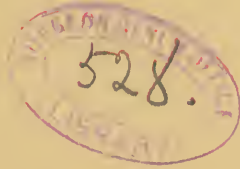


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A case of atresia laryngis

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A CASE OF ATRESIA LARYNGIS FROM CATARRHAL
LARYNGITIS, WITH PRESENTATION OF PATIENT,
FOLLOWED BY INTUBATION.

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Gentlemen of the Parish Medical Society: It is almost without preparation that I appear before you this evening, as I was approached by your worthy secretary only three days ago with the pressing request that I should take the place of the designated essayist. Previous engagements and the short limit of time induced me to resort to an exhibition of an interesting case which is now under my treatment, rather than to write an essay.

The clinical history of this patient, whom I have to-night brought before you, is such as, I hope, will compensate to some extent for the regrettable change in your programme.

I now refer to a case of almost complete synechia of the rima glottidis, the result of chronic catarrhal ulcerations. Her observation, as taken by Dr. C. J. Landfried, was as follows: About eleven years ago, during high water in the suburbs of the city, Mrs. G., a native of New Orleans, aged 41 years, was accidentally thrown from a skiff, getting her head and body soaking wet. That same day she noticed a little huskiness of the voice, which gradually became worse, until finally she was so hoarse that she could not be understood (the voice not amounting to more than a mere whisper). The patient has had a marked aphonia from that time to this, due, however, for nine years to, presumably, a catarrhal laryngitis, and for the

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presented by the author

last two years to a synechia or adhesion between the vocal cords, causing at first slight dyspnœa, but which became so aggravated in the short space of three months as to require a tracheotomy. The dyspnœa was continual, *i. e.*, night and day, and not paroxysmal; during rest as well as upon slight exertion, patient always experienced a sense of suffocation.

The dyspnœa was aggravated by the least exertion, such as sweeping, going up steps, etc., and showed no tendency to ameliorate, but, on the contrary, became gradually worse. A few months after the accident (falling from skiff) above mentioned, patient had recourse to a medical gentleman for her hoarseness. He treated her for several years with electricity applied to the neck in the region of the larynx and by sprays, inhalations, etc. At the end of that time (five years), her hoarseness not being any better, she concluded to go to the Charity Hospital, where she was examined by a physician of the visiting staff, who made an application to the pharynx (she says of something black) and ordered her to put one teaspoonful of turpentine in a pint of steaming water, to be used by inhalation, and also to go to the piney woods or a place not near water. She followed those instructions, and came to the city every third or fourth week, for the purpose of reporting. After one year of such treatment, she was just about the same; no better nor no worse. She next went to another public institution.

The surgeon in charge there ordered a mixture to be taken internally, and inhalations, which she followed for about nine months, but with no result. At the end of that time the breathing commenced to become embarrassed, dyspnœa increased, and the disease pursued the course outlined above. In this condition she applied to the Eye, Ear, Nose and Throat Hospital on the 29th of December, 1889, just two years ago.

Before the accident, which occurred eleven years ago, from which she dates her trouble, patient was perfectly well. She had no cough, and her general health was good. Father died of apoplexy eighteen years ago, at the age of 68. He was a stout, robust man. Mother is living, 72 years of age, and, for her age, very active. Patient had four children; one died at the age of 9 days, and the other three, living, are perfectly healthy. Has three sisters living, who are robust and

remarkably healthy. Two brothers, also living, and well. No history of any skin eruption, no alopecia, no sore throat that could be suspected as specific, no sore eyes, and, in fact, nothing that would lead to a suspicion of syphilis.

Upon examination of the larynx I found a marked stenosis of the glottis, with appoximation and almost complete immobility of the arytenoid cartilages. The respiration was carried through a small aperture of the size of a goose quill, and located near the posterior commissure.

The right arytenoid cartilage seemed to be on a more anterior plane than the left one. A shallow groove could be seen extending from the above mentioned aperture to anterior thyroid angle. When the laryngeal sound was used this groove was found to be lined not by a depressible membrane, but by a resisting tissue, the opposing edges of the rima glottidis being, as it were, firmly glued together. The line of union was imperfectly straight. No granulation tissue could be found to allow of removal for microscopical examination. The patient's general appearance was miserable. She was pale, weak and very much emaciated. The physical examination of the chest gave negative results. Her expectoration was difficult and generally frothy, occasionally spotted with thick secretion; no bacilli were found. After reporting a few times, the patient was advised to enter the hospital in order to be tracheotomized. The operation though was hurried on by an alarming attack of dyspnœa. During 1890 numerous attempts were made with Whistler's instrument to dilate the opening in the larynx, which had contracted still more after the introduction of the cannula.

Whilst in Berlin I ordered a special set of laryngeal knives, hoping, on my return home, to incise the synechia; I could then scarcely introduce a very slender laryngeal probe. In 1891 I was forced for several months to abandon all attempts, by reason of a deep phlegmon of the neck, the result of lymphangitis caused by the introduction of the sound, which determined probably a traumatic infection. Upon my return from Europe this year I found the larynx air-tight, the opening being closed by a large granuloma. After removing it with the laryngeal forceps, I succeeded in introducing *this* very slender sound through the tracheal wound, from below upward. After push-

ing it up into the pharynx I managed to throw around the end a knot of ligature thread, which I drew down through the tracheal wound, the extremities being tied over the chin. The next day, by means of this thread, I pulled through the stricture a double thread, then four, six, eight, etc., until I had to stop on account of an ulceration of the epiglottis and inner surface of arytenoids, caused by continuous pressure and friction during deglutition. Still I had managed, by that time, to have an opening sufficiently large to admit the No. 1 of Schrötter's hard rubber tubes. This, on the first day, remained in the larynx for about half an hour.

The next day the same number was again introduced, and remained about the same length of time. On the third day No. 3 was introduced without difficulty, and remained in place a little longer than the preceding numbers, say about one hour. The same number was introduced on the two succeeding days, and remained about the same length of time. Then No. 4 was introduced, and allowed to remain one hour. This number was reintroduced each day for about eight days, when I commenced introducing O'Dwyer's tubes for infants, first the size next to the largest and to-day the largest size. As soon as I receive a box of O'Dwyer's tubes for adults I will incise the stenosed parts if necessary and proceed to use much larger tubes, and hope to be able, in the course of a few months, to dispense with the tracheotomy tube when the canula wound can be closed, and the patient considered as cured.

Now, gentlemen, I wish to call your attention to a point in the etiology of the case which is certainly a most interesting one, and might be the subject of a spirited controversy. The fact is that, leaving aside the different forms of acute stenosis of the larynx, such as acute œdema of the glottis, erysipelatous inflammation, laryngeal diphtheria, perichondritis, etc., most cases of chronic stenosis of this organ can be classified under the head of tuberculosis or syphilis. Of course, this statement does not apply to those cases in which the stenosis is the result of neoplasm or of the cicatricial adhesions which follow some of the acute infectious diseases, such as variola, typhoid fever, glanders; nor does it include cases of rhinoscleroma, of lupus or of paralysis of the abductor muscles.

In a general way, it is true that most cases of chronic stenosis of the larynx are of a tubercular or syphilitic origin. A careful study of the present case makes it evident that it cannot be classified under either one of these two headings. The absence of any specific infection, the duration of the disease, the negative result of the examination of the sputa at the time, the absence of cough or of expectoration, compels me to abandon all idea of tuberculosis or of syphilis. I must, therefore, consider this as a case of laryngitis *a frigore*, which led to an ulcerative process, and finally to an almost complete synechia of the glottis.

I am aware that the existence of catarrhal ulcerations, and especially leading to such a result, has been contested by most specialists. Schnitzler, of Vienna, and Heryng, of Warsaw, with a few others, are the only ones who admit their existence. In fact, I have failed in my researches (hurried, it is true,) on that subject to find a case of chronic cicatricial stenosis of the larynx which was ascribed to purely catarrhal ulceration.

The case of Schrötter is the only one which presents such points of great similarity with the one I bring before you this evening, and I will ask your permission to read to you a synopsis of the observation. I refer to the one published by his assistant, Dr. George Juffinger, in which hoarseness, without known cause, had existed two years and a half in a man 25 years of age. This was followed by dyspnoea, eventually requiring tracheotomy. Six weeks after the operation all communication was shut off between air passage and pharynx—attempts at dilatation failed—division of the larynx and removal of the obstructing tissues were only temporarily serviceable. Schrötter found complete occlusion of the larynx. The arytenoid cartilages were closely adherent, and the ventricular bands were thickened and in contact. After repeated failures to find a passage by way of the mouth or by way of the trachea, Schrötter passed a harpoon lance between the ventricular bands and through the cicatricial tissue into the trachea. A thin thread was then thrown around this instrument in the tracheal wound and drawn up through the mouth, when its two extremities were tied together. The next day a

thicker thread was tied to the tracheal end of the first one and drawn through in its turn. Subsequently larger threads, then catgut, and eventually a leaden wire of considerable size were drawn through. This was followed by the graduated dilating prisms, until on the fortieth day Schrötter's No. 20 could be introduced. At this time a small granulation tumor was detected in the glottis, and was removed with the electro-caustic snare. Dilatation was continued as before, and eventually confided to the patient, who became enabled to work and to sleep with his canula closed. It was hoped that eventually the canula could be removed.

Leaving this very interesting question of etiology, I will proceed, gentlemen, to say a few words in regard to the practical point of treatment in cases of chronic stenosis of the larynx, my remarks now applying to the chronic forms of this trouble.

I must tell you that this question of treatment of chronic laryngeal stenosis has been in the past few years the subject of numerous publications, and has led to the invention of numerous instruments. In time not far removed a medical interference amounted to little less than the appearance of the physician as a *Deus ex machina*, when he arrived in time to perform the operation of tracheotomy. Asphyxia was for the time being remedied, but the physician, as well as the patient, had to face the awful prospect of a canula which had to be worn generally for a life time.

To-day, thanks to the treatment advocated in 1876 by Dr. Schrötter, and also to the procedure of intubation, as perfected by O'Dwyer, this painful necessity is becoming rarer and rarer.

Not that these gentlemen have an exclusive right to the honor of this great progress, for it is proper to remember in this connection the pioneers, like Desault, Chaussier, Currey, Bouchut, Trendelenburg, Weinlechner, and others.

In looking over the literature of this subject, I find in the Index Catalogue of the Surgeon General's Library the title of an observation published in 1828 by Liston, which reads as follows: "Notes of a case in which the canal of the larynx after being nearly obliterated, was re-established."

Now when we come to synthetize the very numerous op-

erative procedures instituted to remedy laryngeal obstruction, they can all be ranged under the head of three general methods :

1. The endolaryngeal method, by itself.
2. Dilatation, with preliminary tracheotomy.
3. Laryngotomy.

A complete study of these three methods and their numerous modifications would tire your patience, as they have taxed the minds of specialists, and more than justify what an expert like O'Dwyer has expressed in the following lines: "To insure success in management of chronic stenosis of the larynx, some ingenuity and a great deal of patience and perseverance are necessary in order to overcome the many difficulties encountered."

1. The first method is the one which naturally absorbs from the start the attention of the surgeon. It consists, as you can very well understand, in dilatation of the parts by means of bougies, with or without the adjunct of liberative incisions, or even of excisions. We can divide the instruments used for this purpose in two general classes :

(a) Those which are calculated to remain in place *only a limited time, a few hours at most*, such as ordinary bougies; Mackenzie's three-bladed parallel dilator, Whistler's cutting conical dilator, Navratil's ingenious but complicated four-bladed dilator, and Moure's instrument, which has the advantage of allowing one to work it with one hand, whilst with mirror in the other hand, the operator can direct his manipulation. We have next, in this same class, Schrötter's hard-rubber hollow tubes, which are prismatic, and, therefore, better adapted to the shape of the larynx.

(b) The second class of instruments comprise those which are destined to remain *in situ* a longer period than a few hours. They can be placed and retained by the patients, for days, weeks and months. The intubation tubes of O'Dwyer represent the most perfect type of these instruments.

In regard to these tubes, as used in connection with chronic cases of stenosis, I can not express my view of their utility better than by quoting the author himself, who said at the International Congress in 1887: "Had intubation of the larynx

proved a complete failure in the treatment of croup, I should still feel amply repaid for the time and expense consumed in developing it, for I believe it offers the most practical and rational method yet devised for the dilatation of chronic stricture of the glottis." He supports this view by the record of five cases treated by intubation.

Since these cases were published, many other contributions to this subject have appeared. Among them I will call your attention to the article of Dr. Lefferts, of New York, on the treatment of syphilitic stenosis by intubation, which proved to be one of the most interesting papers read before the Laryngological Section of the International Congress of Berlin. To bear out the correctness of his views, he cites ten observations, in which intubation proved to be the simplest and speediest method of remedying alarming dyspnoea, and thereby avoided the inconvenience and danger of tracheotomy, one of which certainly lays in the temporary or permanent use of tracheal canulæ.

In these chronic cases, the tube is often worn for very prolonged periods without harm or inconvenience. In one of O'Dwyer's cases, owing to the patient being lost sight of for a length of time, the tube was worn continuously for ten months. Experience has shown, as might have been anticipated, that when the larynx is affected with chronic inflammatory thickening and cicatricial narrowing, considerable pressure can be tolerated from tightly fitting tubes without injurious consequences. In introducing the tube, also, in these cases, more or less force may have to be employed, and can be employed without injury.

In cases requiring the retention of a tube for several months, it is important, says O'Dwyer, to change the points of pressure in the vestibule of the larynx about once in two weeks, in order to prevent erosion of the mucous membrane, with consequent sprouting of fungous granulation, which is liable to occur from the compression exerted by the constrictor muscles during every act of swallowing.

A hard rubber tube may be allowed to remain in the larynx for a much longer time than one constructed of metal, because, owing to its lightness, it does not occupy a fixed position, but

moves upward by coughing, and is again pressed downward by the act of swallowing. Another objection to the long retention of a metallic tube, is the fact that the gold plating soon disappears in places, followed by erosion of the metal and the deposit of calcareous matter, which produces a good deal of irritation.

The difficulty of deglutition, which sometimes is present, after the introduction of an intubation tube is not a source of trouble in chronic cases, for deglutition has invariably been found to be carried on quite easily after the first few days, both in children and adults. In the stenosis which sometimes follows tracheotomy, and which renders it impossible to dispense with the tube, intubation has been found a valuable method of treatment. Ranke, in discussing this subject, gives as the principal cause of difficulty in dispensing with the tracheotomy tube:

- a.* Granulations growing up in the region of the tracheotomy wound, especially at its upper end.
- b.* Cicatricial stenosis, either at the site of the incision or at some point in the trachea where the canula presses.
- c.* Swelling and thickening of mucous membrane of the larynx, between the under surface of the cords and the lower margin of the cricoid (chorditis inferior hypertrophica).
- d.* Bilateral paralysis of the abductors.
- e.* Paresis of the cords from disease.
- f.* Dread of having the canula removed, producing laryngeal spasms.

In all these forms of difficult decanulement Ranke advocates intubation, although his own experience is confined to its employment in the first two forms.

If time permitted, I could prolong this dissertation by entering into the minute details of intubation in children, as compared to the same procedure in adults, by speaking of the use that can be made of cocaine in facilitating the manipulation, also of the use of laryngeal mirrors in adults. I will limit myself, before discarding the subject, to call your attention to the fact, as demonstrated in the case I present to you, that in the treatment of chronic stenosis in the adult the set of croup tubes (as this one) used for children will do to begin with,

but the calibre, shape, length and material of the tube, as also the strength of the handles, have to be modified in order to complete the treatment. No set of instruments, however complete, will be sufficient for all cases, no two of which are alike, says O'Dwyer, and the construction of tubes adapted to special peculiarities will sometimes be required.

2. I now come to the second general method of treatment in these troublesome cases—I mean to dilatation with preliminary tracheotomy—a method which is not to be resorted to until all the possibilities of the endolaryngeal method have been thoroughly exhausted. It is true that it is the one that I have pursued in this case; but let me tell you candidly, had the sum of evidence produced to-day in favor of intubation been displayed two years ago, and especially had the dyspnœa been less alarming, I sincerely think I could have managed my case better and avoided a great deal of trouble and annoyance. To this method belongs the improved Schrötter's plan of treatment. I soon found that the Trendelenburg hollow tube, as perfected by him, could only be used for very temporary dilatation, occasioning at times serious irritation and very great loss of saliva (as evidenced in my patient's case, who was certainly weakened by a daily loss of over one pint of saliva). He subsequently advised preliminary tracheotomy, and devised his method of dilatation of chronic stenosis by introducing through the mouth small prismatic bougies. Through each prism a rod, having an eye at the top for affixing a thread, and a knob below, or a perforation, by which the bougie can be secured by a pincette or by a bolt passed through the fenestrated canula in the artificial opening. The bougie is inserted by means of a canulated director fitted to a perforation surrounding the eyed rod at top, the thread attached to which has previously been drawn through the director by a special wire hook and is then united at the distal end.

As soon as the bougie has been secured at the lower end the thread is loosened from the director and that instrument is withdrawn, leaving the bougie in position and the thread hanging from the mouth. The thread being secured, the bougie remains in position day and night until it becomes necessary to clean it or desirable to replace it with a larger one, when it is

released below and withdrawn by traction on the thread. This method has produced remarkable results in the hands of Schrötter and was universally acknowledged to be the most effective until intubation, as shown you in the present case, was proved to be more than a serious competitor. In connection with this general method I will simply mention the numerous attempts made by Stoerk, McHenry, Czermack, Renich, Burow, Bruns, and many others to dilate the stenosis from below upwards. Whilst some of them have proved effective in isolated cases, as in Liston's observation, still these procedures have generally been abandoned in favor of the above mentioned one.

3. The third general method of treatment of chronic stenosis of the larynx, and to which I will simply make a rapid allusion, is laryngotomy, or laryngo fissure. This method, formerly recommended by French surgeons, is, and especially has been, enjoying quite a reputation in Germany. The larynx is open on the median line, and the causes of obstruction are either incised, or excised, by means of the bistouri, scissors, or thermo-cautery, and to avoid ulterior cicatricial retraction the larynx is subsequently cauterized. Whilst I admit that there are cases in which this method is perfectly justifiable, and, indeed, has given good results, still they are so few that I think it can be discarded. It should be limited to those cases of chronic stenosis, the result of obstructive neoplasm, or for extraction of foreign bodies, and intended as much for their permanent removal as for the relief of the stenosis.

