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TREATMENT OF MULTIPLE PAPILLOMAS OF THE LARYNX IN CHILDREN.*

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The treatment of multiple papillomas of the larynx in children has always been difficult because of the tendency to recurrence. Many methods have been employed, such as tracheotomy, thyrotomy and cautery, endoscopic operative measures, fulguration, the application of various medicines locally, and X-ray and radium. The lack of uniformity of methods employed in the treatment of this condition emphasizes the fact that results have not always been good. During the last six years I have treated the condition by radium inside

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the larynx and the outside of the neck, and the results have been much more satisfactory than with any previous methods.

In 1901, McKenzie established the fact that in many cases multiple papillomas of the larynx in children disappear of themselves if a tracheotomy is performed; he advocated tracheotomy instead of treating the papillomas. Clark, in 1905, and Smith, in 1914, stated that they believed tracheotomy to be the most efficient method of treating these cases. While the value of tracheotomy is well known, cases are reported in which the patients have worn tubes for years without any improvement of the condition. I examined a woman, aged 22, who had worn a tracheotomy tube since she was two and her larynx was filled with papillomas. Polyak, in 1911, discussed the treatment of three patients by radium, two adults and one child. He believes that radium will take the place of operative measures in these cases. Abbe, in 1898, was the first in this country to treat multiple papillomas of the larynx with radium. The patient was a woman aged 30. In 1912 he treated a girl aged 16 with papillomas of the larynx with complete clearing up of the condition. Harris, in 1913 and 1914, reported thirteen collected cases which included Abbe's, Polyak's, and Freudenthal's cases. Cohen told of a child aged 5, treated by Bernham, in whom the results were exceedingly good. Plum, in 1920, reported sixteen cases of multiple papillomas; four of the patients were treated by radium, two with good results, and one with a fair result. Plum believes that the results are encouraging. Several observers report poor results by the use of radium. Hopkins, in 1914, reported a case in which radium was used, and was followed by adhesions of the anterior three-fourths of the larynx, and brought up the question of whether or not the scarring was due to the radium treatment. Iglauer, in discussing Smith's article, spoke of the scarring in the larynx following the treatment by 50 mm. radium for seven or eight hours. Jones reported a case of multiple papillomas unsuccessfully treated with radium, but the dosage was not given. Duffey, in 1919, reported a case of a child, aged 3, who developed diffuse thyroiditis and died, following the application of radium inside and outside the larynx. Lynch has perfected the suspension apparatus that is now used and which has added a great deal to the efficient

care of these patients. His results in removing the papillomas by operative measures have been superior to any others on record in this country. He, however, now believes that the dissection of multiple papillomas from the larynx is an unsuccessful procedure and that the best method for treating these conditions is by fulguration or by acid nitrate of mercury.

During the years from 1914 to 1920, I have examined at the Mayo Clinic twenty-six children under 12 with multiple papillomas of the larynx. The youngest child was ten months; and the oldest was twelve years. Such patients are usually brought to the Clinic because of hoarseness and shortness of breath, which may have started at the age of two or three months, as a slight wheezing or crowing cough, or the condition may not have been noticed until the child began to talk. Sometimes the first symptoms are not observed until the child is three or four years of age. He may later become unable to speak above a whisper, and may get blue when crying and require emergency tracheotomy. Frequently parents state that the hoarseness came on after whooping-cough, measles, or a cold, which they believe is the cause of the trouble.

Multiple papillomas of the larynx are often diagnosed as laryngismus, stridulus, asthma, and enlarged thymus, but these conditions are readily ruled out by careful history taking. The diagnosis can be made only by laryngoscopic examination, by means of which the typical picture is seen.

Many of the patients in my series had been operated on by endoscopic methods. One patient had had six thyrotomies and cauteries performed by a general surgeon and was wearing a tracheotomy tube. The glottis was so badly scarred that a small probe only could be passed through it. One patient had had six suspensions and the removal of the papillomas, but when he came to the Clinic a large papillomatous mass stood up from the larynx and almost filled the laryngopharynx. The upper margin of the mass was on a level with the tip of the uvula. The conditions of the other patients were not unusual; the larynx was usually filled with a varying amount of papillomatous tissue. Nineteen of the patients had had tracheotomies previously or tracheotomy was performed for marked dyspnea shortly after their arrival. Tracheotomy was not performed unless obstruction made it necessary. One

patient not included in the group of twenty-six died on the train coming to Rochester from laryngeal obstruction (Fig. 1).

TREATMENT.

The treatment in this series of cases was given under ether, by means of a Lynch suspension apparatus. Except in a few of the early cases no attempt was made to remove the papillomas. A small tube, containing the emanations or the radium salt, was inserted into the glottis and held there by means of forceps. The tube was kept moving under direct observation so that no particular area was overtreated and so that the part needing treatment received it (Fig. 2). The patient was kept asleep during the entire treatment, and from 75 mg. to 150 mg., or millicuries, of radium were used for from twenty minutes to thirty-five minutes, and occasionally longer if indicated by the particular condition. No screening was used except the silver tube which contained the salt, or the emanation, and is less than 1 mm. thick. Patients were treated, as a rule, about once in six weeks or two months. If recurrence was noted, further treatment was given before the recurrence became marked. Parents are always told that unless the child can be brought back at definite intervals it is of little use to begin treatment. The most suspensions given in one case were six, and the least one. Besides these suspension treatments, radium was applied outside the larynx; as a rule about 3,000 mg. hours were given, using 2.5 cm. of wood and 2 mm. of lead screening. These external applications were frequently given between the suspension treatments.

RESULTS.

Of the twenty-six cases, nine cannot be considered in the results. One patient died about twelve hours after an emergency tracheotomy. One patient died at home between treatments for the want of a tracheotomy, after having had dyspnea for a week. Four patients did not remain for treatment since they could not return at definite intervals. Two patients received one or two treatments and were unable to return. One patient could not be traced, but at the last examination was remarkably improved.

Of the seventeen patients of whom definite information was obtained, eleven are entirely free from papillomas; nine of these had had tracheotomies and the tracheotomy tube had been removed. The tube is always left in place at least six months after the larynx is free from papillomas. One child, on whom a tracheotomy was performed at the age of two and one-half years, had worn the tube for one year and seven months and it could not be removed after the larynx was entirely free from papillomas because of the apparent collapse of the trachea above the tracheotomy opening. A two-way tube was inserted in place of the old tube, and later this was removed, and the tracheal opening closed. This was the only instance in which any difficulty occurred in removing the tracheotomy tube. Two of the eleven patients did not have tracheotomies and were not suspended; they received treatment entirely outside the larynx because they had colds at the time of their examination and it was thought inadvisable to give ether. Six of the seventeen patients are still under treatment, but five during the last year only. The larynx of four of the six patients is almost entirely cleared up; possibly there may be an occasional papilloma, but the voice is fairly good. Three of these four had tracheotomies and they can cork their tracheotomy tube. One of the six is much improved but papillomas are present and the voice is hoarse. This patient is wearing a tracheotomy tube and can cork it. One of the six patients, the one referred to as having had so much operative work before coming to the Clinic, is so remarkably improved that the papillomatous mass is now intralaryngeal. In the entire group I have not seen any bad results follow the use of radium, but I believe that this is undoubtedly owing to the fact the radium was under direct observation and was kept moving while in the glottis (Fig. 3).

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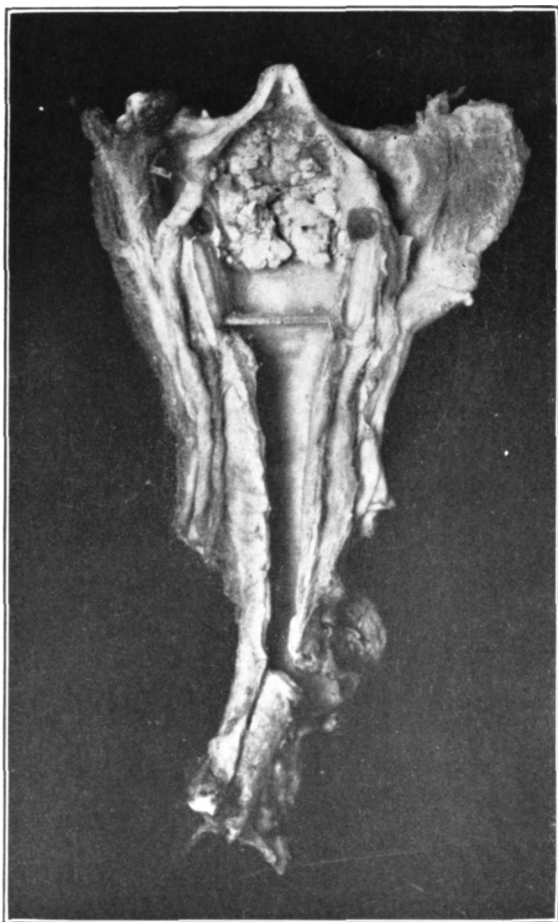


Fig. 1. Specimen taken at necropsy of a multiple papilloma of the larynx in a child who died on the train on the way to Rochester for an examination.

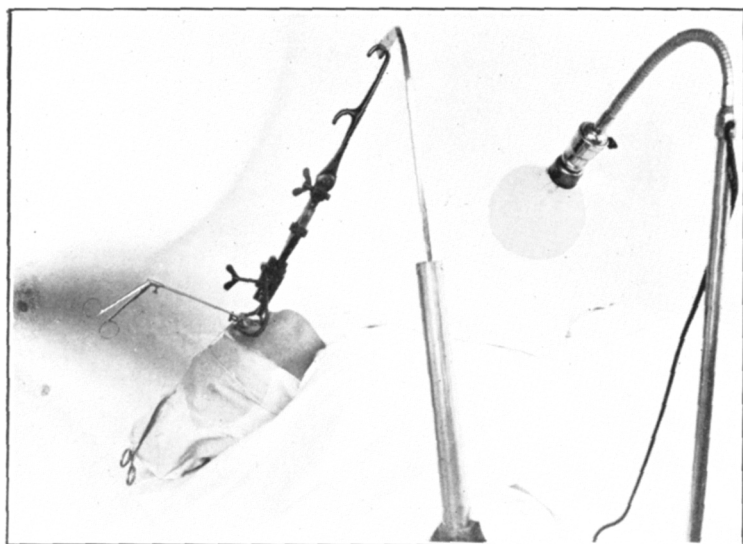


Fig. 2. A child under suspension. The forceps in the mouth holds a tube of radium directly in the glottis. The radium tube is kept moving during the application.

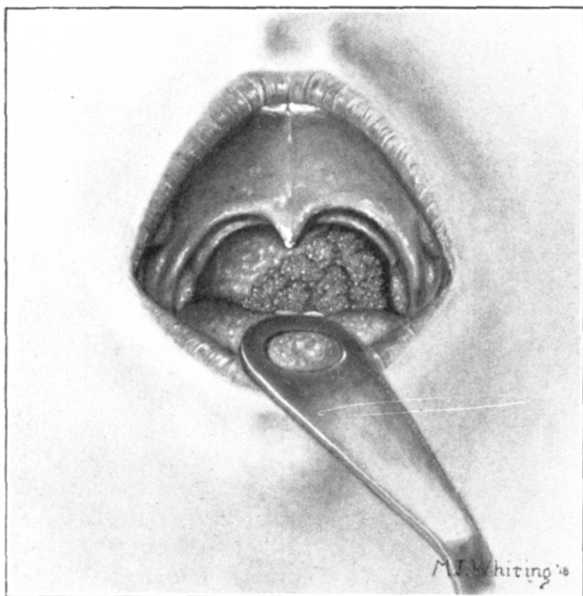


Fig. 3. An extensive papilloma of the larynx which has extended up into the pharynx from the glottis, the result of repeated operative treatment. The condition has now almost entirely disappeared under radium treatment.