

SUSPENSION LARYNGOSCOPY WITH DEMONSTRATION OF METHOD.*

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It is not so long ago that we thought inspection of the air passages was a closed chapter and that nothing more was to be accomplished in that direction. Then Killian introduced bronchoscopy, and this was followed by other new ideas. I need only mention the names of Mosher, Jackson, von Gyorgyai, Hays, Yankauer, Beck, and Edgar Holmes of Boston, to bring to your minds a great deal that has been done of late. But laryngology is advancing rapidly, and today again we have something entirely new, i. e., suspension laryngoscopy.

This latest discovery of Killian's is not only very interesting, but his method is of great practical value in many cases, and it has been tried by the writer in a series of experiments which have extended over nine months. In the first publication† on suspension laryngoscopy, its advantages and shortcomings were defined, and after larger experience we hold practically the same views.

It is unnecessary to describe the method just demonstrated in detail, as you have seen it today and can find the full account in the publication mentioned. Permit me, however, to give some additional points which may prove useful.

Besides the necessary instruments, the first thing required is good illumination. The best for operative work, and the only kind advisable, is a good Kirstein headlight. For other work, a small lamp (or two) attached sideways may be helpful. The second requisite is a room that can be darkened

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†Wolff Freudenthal: Personal Observations with Suspension Laryngoscopy. Medical Record, February 22, 1913.

(absolute darkness is unnecessary); and the third, an assistant with some experience in handling the apparatus. Trivial as these things seem to be, they are very important. The writer speaks from experience. Once, on being called to a general hospital to remove a growth from the larynx, a total failure resulted, owing to the lack of proper facilities. At another time the assistant was entirely at fault, as he manipulated the handle so roughly that he irritated the patient, who was of a very nervous temperament, and nothing could be accomplished under local anesthesia.

Only once a slight accident occurred, which I should like to mention: M. S., a short, rather heavy-set young man, twenty-five years of age, was curetted under suspension laryngoscopy on account of an ulceration of the posterior laryngeal wall (incipient tuberculosis of the lungs). The procedure took the usual course, but immediately after the operation the whole appearance of his face changed; it became swollen, highly red, and the whole forehead was bloodshot. He suffered no discomfort, however, and I ordered simple rest and codein. The next day there was not much change. In the pharynx there were still enlarged arteries on the right lateral wall and on the left tonsil. A few days later everything appeared perfectly normal.

Another point to be mentioned relates to the epiglottis. Years ago, when Kirstein first described his instruments for autoscopy, I noticed that the epiglottis in many instances could not be kept down with his spatula. At that time an attempt was made by me to overcome this difficulty by means of hooks which could be pushed over the epiglottis, these being made by Tiemann & Company. Later, however, this plan was forgotten, to be recalled only when the necessity for holding up the epiglottis again presented itself. The writer then resorted to the same device (see Figure), which consists of a silver wire fastened in the groove of the spatula at B and C, and ending in two thickened points, D and E. These can be pushed forward, and when they are in that position the epiglottis will remain in situ. By means of the hook A we can bring the wire forward or backward. The portion A—B can be turned to one side, if it is in the way. In the cases so far examined, this modification has worked very well. Since writing this I have noticed that Albrecht of Berlin had a

similar idea, and published his modification of a tongue holder in the *Berlin. klin. Wochensh.*, p. 2092, 1912. I have not seen his instrument, as it could not be obtained in New York.

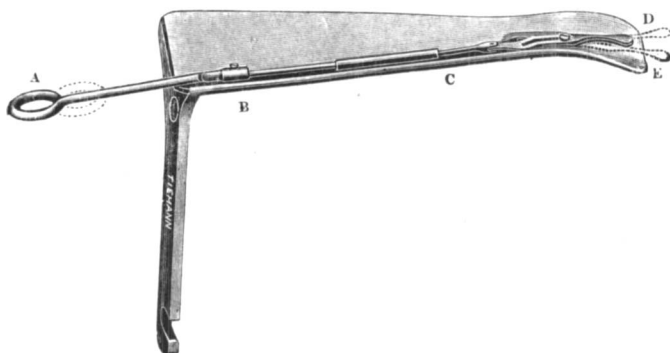
Permit me to give you the details of some of the cases handled by me, which may be divided into several classes.

I.—TUBERCULOUS CASES.

These have been the most instructive, but only those will be mentioned which were of special interest to me.

G. H., a sailor, aged 40, was referred to me in September, 1912, on account of hoarseness which had come on gradually during the last ten weeks. No pain, no cough, but a heavy feeling in his chest.

The larynx showed an irregular infiltration of the left vocal



Epiglottis Holder.

cord and a thickening of the entire right one, which was immovable. Quite a large ulceration was seen on the posterior wall. Examination of the chest revealed only the presence of a bronchitis; no tubercle bacilli. In spite of the fact that the lungs showed no positive evidence of any tuberculous affection, I took the case to be one of tuberculosis.

On October 18th, several pieces from the vocal cord were removed, and the ulcerated surface was curetted under suspension laryngoscopy. The immediate result was satisfactory. The ulcer healed and patient could breathe easier. Within a week he left for a country place. At the beginning of December, 1912, he returned, as he did not feel comfortable. On

December 9th, the septum for the first time showed the presence of a few tubercle bacilli. There were some new ulcerations, which were treated with orthoform emulsion. The pain disappeared, but not the ulcers. These were curetted again under suspension on the 20th of December, and again the patient felt so much better that he left for the mountains.

In February, 1913, he returned to the city with some dyspnea. Sputum positive, but chest findings almost the same as in the beginning. The larynx, however, had changed surprisingly. There were irregular masses springing up from both vocal cords; the arytenoids were markedly swollen, so that very little of the posterior wall was visible, and little space was left for breathing. Patient did not care to undergo another operation, and was kept under observation, the dyspnea growing steadily worse.

March 17th.—The dyspnea was so marked that I came very near doing a tracheotomy in my office, but finally succeeded in getting him to the hospital. There I removed five large pieces from the larynx under suspension laryngoscopy, local anesthesia being employed. The bleeding during and after the operation was minimal, in spite of very extensive removal of tissue. I mention this merely on account of a remark made by Dr. Schoetz in the Berlin Laryngological Society. (Of course, this does not mean that the possibility of hemorrhage in tuberculosis of the larynx is excluded entirely, but only that we need not be afraid to operate on such cases.)

The further history of the case proved that we were right in our deductions. After the operation the patient was put to bed and given ice externally and by mouth. All the instruments required for a tracheotomy were placed next to his bed, in case of immediate necessity. His breathing was better than before the operation, but about six hours later it again became quite bad, due, undoubtedly, to edema of the larynx, which, however, subsided gradually. The next day, when I examined him, a good deal of edema was still present, as well as some dyspnea and dysphagia. The day following (March 19th) the picture had changed much for the better. The edema had largely subsided, he could breathe almost naturally, and felt entirely different. The dysphagia, however, was marked. Orthoform emulsion was applied.

March 24th.—No appetite. Patient felt like vomiting all

the time. There was a false membrane in the larynx and a great deal of discharge from that source. Respiration free.

March 27th.—Fulguration was applied to hasten the process of healing, with the result that the edema again appeared next day, together with dyspnea. This subsided after application of cocain and adrenalin, but soon recurred. Examination showed a dislocation of the left arytenoid, which was flattened and lower than the right one.

The dyspnea became so marked that on March 31st I removed part of the overhanging tissue from the right vocal cord, in the presence of Dr. Layman of Indianapolis and other colleagues. After that the breathing remained free, and about two weeks later the patient again left the city.

In reviewing the history of this remarkable case, you will find several points of interest. First: The case presented the clinical picture of advanced laryngeal tuberculosis at a time when the lungs were very little or not at all involved. Second: After we had once curetted the larynx, infiltrations sprang up so rapidly that tracheotomy became imminent. But I refrained from that operation and instead removed five large masses from the larynx. I did not know that one could with impunity resort to such an extensive excision until in this case I was simply forced to do so in order to remove as far as possible all diseased tissue, and also to give breathing space.

You will naturally ask why tracheotomy was not done, which is so much simpler. To this I must answer that I was ready to perform this operation in the hospital whenever it should become necessary, but I tried to avoid it if possible. What would be gained by it in such a case? Only the danger of immediate suffocation would be averted; but afterward, what then? We would have had to resort either to a laryngofissure—and the mortality of that operation is very high indeed—or remove the enormous masses later with the aid of suspension laryngoscopy, and that probably would have been more difficult with the trachea opened. So, after careful deliberation, it was thought best to proceed as we did. The patient has gained free breathing space without having to undergo a tracheotomy, with the eventual necessity of having to wear a tube for a long period. He has now every chance for improvement.

Another case which is remarkable for the ease by which

a cure was accomplished is that of a tailor, aged 30. He had suffered from tuberculosis for the last three years. He had been for about a year in Denver, Colorado, where his pulmonary condition was practically arrested. He looked well and strong, and the only thing that annoyed him was the larynx. On account of his hoarseness he could not get a position, and the irritation in his throat made him cough. Quite a good-sized interarytenoid growth was visible, which was apparently the sole cause of his trouble. In several clinics attempts at removal had been made, but they were unsuccessful. The writer had the same experience at his first attempt. When the patient was placed under suspension laryngoscopy, quite a large piece was removed, but afterwards we found that a good deal more had been left and we had to operate twice again, the last time in the presence of Dr. J. Solis-Cohen of Philadelphia, on April 16, 1913. The patient felt much better and soon withdrew from treatment. I believe him to be cured.

It must be added here that as a rule large masses of tissue are not removed at one sitting, as we do not keep such patients in the hospital overnight and edema of the larynx is apt to set in. It is only where there is no danger that we remove all that is necessary at once, even very large masses.

Whether this case and the one previously referred to remained cured or not, is immaterial so far as the method is concerned. For the time being the first patient's life has been saved, and the last patient's growth removed, thus giving them the best chances for recovery.

In this connection I may be permitted to give the further history of two cases reported before.

Mrs. Z., a very nervous and excitable woman, was suffering from tuberculosis of the lungs and ulcerations of the epiglottis and left vocal cord. She was curetted on November 8, 1912, as thoroughly as possible. The dysphagia disappeared to a great extent afterwards, and if it were not for the pain from the ulceration of the epiglottis—that could not be reached—she would have felt much better.

On February 16, 1913, the following note was made in my book: Patient had been treated for several weeks after the curettage according to the usual methods, and now she can eat and swallow like any healthy person. She had not come for treatment for the last four weeks, and now has pain in the chest—slight pleurisy.

March 12, 1913.—Status idem. She only came to ask whether she should take the serum treatment so much talked about. Larynx in good condition.

April 15, 1913.—She again has dysphagia, is unable to come to my office, and is being treated by a local physician. There is no doubt in my mind that the ulcerations have recurred and that she ought to be curetted again thoroughly under suspension laryngoscopy.

M. F. had suffered from tuberculosis for about eight years and had a large mass of tuberculous infiltration, with an ulceration on the posterior wall of the larynx. Both arytenoids seemed enlarged (perichondritis). He had been seen by many colleagues of this city. The writer also had had him under treatment for quite a time, but it was impossible to get rid of the infiltrations. Even fulguration did not exert any beneficial effect, as it was not well tolerated by the patient. Since his pulmonary condition did not bother him, he was naturally desirous of having his throat cured. On November 15, 1912, in the presence of a number of laryngologists who attended the Clinical Congress of Surgeons, quite a large piece was removed from the larynx. Part of the arytenoid had been caught and removed at the same time, but not the entire mass of granulations. Postoperative pain was very slight; no dyspnea. A false membrane soon formed over the site of operation, but soon disappeared. On December 20, 1912, the whole mass was curetted thoroughly, with very satisfactory result.

On February 2nd he had to be curetted again, and what followed in this instance was similar to the condition observed in the case reported by Halle to the Berlin Laryngological Society (*Berlin. klin. Woch.*, p. 321, 1913), viz., the picture of a paralysis of both postici muscles. It is evident that no paralysis of central origin was present, but that by the curettage of the posterior laryngeal wall scars had formed which brought the vocal cords in adductor position. Yet he has no dyspnea and feels quite comfortable, so that no other treatment is indicated.

It seems to us that through suspension laryngoscopy an extensive field has been opened for thorough and radical work in laryngeal tuberculosis. We are thus enabled to curette all ulcerations thoroughly, with the exception of those of the epiglottis, and we are furthermore in a position to remove the

diseased tissues down to the healthy parts. This, for the first time, seems like real surgery of the larynx. How far we may go, the future will have to show us.

II.—ABSCESS FORMATIONS.

As mentioned very briefly in my first article, these cases offer a great opportunity for suspension laryngoscopy, especially those of abscess in the larynx. A case that occurred in my practice several years ago is still fresh in my memory. A young woman who had a retropharyngeal abscess suddenly developed severe dyspnea, the phlegmon having extended into the larynx. Both arytenoids were seen to be much swollen, apparently occluding the entire lumen of the larynx. One arytenoid was incised and a good deal of pus was evacuated. When the other was incised, the patient suddenly collapsed and fell to the floor. A hurried tracheotomy saved her life for twenty-four hours. How much better would it have been to have such a patient under suspension laryngoscopy, with the head hanging down and the abscess draining downward by its own gravity. These cases are quite rare, but if ever there was a strict indication for a certain method, it is in such patients.

While writing this article I happened to see another case, the history of which may be of interest. A married woman, aged 27, was referred to me on February 22d, on account of hoarseness which had persisted for six months and was gradually getting worse. She had a slight cough, but no other complaint whatsoever. I made a diagnosis of pachydermia laryngis, and treated her accordingly. Later on she suffered from tonsillitis, both tonsils being very much swollen, and it turned out that she had had such attacks before and that she was subject to rheumatism. It was decided to enucleate the tonsils some time after the acute attack was over. But no sooner had the condition of the tonsils improved than a swelling of the left arytenoid set in. This was considered as a purely rheumatic arthritis. In spite of all medication, the discomfort (dysphagia and slight dyspnea) was very annoying. Three days later the other arytenoid cartilage became swollen, though to a lesser degree, and at the same time true blebs appeared on top of the left arytenoid. As the dyspnea had increased, it was naturally thought advisable to open the bleb.

Remembering my former experience in that direction, I put the patient under suspension laryngoscopy, and at once saw not only the bleb on the left side, but also another on the right side, just below the glottis, which I had not noticed before. Both were incised, and patient felt easier. A very energetic antirheumatic treatment reduced both arytenoids materially, and she left the hospital without dyspnea. (There was no pemphigus present.)

Even in abscess formation higher up in the pharynx, suspension laryngoscopy is occasionally indispensable, and perhaps may be universally adopted in the near future. Already some of our laryngologists no longer open a retropharyngeal abscess in young children in the upright position, but prefer to do it with the head hanging down. Accidents have happened in their clinics, and they have learned to be careful.

One case occurred not long ago which may be worth mentioning. A house surgeon in one of the larger hospitals of this city called up his visiting surgeon during the night, asking his permission to open a retropharyngeal abscess in a young child. Consent was readily given. Some time later the visiting surgeon was called up again and asked what should be done with the child, as it had not been breathing for the last forty-five minutes! (Tracheotomy had been done!) Undoubtedly there are more observations of such fatal results, which always occur from the pus clogging up the glottis. How different is the procedure under the suspension method. We had a chance of operating on two such cases in infants of sixteen and nineteen months respectively. In both instances the abscess was rather deep down, but showed up beautifully as soon as the child was under suspension. The whole extent of the abscess was easily seen and still more easily evacuated. The children had received only a few whiffs of ether.

This brings us to the question of

III.—TONSILLECTOMY.

Shall they all be done under suspension when general anesthesia is employed? While the writer is not prepared to give a definite answer to this question, it is his experience that in older children the operation can be done easily in this position, and in many cases it is preferable to the prone or the upright posture. In younger children,—that is, below the

age of three or four years,—the mouth cannot be opened sufficiently wide to allow the use of the comparatively big tonsil instruments with ease and satisfaction. In older children it is simple.

If you do operate in that way, it is wise to introduce the spatula sideways and so fix it that its end is not in the median line, but points toward the tonsil to be operated on. In this way, the tongue is kept entirely out of the way. If narcosis is carried out satisfactorily, the advantages of this mode of operating on the tonsils are in many cases very noticeable. The writer has operated on about twenty children in this manner, and finds that the benefits derived are due to the fact that the blood flows downward into the nasopharynx and gets out of the way. We do not require any suction apparatus, and can finish the operation quickly and without much assistance, always provided that the anesthesia is complete.

IV.—PAPILLOMA OF THE LARYNX IN CHILDREN.

It would seem that these cases are especially adapted to suspension laryngoscopy, but the writer has not had the good fortune to come across such a case for the past year. He has seen, however, a number of

V.—BENIGN NEOPLASMS OF THE LARYNX IN ADULTS.

These patients were absolutely unmanageable under cocaine, and the suspension had to be done under general anesthesia. The first requisite in these cases is perfect anesthesia, and you are lost without that.

The following case, upon which I operated in conjunction with Dr. J. Weinstein, may be of interest:

S. E., aged 52, agent. Hoarse for the past three years. The doctor had several times removed pieces from a mass on the left vocal cord, which were always found to be benign. For the last two months patient had had some dyspnea, and the larynx showed a large mass filling nearly the entire left side. As there was no strict indication for removal of the entire larynx, we took out as much of the diseased tissue as we could get. This was done under general anesthesia. The patient had quite a little edema of the larynx following the operation, as well as dyspnea, but these disappeared, and I understand that he is now doing well. Examination of the tissues removed again proved to be benign in character.

In cases where it is necessary to operate on the anterior commissure, which is naturally the hardest to reach, the epiglottis has to be out of the way entirely. For that purpose it may be sufficient in some cases to use a longer spatula or the writer's spatula with the hooks, described above. If neither of these proves adequate to bring the anterior commissure into view, as will be the case in the majority of instances, then one assistant has to press down the larynx from the outside. This helps in many cases.

Dr. J. Solis-Cohen of Philadelphia recently suggested that with a long, flexible-handled, polished steel mirror, one centimeter in diameter, one could examine and operate upon the anterior walls of the larynx and trachea under suspension laryngoscopic examination. As I had in my possession a long-handled glass mirror which had been devised for the inspection of the vocal cords from below, I straightened it and tried Dr. Cohen's suggestion. I was able to see the anterior portion of the larynx, but it is doubtful whether another instrument to remove any neoplasm could be introduced simultaneously with the mirror. Yet this is a very interesting experiment and encourages future trial.

VI.—FOREIGN BODIES IN THE PHARYNX AND LARYNX.

Dr. E. D. Davis of London removed a pin from the posterior pharyngeal wall of an infant eleven months old, under chloroform. He found the great advantage of suspension to be in the comprehensive view obtained by this method, as compared with the small area visible by the esophagoscope (*Brit. Med. Jour.*, January 18, 1913, p. 115). The operation was apparently very easy.

It seems to us quite natural that foreign bodies in the larynx should be removed under suspension laryngoscopy, and that we ought to be able to reach them very easily without the least risk.

In conclusion, I would say that while suspension laryngoscopy is not going to revolutionize the entire domain of laryngology, nor replace the old established methods in the large majority of cases, it will be—if it is not already—of great benefit, both diagnostically and therapeutically. In the many cases where through its aid a clear view of the operative field is gained, it has proved of incomparable value.