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SOME INTERESTING LARYNGEAL NEOPLASMS

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LARYNGEAL NEOPLASMS.

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DURING the past year an unusually large number of laryngeal diseases have been treated in my service at the hospital. Although they are not all of equal importance, every affection of this part of the respiratory tract may be considered as having an interest of more or less individual nature. Especially is this true when the larynx is the seat of a new growth, the size, shape, situation, and nature of which may seriously alter the character of the vocal sounds and interfere with the functions of respiration and deglutition to such a degree as to imperil the life of the patient. Unfortunately, this condition is often reached before a physician has been consulted. Hoarseness, with impaired respiration and deglutition, are most frequently the initial symptoms of a serious disease of the larynx; their appearance, however, is usually so insidious that they may have existed for months without attracting much attention or causing discomfort. In due time something occurs which determines the necessity of a laryngeal examination, and the serious import of the symptoms is appreciated. Who can estimate how many lives might be saved if it were possible to see and make an early diagnosis of every case of tubercular and cancerous disease of the larynx? The histories of the following five patients are selected, as being the most unusual and interesting cases of laryngeal neoplasms, which were treated in my service in the throat department of the hospital during the year:

CASE I. Nora Ring, aged 5 years, came to the hospital March 19, 1894. Her mother said the child had been somewhat hoarse since birth, and suffered from frequent attacks of croup, especially during the winter months. For the past six months her breathing had been labored and was

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accompanied by choking and suffocative attacks at night. Three weeks before her visit to the hospital she contracted measles, and during the attack there was considerable irritation of the upper respiratory tract. The recovery from the exanthem was uneventful, but the laryngeal symptoms continued. Her condition on visiting the hospital was one of great discomfort—face pale and anxious, with bluish lips and alæ nasi much distended at each inspiration; the latter was difficult and labored, calling into action the accessory muscles during each inspiratory effort. The noisy respiration could be heard several feet away. Owing to the distressed breathing, no examination of the larynx could be made at this visit. Hot steam inhalations, with fomentations and a $\frac{1}{8}$ of a grain



FIG. 1.
Congenital Papillomata.

of bichloride of mercury, were prescribed three times a day, and the child sent home. The temperature at this time was 100° F. and pulse 110.

On the evening of March 20th the respiration became so labored that my assistant, Dr. Frank K. Roarke, was called. He introduced an O'Dwyer tube, but owing to the thick, tenacious character of the mucus in the larynx and trachea, air would not pass readily through the tube. Respiration being more embarrassed by its introduction, it was removed, a high tracheotomy performed, and a small tracheal tube introduced. The next day the patient was admitted to the hospital, the pulse rate being at this time 136 and the temperature $102\frac{2}{3}^{\circ}$ F.

Recovery from the tracheotomy was uneventful, and on the 7th of April the patient was able to walk about the ward. During the three weeks following admission to the hospital, a spasmodic cough became a troublesome feature, accompanied by the expectoration of yellow, ill-smelling, stringy mucus.

Creosote and terebene were given alternate weeks for a month, improving the character and diminishing the quantity of the mucus. The tracheal tube was removed daily, and the wound and as much of the tracheal wall as could be reached with bent probes was cleansed with cotton dipped in peroxide of hydrogen. After the frothy mucus had been wiped away the tube was reintroduced. Vinum ferri citratis was given from March 30th to April 17th, when it was discontinued and liq. potassii arsenitis administered until the 20th day of May. This greatly improved the physical condition. Prior to this time no air had passed through the larynx when the tube was removed, but some respiration was now possible. The catarrhal symptoms of the trachea and upper bronchial tubes having greatly diminished, a laryngoscopic examination was made. The rima glottidis was found to be packed with irregular, red papillomatous masses of various sizes and shapes, which were seemingly attached to the ventricular bands and completely covered the vocal cords. Shreds of yellow mucus occupied the spaces between the growths. Alkaline sprays were employed daily in the larynx for some weeks, and a laryngoscopic examination made from time to time. About the middle of June, the papillomatous masses had lost their œdematous appearance and diminished so much in size that their individual characters could be observed and their attachments well determined. Prior to this observation, the laryngeal obstruction seemed to result from large, fleshy, fringed masses, as already described, but from a sketch taken in June and represented in Fig. 1, it will be seen that there were really seven distinct papillomata, which, owing to the catarrhal laryngitis had become swollen and œdematous. There were two papillomata on each cord, one in the inter-arytenoid space, and another in the anterior commissure near the lower part of the cushion of the epiglottis, but above the cords; while another was attached to the anterior wall of the trachea immediately below the cords. The latter growth could be seen through the opening in the trachea and, as will be related, was subsequently removed, through the tracheal wound. During the succeeding summer months, creosote was administered daily and the patient allowed as much out-of-door exercise as possible. The papillomata gradually diminished in size until by the 1st of October, those on the cords and the one in the posterior commissure had entirely disappeared, leaving the cords red and somewhat thickened. The growth in the anterior part of the larynx had diminished in size, but had a firm, nodular appearance. As the patient was anxious to leave the hospital, the removal of the remaining portions was decided upon, and effected after

considerable training of the throat. The removal of the papillomata above the cords was effected in three sittings with Mackenzie's forceps. The subglottic mass was also detached in part with the forceps from above, but the remaining portion was removed through the tracheal opening by a bent curette, the cutting surface being made angular to fit between the wings of the thyroid cartilage. On the 10th of October the tracheal tube was removed and the wound closed; and on the 17th the child left the hospital with the tracheal wound healed. The vocal bands were of a pale pink color, and granular in appearance, and the voice of a hoarse, rasping character, considerably above a whisper. She has since visited the hospital once a week, and had the larynx sprayed with a solution of chloride of zinc. The improvement of the voice gradually increased until it became quite distinct, but it remains somewhat weak.

This case is of unusual interest, as there is every evidence from the history of the hoarseness, shortness of breath on exertion, and frequent attacks of croup, that it was one of congenital papillomata, and although Mackenzie, in 1871, considered congenital papillomata as unproven, their presence is now admitted by most observers. It furthermore raises the question whether tracheotomy, producing functional rest of the larynx, may not in some cases favor atrophy of the papillomata and their complete and permanent disappearance. Certainly in this case, although only three months have elapsed since the tracheal wound closed, there is not the slightest evidence of recurrence, and from week to week the cords become thinner and paler, and the voice improves in ratio. My somewhat limited experience with the treatment of laryngeal papillomata in children by thyrotomy has given much less favorable results, as the frequent recurrence of the growth required the operation to be performed two or more times on each case and left the voice much impaired.

The next case, represented in Fig. 2, is one of sarcoma of the epiglottis, and I believe, is the largest one reported in the literature of laryngeal neoplasms as originating in this situation. The location is not an unusual one for cysts, papillomata, fibromata, etc., but only two authentic cases of sarcoma of the epiglottis have been reported; one by Morrell Mackenzie in

his essay on one hundred cases of laryngeal growths, and another by Dr. Burow in the *Berlin. klin. Woch.*, No. 8, 1887. In Mackenzie's case, although the growth was comparatively small, it produced almost complete aphonia and extreme dyspnoea. Burow's patient, and the one now presented, although having much larger growths than Mackenzie's patient, gave little evidence in their voices of the size of the neoplasms. Burow describes the voice of his patient as being peculiar in tone. The voice of my patient was flat, and although the lips

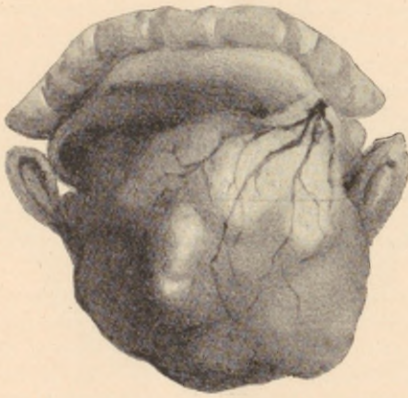


FIG. 2.

Sarcoma of the Epiglottis.

and tongue made the movements for vocalization, they seemed devoid of sound, the voice apparently coming from a distance. The difference in character of the vocal tones was doubtless due to the positions of the neoplasms which in one case infiltrated the cushion of the epiglottis, and was just large enough to insinuate itself between the cords and prevent their coaptation, and at the same time diminished the area of the respiratory tract in its most important part. The large size of the other neoplasms and their higher attachment kept them well above the vocal bands, and interfered but little with their functions.

CASE 2. Bridget O'R. Age 32 years.

Came to the throat department of the hospital July 23, 1894, complaining of choking sensation in the throat. Family history negative.

Personal History.—Always well until four years ago, when she had nervous prostration. About a year later she noticed that her voice was rather flat, and it required a little effort to produce a clear sound. Eighteen months from the first appearance of the vocal change, she experienced some difficulty in swallowing, and the solid particles of food seem to lodge near the root of the tongue. This condition rapidly increased, and for six months previous to her visit to the hospital, she had been unable to take anything but liquid nourishment.

Present Condition.—Patient looks pale, emaciated, and somewhat cyanotic, and coughs incessantly, owing to a tickling sensation in the region of the larynx. Respiration about normal, while the patient is quiet, but slight exertion makes it rapid and labored. While asleep the respiratory efforts have become so alarming that the friends of the patient, with whom she stays, insisted that medical advice should be had at once, which accounts for her visiting the hospital. No pain had been experienced and the performance of ordinary duties produced so little discomfort that she had never before consulted a physician.

On laryngoscopic examination, a round, somewhat lobulated white tumor about the size of a hen's egg was seen at the base of the tongue and behind the epiglottis, almost filling the oropharynx and covering the larynx. Its location and appearance is very well shown in Fig. 2. The mass was elastic and freely movable, and being attached by a rather long and narrow pedicle, it came well up into the back part of the oral cavity during deglutition.

Several large vessels coursed over its upper surface. The white glistening appearance and feeling of fluctuation on palpitation, suggested a large cyst. A puncture was made well into the centre of the mass with a laryngeal knife, but resulted only in a severe hemorrhage. The patient was admitted to the hospital on the 25th of July and an attempt made to remove the growth, but the administration of both ether and chloroform embarrassed the respiration to such a degree that a low tracheotomy was performed. The patient by this time was very cyanotic, respiration shallow, and the cardiac action so weak that considerable difficulty was experienced in reviving her. Convalescence from the tracheotomy was rapid and uneventful. On August 3d, after finding that the attachment was limited to the margin of the epiglottis on the right side, an eight

per cent. solution of cocaine was applied and a loop of platinum wire thrown around the pedicle of the growth. An intermittent electric current was passed through the platinum wire and within five minutes the pedicle was divided and the mass fell out of the mouth. Very little hemorrhage followed. The voice at once resumed its natural tone, and on examination the cords and larynx were found to be normal in appearance. The right half of the epiglottis and its accompanying growth had been removed. Very little pain or reaction followed the use of the cautery, and on the 5th of August the tracheal tube was removed and the opening closed. On the 8th, the patient was discharged from the hospital.

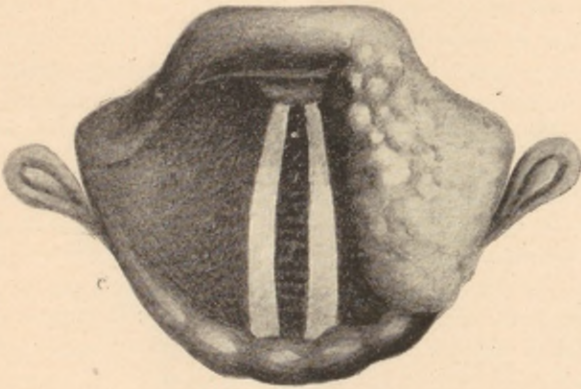


FIG. 3.
Syphilitic Neoplasm.

On the 15th of September, she visited the hospital again, but no trace of the neoplasm was apparent. The remaining half of the epiglottis had fallen over and partially occupied the place of the portion removed.

Her general nutrition was much improved and she had gained ten pounds in weight.

On examination the growth was found to weigh 360 grains and to be $4\frac{1}{2}$ inches in its greatest circumference and $3\frac{5}{8}$ inches in its lesser. A microscopic examination was very kindly made for me by Dr. E. K. Dunham of the Carnegie Laboratory, who reported that the growth was a sarcoma of the variety called by the Vienna school "perithelioma," and that the prognosis was rather more favorable than in most other varieties of sarcomata.

Although many authorities on laryngeal neoplasms believe that an expert should have little difficulty in making a diagnosis between syphilitic and malignant disease of the larynx, plates 3 and 4 of Cases Nos. 3 and 4, with their histories, illustrate the perplexities which may be experienced. The age of one of these patients favors malignant disease, while that of the other favors syphilis. Neither admitted any knowledge of a specific primary affection, and although each was given five drachms of potassium iodide daily for a week, neither showed any diminution in the size of the laryngeal growths. They

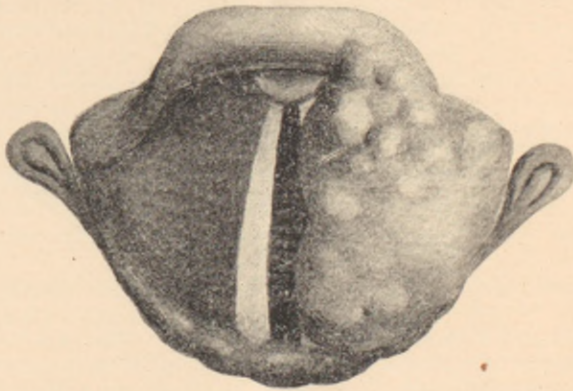


FIG. 4.

Epithelioma of the Larynx.

both complained of burning and stinging sensations in the larynx, and while one had chewed as much as an ounce of tobacco daily for fifty-four years, the other followed cigar wrapping as his employment, and has kept daily small pieces of tobacco in his mouth for many years. My colleagues who saw the cases, agreed that in location, size, shape, formation, and color, the neoplasms bore a remarkable resemblance to one another, and it was the general opinion that they were malignant in character. Both seemingly arose from the left ventricular band, which is probably the most frequent situation for the initial deposit of malignant neoplasms, and passed upwards

along the lateral walls of the pharynx to the posterior surface of the epiglottis into the left glosso-epiglottic fossa. After the administration of the first course of potassium iodide, a microscopic examination of a portion removed from the older man's throat proved the growth to be an epithelioma. No microscopic examination was made in the other case. Although bearing many appearances in common, these two cases were different in some important particulars and had characteristics representing their respective natures. The tissues surrounding the malignant neoplasms were very much irritated by an abundant secretion of thick mucus of the usual odor noticed in malignant cases; this was not apparent in the specific case. The notes of patient No. 3 are of further interest as showing that a later administration of exceptionally large doses of potassium iodide and mercury proved the neoplasm to be a syphilitic growth of a somewhat unusual character. The possible method of acquirement is also of interest in this case, as there is every reason to believe that the patient was truthful in denying any knowledge of syphilis. The complaints of a prolonged tonsillar disease, with the history of subsequent sore throat, is suggestive as to the possible point of infection. Tertiary syphilitic deposits of the larynx require more than a moderate dose of potassium iodide before its full benefit is obtained. An ounce or more of this salt in divided doses during the twenty-four hours may be needed. This, of course, necessitates great care, rest in bed, stimulants, hypodermic injections of strychnia, and occasionally hot packs. The resolution of a syphilitic neoplasm and infiltrations may be hastened by the application of a solution containing

Iodine.	
Carbolic acid,	āā grs. 120.
Potass. iodid.	grs. 10.
Spt. rect.	ʒ ii.

CASE 3. T. M. C., aged 37, worker in tobacco, came to the hospital October 10, 1894, complaining of difficult nasal respiration and a slight hoarseness and burning sensations in the throat. His father died at the age of 39 from pulmonary tuberculosis; his brother at the age of 30 from tuberculosis of

the throat, lungs, and intestines. The personal history of Mr. C. was excellent. With the exception of an occasional sore throat, he had been perfectly well until May, 1892, when he began to suffer from pain and soreness in the left tonsil accompanied by swelling of the anterior cervical glands. The tonsil increased in size until it became so large that it interfered with his breathing and taking nourishment and had to be removed. Owing to the apparent growth of the tonsil between the operations, it had to be excised three times. After the last operation considerable pain was experienced. A thick, yellow membrane formed on the tonsillar wound and remained two or three weeks; accompanied by high temperature and severe systemic disturbance. About a month after his recovery Mr. C. began to have a dry and burning sensation with some tickling on the left side of his throat near the root of the tongue, especially noticeable during deglutition. These sensations continued with varying intensity from June 9th to the latter part of August, 1894, when a slight hoarseness appeared, and rapidly increased until the tones were of a husky and rasping character. On examination, Mr. C.'s general condition was found to be good. The remaining portion of the left tonsil was hard and surrounded by considerable cicatricial tissue. The right ventricular band was thickened, and both cords were also somewhat red and thickened. The right cord moved freely but the movement of the left was somewhat impaired. The anterior two thirds of the left ventricular band was covered with a pale, yellow nodular mass, as shown in Figure 3. It passed upwards over the posterior surface of the epiglottis and into the left glosso-epiglottic fossa.

The margin of the neoplasm was distinct, and did not apparently infiltrate the surrounding tissues. The papillæ and follicles at the base of the tongue were considerably hypertrophied; otherwise, the upper respiratory tract seemed healthy. Potassium iodide was administered in increasing doses from October 15th to the 26th until five drachms a day were taken without any apparent diminution in the size of the growth. On the 31st of October, the potassium was renewed and continued until November 5th, when the dose of the salt had reached one ounce per day. The neoplasm then began to diminish in size. Complete rest was enjoined and the large dose of potash continued with the addition of ten drops of the tincture of nuxvomica three times a day until the 14th, when the potassium was discontinued. The mass by this time had grown much smaller; the margins were more clearly defined and the pain and burning in the throat greatly lessened. Hydrarg. bichlorid. was then prescribed and continued December 3d, when the

potassium salt was again administered. The last course of potash with several applications of solid nitrate of silver and chromic acid completed the removal of the neoplasm and has left the larynx nearly normal in appearance and the patient is still under observation.

CASE 4. William M., aged 69, presented himself at the hospital on the 15th day of October, 1894, complaining of hoarseness and shortness of breath with difficult respiration and regurgitation of food. Family history negative. He had chewed tobacco for fifty-four years, but had enjoyed perfect health until eight months ago, when his throat began to feel sore, and a spasmodic cough, especially violent at night, soon followed. His physical condition was much impaired, and his loss in weight during the past three months had reached over thirty pounds. He spoke in a hoarse whisper, coughed continuously and expectorated quantities of a glairy, frothy, ill-smelling mucus. When he accidentally swallowed some tobacco juice, it caused severe pain and a paroxysm of coughing and strangulation. For some time past he could take only liquid nourishment, as an effort to take solid food resulted in severe choking, the food lodging near the root of the tongue.

Laryngoscopic examination showed the mucous membrane of the larynx to be very red and covered with mucus; the right cord slightly red and movable; and the left cord perfectly immovable, and owing to its infiltration by the neighboring neoplasm, it could not be distinguished. The left ventricular band was completely covered by a yellow, nodular-looking mass which passed upwards along the laryngeal surface of the epiglottis nearly to its tip, and then into the left glosso-epiglottic fossa. The surrounding tissues were considerably infiltrated, and the anterior cervical glands somewhat enlarged and tender. He complained of pain running up to the left ear and down the anterior portion of the sterno-mastoid muscle.

On his next visit to the hospital, Oct. 21st, Mr. M. reported that his breathing had been much better for the three previous days without any apparent reason. He was admitted to the hospital and given potassium iodide until the 31st, when the daily dose had risen to 5 drachms without any diminution in the size of the growth; on the contrary, it seemed much more irritable, and several alarming suffocative attacks had occurred during the night.

A small piece of the growth was removed for examination, and proved to be an epithelioma. Tracheotomy was decided upon, and a low operation performed with cocaine as an anæsthetic. It proved very satisfactory in relieving the pain and discomfort

of the operation. He rallied well from the operation and experienced considerable relief. Twenty-four hours later the nurse noticed that there was no respiration through the tube, and an examination showed that the surrounding tissues had become so infiltrated from the traumatic inflammation following the operation, that they had gradually lifted the tube out, and in front of the trachea. The tracheal wound was covered with a yellow, organized, fibrinous tissue which infiltrated the surrounding parts for some distance. Considerable difficulty was experienced in finding the original opening in the trachea and in reintroducing the tube. Although a longer tube was substituted, it was found in a few days that it also was being lifted out of the trachea. This early discovery prevented the formation of the fibrinous exudation which had previously taken place, and no difficulty was experienced in finding the tracheal wound the second time. A specially long tube was now made and after its introduction no further trouble was experienced. The cough and all the distressing symptoms were ameliorated and a condition of comparative comfort resulted.

On the 21st of November, considerable pain in the left side of the neck was experienced, especially severe on swallowing. This was found to result from an infiltration and contraction of the anterior belly of the stylo-hyoid muscle. Laryngoscopic examination showed that the surface of the neoplasm was ulcerating near the tip of the epiglottis and that infiltration was spreading laterally, and up the side of the pharynx. Liquid nourishment was taken without much discomfort, and after a time the muscular tenderness abated; and as there was no occasion for a longer stay in the hospital, he was sent home on the 30th of November.

He has been heard from several times during the past month and the reports are of easy respiration and deglutition, with a general condition of comparative comfort.

The next case, represented in Figure 5, has several interesting features. The history, appearance, location, and many of the symptoms of this neoplasm bore a strong resemblance to those of a papilloma of the vocal cords, but on removal the tumor proved to be a hard, fasciculated fibroma. It is difficult to account for the pain experienced by this patient, as it was unusually severe and out of all proportion to the size of the growth.

CASE 5. Lena M., aged 35, came to the hospital Octo-

ber 29th, complaining of severe pain in the left side of her throat, especially when she swallowed. Family history negative. Personal history good until one year ago, when after talking considerably she became hoarse. This condition gradually increased until the present time, when she is able to speak only in a hoarse whisper. Two weeks before her visit to the hospital she began to have pain in the left side of the larynx, which soon became especially severe on swallowing and at night. An itchy, scratchy feeling caused considerable irritation of the throat. A laryngoscopic examination showed the right cord to be normal. On the left cord, at the junction of the anterior and middle third, a small round mass was visible,

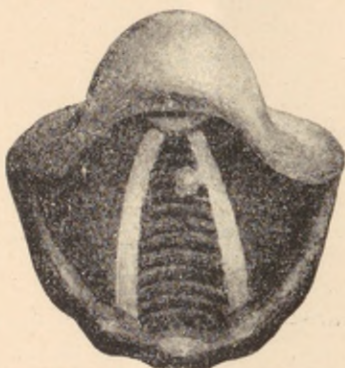


FIG. 5.

Fibroma of the Vocal Cord.

seemingly growing from the free margin of the cord, and during ordinary respiration standing out in the rima glottidis, as shown in Fig. 5. When the cords were approximated, the neoplasm turned upwards on the superior surface of the left cord. Several vascular points were visible over the surface of the growth even after the application of cocaine. The rest of the larynx and upper respiratory tract was normal in appearance. At subsequent visits on October 31st, November 5th and 7th, the patient's chief anxiety was to be relieved of the severe pain which she said was increasing rapidly. A 20% solution of cocaine was applied to the larynx on November 7th, and the growth removed by Mackenzie's antero-posterior laryngeal forceps. There was considerable hemorrhage from the point of the attachment of the growth to the cord, and during the evening following the operation the patient became completely aphonic. The next morning the voice was almost

normal in character and the pains and scratchy sensations in the throat had disappeared. The latter returned after a few days, but were soon stopped by a spray of 20-grain solution of chloride of zinc. When the patient last visited the hospital, November 30th, it was difficult to tell which vocal cord had been the seat of the growth. The vocal sounds were natural, and there were no abnormal sensations in the larynx.

The remarkable tolerance which may be established in the larynx and oro-pharynx when the encroachment is slow and unaccompanied by pain, is well illustrated in a resume of some of these cases. Of course, much depends on the size, shape, and situation of a neoplasm. If the initial development implicates the cords, ventricular bands, or either commissure on a plane with the cords, the voice is at once impaired from their fixation or prevention of coaptation. If the anterior commissure is implicated, the smallest growth may give early evidence of its presence; on the other hand, the upper part of the inter-arytenoid space and the arytenoid cartilages will tolerate neoplasms of considerable size. One of the patients recently at the clinic had several large condylomata in the superior part of the inter-arytenoid space, without producing any change in the vocal sound or respiration; they were discovered during a routine examination, when the patient visited the hospital for some nasal difficulty. Extrinsic parts of the larynx are more tolerant, especially if the growth begins in the upper part of the epiglottis. The tolerance to these large and numerous growths does not make them less dangerous, as an attack of indigestion, cold, fear, excitement, etc., may result in an attack of suffocation which may prove fatal before medical aid can be obtained. The favorable result obtained by the tracheotomy performed in Case 1 was most gratifying, and in cases of congenital papillomata, attacked with membranous or catarrhal laryngitis, this method gives immediate and permanent benefit.

In laryngeal papillomata in children, if the symptoms are not urgent, considerable success may be expected from endolaryngeal treatment. The chief difficulty arises from the violent struggles of the child and the quantity of mucus in the throat. I have adopted a method in three children, aged respectively 2 years, 3 years, and 3½ years, which has enabled

me to remove the papillomatous masses with comparatively little trouble. The day before the operation, belladonna is given in small doses and increased until dilatation of the pupils and dryness of the throat are produced. An hour before the operation some preparation of opium, such as paregoric or Dover's powder, is administered until the patient is well under its influence. The resulting condition is more satisfactory for these operations than ether or chloroform anæsthesia, as complete muscular relaxation is not produced, but just sufficient resistance remains to make it an easy matter to hold the child in the upright position. This is done by one assistant, who places the child in O'Dwyer's position for intubation, and holds out the tongue. A second assistant steadies the head and holds the gag. An application of 2 per cent. solution of cocaine is then made, and the child is ready for the introduction of the laryngeal mirror and forceps. There is little difficulty in obtaining a good view of the larynx, as the child is quite passive, and owing to the dryness produced by the belladonna the view will not be obstructed by mucus. The papillomata may readily be grasped and removed in the usual way. Recurrence of papillomata after treatment by the endolaryngeal method is also frequent, as it is after their treatment by thyrotomy, and occasionally after tracheotomy. If once removed, the papillomata are usually several months in recurring, and the older the child, the easier it is to carry out the endolaryngeal treatment. If tracheotomy is performed, months pass before a favorable termination is reached, and, moreover, it is not always successful. Added to this, there is an element of danger in opening the wind-pipe, and the disfigurement of the neck is also of great moment in some cases. All things considered, it seems that every effort should be made to employ the endolaryngeal method for children; it is safer, the voice is always left in better condition, and it does not disfigure. Tracheotomy may be used to relieve the acute symptoms which occasionally occur in cases of neglected papillomata and in the laryngitis resulting from exanthemata.

It would seem better to defer thyrotomy in these cases until the other methods at our disposal have been tried.

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