against the indiscriminate removal of tissue for examination (especially when done through the natural passages) are as follows: 1. It subjects the patient to the danger of antoinfection at the point of incision and to metastasis elsewhere. 2. It stimulates the local growth of the cancer. 3. Finally, the method is often inconclusive, misleading, and sometimes practically impossible.

The moment the continuity of the growth is broken, in that moment is opened the pathway for self-poisoning, and an unfavorable influence is excited on the local process. If ulceration has already taken place, a portion of the growth can be taken, if skilfully removed, for microscopic examination; but, as Bloodgood has pointed out, in the majority of cases the tumor is "buried" and an exploratory incision for purposes of microscopic diagnosis means two operations, and if the tumor is malignant, opens the way for general dissemination.

If I interpret aright the general sentiment of those laryngologists who are qualified to speak with authority on the subject, and who have declared themselves on this phase of the question, it is practically to the effect that attempts at incomplete removal (whether for diagnostic or curative purposes) of malignant growths of the larynx have little or no irritating or stimulating effect upon the local disease. In view of the established and glaring fact that the growth of cancer elsewhere in the body is stirred into greater activity by incautious manipulation of the local lesion, it seems well nigh incredible that any disagreement of opinion in the matter should exist in the case of cancer of the larynx. And yet, strange as it may seem from the standpoint of the modern conception of cancer, the universal sentiment of authority is to-day practically unanimous in advising indiscriminate and immediate removal of portions of a suspected laryngeal neoplasm as an early

and routine means of diagnosis. Even the best of laryngeal surgeons lose no time in procuring pieces of a supposed cancerous growth of the larynx for examination under the microscope, before they have gone carefully into the history of the case and endeavored to make the diagnosis with the naked eye alone. In the light of my own experience, I do not hesitate to declare that cancer in the larynx behaves in precisely the same way under incautious irritation or manipulation as it does in other organs of the body. Not to multiply examples, I well remember the method of treatment of laryngeal cancer in my earlier days (at the Golden Square Hospital, London), which consisted in the performance of tracheotomy and the subsequent removal, piecemeal, of the growth through the natural passages. By this process, which to-day in enlightened surgical communities would be considered as a means of slow murder, the growth was stimulated at once into much greater activity, the patient naturally became worse and worse, and was sent to his long home much earlier than if he had been left severely alone. As I have said on another occasion, when I look back through the years in which I have seen cancer of the larynx maltreated, and in which I have unconsciously maltreated it myself, I am simply appalled at the retrospection.

I am sorry, too, that my personal experience does not agree with that of some of my laryngological friends who deny the possible dangers of autoinoculation and metastasis after incomplete attempts at the removal of laryngeal cancer. The position, it seems to me, is axiomatic and does not call for debate. If all the cases of metastases following incautious operations on laryngeal cancer were to be placed on record, their number would appear in the form of a revelation. Such cases do not usually find their way into print.

And just here let me say if any one wishes to know in what sense I use the term metastasis, let him consult the nearest medical dictionary for a definition of the term. To charge, at least by innuendo, as one of my critics has done, that by "metastasis" I mean the inhalation into the lungs or the deglutition into the stomach of detached fragments of the growth is simply unmitigated nonsense.

As to the question of direct inoculation of the laryngeal tissue by constant contact of opposing broken or unbroken surfaces, I can only say that, while not denying the possibility of its existence in cases in which the foul discharge from the can-

cerous mass may come in contact with an abraded or ulcerated surface, I have never met with an authenticated case of the kind in literature, nor have I ever seen this accident in practice. Such a phenomenon is common and characteristic and of important diagnostic significance in tuberculosis; in cancer of the larynx, its occurrence is as yet unknown and problematical. To confound such a phenomenon with the phenomenon of metastasis, however, with which it has nothing in common and to which it bears no resemblance, would be an inconceivable blunder had it not already been committed.

An interesting fact in connection with this part of the subject is the great difference in the tendency to metastasis after cauterization and after incision of cancerous tissue. In the former (when done, for example, by fire or escharotic), while metastasis may and does occur, there seems to be only a slight tendency to dissemination, while on the other hand, when the knife is used, metastasis is almost sure to follow. Thus, out of hundreds of cases of breast cancer in Halsted's clinic, not a solitary patient has been cured in whom the tumor had been previously incised or operated upon by surgeons outside of the hospital. There have been several in which a cure has been effected after recurrence, the original operation having been done in the hospital, but not a single case of cure in which the patient was operated on before entering the institution.

I need not dilate upon the difficulties in the way of the microscopic diagnosis of cancer of the larynx. They are multitudinous. That the very best pathologists make mistakes (especially in the diagnosis of tumors) is a matter of common observation. The surgeon, through no fault of his (and even the pathologist), may be easily misled and therefore only such testimony should be accepted as final as comes from an expert specially versed in the histological differentiation of tumors.

In closing this part of my subject, permit me to correct a wrong impression that seems to have been created in the minds of some of my colleagues both at home and abroad as to my views on microscopic evidence in the diagnosis of suspicious looking neoplasms of the larynx. According to my critics, I reject completely the use of the microscopic in the diagnosis of malignant growths of the larynx, and therefore would recommend the complete operation for that disease in the presence of doubt as to its nature. As one of them puts it, I "kick the microscope into the dust heap." No one but a congenital fool would

refuse in doubtful cases the aid of the microscope, and no one outside of the asylum would advise a radical operation (such as the one suggested by me) without a certainty of diagnosis. There are some things that go without saying and which ought to be obvious to the dullest apprehension, and I cannot think that any one who knows me can believe me guilty of such insanity. My original remarks made in 1900, which have called forth such a storm of abuse and misrepresentation, dealt in general principles of diagnosis, and no attempt at elaboration or specification was made. My position, as then stated, is simply that the microscope should be the court of last resort—the final method of appeal. Hands off the growth until the last. Then, if microscopic examination is necessary, let patient and surgeon be prepared for immediate operation. As I said on the occasion already referred to, “before resorting to thyrotomy in general, especially if a portion of the growth is to be removed for examination, it should be clearly understood beforehand with the patient that, if the disease should prove to be cancerous, the surgeon shall be at liberty, if in his judgment it seems best, to proceed at once to operation.” I took this stand in order to check, if possible, the reckless and indiscriminate removal by laryngologists of suspected tumors of the larynx for microscopic examination, and from what I hear and read I may be pardoned if I say that the warning has not been given in vain.

What the future has in store for the treatment of cancer can only be a matter of conjecture. Serum therapy will doubtless some day play a conspicuous part in the treatment of this disease. For surgical treatment to be sufficiently radical involves the sacrifice of so much tissue that the time must surely come when surgery will be supplanted by simpler and more certain means; and with the discovery of the agent of infection will come its antidote. But with the possible future discovery of a serum, with perhaps the ultimate development of the fact that cancer is due to chemical changes in the blood, and therefore beyond the reach and uninfluenced by surgical procedure—with these and other possibilities we are not as yet confronted. The knife is our only weapon today. How can we best employ it?

I do not propose, nor have I the time, to go into any unprofitable discussion of the relative merits of the various operations done for laryngeal cancer, but will simply ask attention

in a general way to the chief indications for and the nature of the operation to be performed for that disease. The indications for operation may be conveniently considered under three principal heads, viz.: (1) the size, (2) the situation and extent, and finally (3) the character of the growth.

1. *Character.* Of these, the latter is by far the most important, and its discussion brings us to the consideration of an immensely important phase of the question, viz., the possibility that the rapidity and certainty of metastasis in laryngeal cancer probably depends not so much upon the situation or even size of the growth as upon its character. In other parts of the organism, some forms of cancer, as is well known, tend to form metastasis quicker than others; in other forms metastasis takes place at a much later period. Examples of the first class are the "spined-cell" tumors, and of the second the group of basal-cell growths. It is very possible that this is true in regard to tumors of the larynx, and that there are in this organ forms of carcinoma of varying degrees of malignancy and with marked difference in their tendency to metastasis. If, then, in the future evolution of our special knowledge along these lines, it shall be indisputably shown, by specially directed study and observation, that some laryngeal cancers are clinically more malignant than others, and that, on the other hand, there are some hitherto thought to be specially malignant which for all surgical purposes are practically benign; then in considering the indication for and character of the operation to be performed, the two conditions of size and situation of the neoplasm become matters of relatively secondary importance.

2. *Size.* A specially malignant type of growth (such as, for example, a scirrhus or medullary cancer), no matter what its size or appearance, no matter whether it is situated inside the larynx or outside the larynx, would demand the most drastic surgical procedure, while in the case of a less malignant and dangerous tumor (as for example the basal-cell cancer) a less radical operation might possibly be called for.

Laryngologists have heretofore committed the common error of grouping together in one class all malignant and quasimalignant laryngeal growths, without making those finer histological distinctions which are so necessary to the proper conception of the relative malignancy of the tumor and the manner of its removal. This finer anatomical differentiation of malignant larynx tumors is a fertile field for future laryngological

study and research. The uncertain or quasimalignancy of some tumors may possibly furnish the explanation of non-recurrence after incomplete removal of the laryngeal structures.

3. *Situation.* I do not believe that any other than the most radical operation should be undertaken in cases in which the disease is medianly situated (as for example, at the anterior commissure or on the posterior wall of the larynx), or in which it occupies both sides of the larynx, or in which, being unilaterally situated, it approaches at all closely the middle line. Equally hazardous would be an incomplete operation in cases in which the disease appears as a diffuse infiltration, especially if fixation has occurred (no matter where situated or to what extent the larynx is visibly involved).

I may say, in passing, that whatever may be thought of other incomplete operations for the cure of laryngeal cancer, there are two methods of procedure which in future narratives of this disorder will be referred to as matters of purely historical interest — the operation through the natural passages and sub-hyoid pharyngotomy.

It is amazing what a hold the intralaryngeal operation still retains on the minds of some of the world's best laryngologists. It is a curious fact that the practice of removing malignant neoplasms of the larynx through the mouth obtains in intelligent quarters even at the present day. And yet the operators who resort to it are simply following the lead of some of the most prominent laryngologists all over the civilized globe. High authority not only sanctions but adopts it as an unquestioned method of treatment. Even in Germany it still has its supporters. The author of the chapter on malignant growths of the larynx, in Heymann's *Handbook*, not only advocates it, but also recommends (at least in the early stages of cancer) the endolaryngeal method, devoting seven pages to its consideration and only two to the more radical measures. While I am quite willing to admire and applaud the skill with which some of these operations are performed, nevertheless, for reasons which I have repeatedly given elsewhere, I cannot too emphatically condemn such a method of procedure. No amount of skilful endolaryngeal manipulation should justify or palliate such an uncertain and perilous operation, especially (for obvious reasons) when the growth is situated in the infraglottic region. Removal of cancer of the larynx by the endolaryngeal method, therefore, should never

come within the range of serious consideration. The risks, even in the earliest cases, are too many and too great. It is a dangerous game in which both surgeon and patient take the gambler's chance.

The same thing may be said of subhyoid pharyngotomy. The number of cases in which it would be even indicated is excessively small, while the risks of the operation far outweigh any advantage to be gained by its performance.

In approaching the treatment of laryngeal cancer we have to face the following facts:

1. It is impossible to limit the extent of the disease laryngoscopically.

2. It is often equally impossible, even after preliminary division of the thyroid, to map out with certainty the whole area occupied by the disease. This is especially true in the case of diffuse infiltration, or where the epithelioma originates in the deep-seated tissues and does not approach the surface until a late stage of the disease.

The loose tissue beneath the mucous membrane in many places, and its wealth in lymphatics, often favor, from a small focus of infection, infiltration of and crossing to other portions of the larynx, and sometimes with great rapidity. Diffuse infiltration, especially if there be fixation of the parts, even though confined to a small area, should always awaken suspicion of the existence of the disease elsewhere in the organ, even though no apparent signs of its presence exist.

3. Even after the removal of the entire larynx, the disease may be apparent in one side of the organ and not in the other, and yet the microscope show extensive carcinomatous deposit in the seemingly normal side. We can never be sure, even in cases in which the cancer appears to be distinctly circumscribed, whether dissemination in other parts of the larynx has not taken place.

4. Cancer in the larynx grows with greater rapidity than it does in other regions of the body. This is due not alone to the histological structure of the organ, but also, and chiefly, to the fact that its physiological mechanism is in ceaseless operation.

5. Investigations, in the study of cancer in other parts of the body, have developed the fact that the amount of lymphatic involvement bears no definite relation to the size and extent of the local lesion. Thus, a small local focus of infection may

be attended with most extensive metastasis to the glandular adnexa; while, on the other hand, the latter may not be markedly involved even in extensive invasion of the primary disease. One or two illustrations will suffice. It has been shown, for example (Wertheim,¹ Sampson²), that in the case of cancer of the uterus, there is no relation between the size of the primary growth and the presence or absence of involvement of the pelvic lymphatic glands, and that we can never, therefore, tell clinically whether or not metastasis has taken place. And to come nearer to our subject, a notable example of the disproportion between the size and extent of the local lesion and the lymphatic involvement is furnished in the case of the lip. Not infrequently cases are brought to the surgical clinic, in which masses of enormously enlarged neck glands have been removed under the impression that the condition was the original disease, when, as a matter of fact, a small unnoticed inconspicuous abrasion or ulcer of the lip has been the primary focus of infection.

These are facts not only of great practical prognostic significance, but also, if shown to apply to the larynx and its lymphatic supply, of overwhelming importance in the surgical treatment of cancer occurring in that organ. It will be the task of the future to determine whether in more or less advanced stages of this affection, or even in its earlier history, the disease may not already lurk in the neighboring lymphatics, as has been demonstrated in the case of cancer elsewhere in the body.

In practically all fatal cases of larynx cancer, death is due to metastasis. In neighboring organs (the neck and mouth) metastasis takes place with great certainty and at an early date. It is therefore, *a priori*, probable that the neck glands are affected in the case of cancer of the larynx, although perhaps not recognizable by the senses of sight and touch, at a much earlier period than is generally supposed. It is at all events safer to assume this to be the fact than to accept the statement, unsupported by definite anatomical proof, that cancer in the interior of the larynx remains for a more or less indefinite period as a purely localized disease, and does not get into the neck lymphatics until a late stage of the affection.

This is a fundamentally important phase of the question

(1) Archiv. f. Gynäkologie, 1900. Bd. lxi. No. 3.

(2) Journal of the American Medical Association, October 29, 1904; Albany Medical Annals, May, 1905, etc.

upon which as yet little or no light has been shed. Until more exact knowledge concerning it be forthcoming, it behooves the surgeon to move with caution, even in cases in which the disease is apparently a distinctly localized affection. In the presence, therefore, of the fact that it is often impossible to limit the diseased area by inspection and the sense of touch, and in the light of the revelations of the microscope, it becomes a serious question whether we accomplish any lasting good, in the majority of cases at least, by any operation short of complete excision of the larynx and the neighboring lymphatics and glands.

On this subject, however, there is much honest difference of opinion. I am not here to discuss it. The whole question, as I have tried to indicate, resolves itself into two special lines of study, viz.: (1) the relative malignancy of tumors of the larynx, and (2) the determination of the glandular involvement in the case of various kinds of tumors as well as various situations of tumors. Investigation along these lines must determine largely the manner of future operative procedure. Whatever operation is done, it should be forever borne in mind that we are dealing with cancer; that no matter how minute the original lesion may be, the area of possible poisoning is practically boundless; and that if the slightest doubt exists as to the character and circumscription of the growth, the complete operation should be done.

Let us finally look forward to the day, which in my humble judgment has not yet arrived, when it shall be definitely shown beyond all human doubt that cancer of the larynx, taken in its earliest stages, while yet a purely localized affection, can be permanently cured by simple surgical measures; but in the meantime, in the present state of our knowledge at least, in view of the uncertainties which the problem before us presents, and in the light of the modern conception of the treatment of cancer, let the surgeon be prepared to take no chances, but in the forceful, if inelegant words of Gross, let him "cut out the very atmosphere of the damned thing."