XII.

THE YANKAUER OPERATION IN THE TREATMENT OF CHRONIC MIDDLE EAR SUPPURATIONS.*

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At the May, 1910, meeting of the otological section, Dr. Sidney Yankauer presented a series of cases illustrating the effect of the closure of the Eustachian tube at the isthmus, where suppuration had existed for a considerable length of time. In presenting the histories of these cases, Dr. Yankauer informed us that these suppurations had been due to a variety of causes, such as granulations, polypi, bone necrosis and cholesteatomatous degeneration. In other words, these patients belonged to that class where treatment had been of no avail over a period of months or years and where, as a last resort, the radical mastoid operation is proposed. In those cases shown, I am sure we all are agreed, the results were remarkable. The ears showed little of the drum membrane, the cavities were dry, the mucosa presenting a glazed appearance. There was absolutely no sign of suppuration.

At the time of the demonstration and subsequently in a most masterly paper appearing in the July *Laryngoscope*, Dr. Yankauer described the original instruments used for closing the tube. The paper described twenty-one cases in detail, of which thirteen were absolutely cured and eight partially cured; in other words, these eight cases were considerably improved and possibly in time would be cured absolutely. Parenthetically, I might mention that Dr. Yankauer's paper opens up an entirely new field in otologic work and is a masterpiece of logical thought.

I immediately became interested in Dr. Yankauer's work and learned from him personally how to do the operation,

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and during the past few months I have operated upon five cases in whom an ear discharge had lasted over a considerable number of years. All available dispensary treatment had been given these patients, with no improvement. Although the discharge has not ceased entirely in any of these cases, yet the improvement is so remarkable that there is little room for doubt that the closure of the Eustachian tube at the isthmus was largely responsible for any change to the better.

I shall take a moment of your time to describe Dr. Yankauer's instruments and procedure.

The instruments which are used for the closure of the Eustachian tube at the isthmus are the salpingeal curettes. The curettes have a hemispherical head with the flat side toward the shank. The cutting edge is circular, having a sixty-

FIGURE 1.

FIGURE 2.

FIGURE 3.

degree cutting angle (Fig. 1). The projection of the cutting edge has been adjusted to correspond to the thickness of the mucous membrane. There are three different sizes—the smallest, with a projection of a quarter of a millimeter; the largest, a half millimeter. Each cutting edge has been mounted on a shank which is shaped to correspond to a curve made by the external and middle ear and Eustachian tube. A probe (Fig. 2) accompanies the curettes for purposes of exploration before cutting.

The technic of the operation is as follows: The Eustachian tube is first anesthetized from its pharyngeal end by means of applications saturated with strong cocain and adrenalin. Dr. Yankauer's applicators (Fig. 3) are ideal for this purpose. They fit into a metal tube on which are markings to indicate how far one is in the tube. Other applications of cocain

are made to the tube via the middle ear and then the tube and ear are thoroughly cleansed by irrigating with boric acid. This is best done by syringing through the Eustachian catheter. The parts having become insensitive, the tube is explored down to the isthmus with the salpingeal probe and, the caliber of the tube having been approximately ascertained, the proper sized curette is selected. The cutting of the mucosa must be done entirely by the sense of touch. The cutting edge is rotated to and fro until one feels that he is down to bone. The mucosa on the superior wall is the most difficult to cut. At the same time the cutting edge is scraped backward and forward until one has denuded a sufficiently wide area. Dr. Yankauer personally suggested to me that more extensive curetting should be done at the anteroinferior angle than anywhere else, in fact almost as far as the middle ear. As the curette is withdrawn, some strands of mucosa may be seen extending into the middle ear; after the operation is completed, the ear is dusted with iodoform powder. An inflammatory reaction takes place in the tube and middle ear, which subsides in the course of a few days. As a rule the patients are told to take the same care of their ears after as before the operation. No untoward results have yet been observed. The objection that one might readily curette into the internal carotid artery through a dehiscence in the bone is easily overruled; for if one has the least sense of touch and does this operation delicately (as it should be done), he always knows by the feel of the curette whether he is down on bone or not.

I shall summarize four of these cases:

CASE I.—A young woman of 25 years had had a profuse discharge from the left ear since childhood, which had resisted all treatment. Examination of the ear revealed the presence of foul-smelling pus, a small amount of granulation tissue over the short process of the malleus, and necrosis of this bone. The granulations and malleus were removed and a week later the Eustachian tube was closed. For a few days there was a discharge of a thin mucoid material which ceased at the end of two weeks, the ear subsequently remaining dry for two months.

CASE II.—A young woman of 22 years had had a profuse foul-smelling discharge since childhood. Treatment of no avail. The tube was very large. After curetting the isth-

mus, a pinkish swelling of the internal wall of the middle ear took place, with a discharge of a thin watery secretion, which cleared up—the ear remaining dry for about six months.

CASE III.—A young boy, 14 years of age, came to the New York Eye and Ear Infirmary complaining of continuous suppuration from the ear since childhood. Examination showed numerous aural polypi, with a profuse discharge of foul-smelling pus. The polypi were first removed with the aural snare and Hartman forceps and the bases cauterized with the silver stick. Suppuration still continuing, the Eustachian tube was curetted. For a few weeks the discharge was still profuse, but of a more mucoid appearance, and since that time it has become less and less until it has almost entirely ceased.

I was so much pleased with the results in the first three cases that I intended to present them to you at the December meeting. Much to my dismay, with the onset of the cold weather, all four cases began to suppurate again, the discharge not being so great as before the operation, but still bad enough to preclude any conclusion from being reached.

In justice to Dr. Yankauer, and in order to have us all form an unbiased opinion, I determined that it was best to let him see the cases personally and suggest some fault in my technic. So the first Sunday in December I sent the cases to his office, where we went over them thoroughly. Much to my surprise, the Eustachian tubes were closed absolutely in three of the cases (1, 3 and 4), and in the fourth bubbles of air could be forced through water in the canal, but no probe or applicator could be forced through the tube. In case I. an adhesion was found near the oval window which, on being cut through, improved the patient's hearing immediately, and the discharge is much less since that time. In case II. a number of fistulous tracts were found, behind which pockets of pus had formed, keeping up the discharge. These were opened and the tubes again curetted, since which time the discharge is very slight. In this case Dr. Yankauer found a dry hard drum membrane flat up against the inner tympanic wall, which he partially incised. Case III., the boy with the polypi, was doing so well that we decided to let him alone and watch him carefully. Although the tube seemed to be closed in case IV., it was decided to curette it again,

as nothing could be found in the middle ear to account for the discharge. Since that time the ear condition is considerably better.

After this seance, I came to the conclusion that closure of the Eustachian tube at the isthmus, in itself, was not sufficient to cause a cessation of a chronic discharge in many cases; moreover, that it is absolutely necessary in a great many cases to perform some intratympanic surgery or treatment which might materially lessen the discharge or cause it to cease entirely. Polyps must be removed, sequestra must come away, fistulous tracts and pockets must be opened, adhesions broken down. If after such surgery is performed the discharge still continues, particularly if it be of a mucoid appearance, the tube should be closed. In such cases a good result should be expected.

In Dr. Yankauer's presentation, I was led to the conclusion that, given a case of chronic middle ear suppuration, all that was necessary was to close off the tube at the isthmus. This opinion was corroborated by the statement in his paper that "most of the patients had some favorite method of treating their ears * * * and they were allowed to continue the same form of treatment, more as a placebo than for any other reason. We may therefore state with logical accuracy that the results obtained were directly caused by closing the tube at the isthmus and by this alone." However, a close perusal of the description of his cases leads me to other conclusions, for it will be seen that in every case save those where nothing of pathologic significance was found in the tympanic cavity, some intratympanic manipulation was necessary. For example, he says in case II.: "Examination showed the presence of a large aural polypus filling the entire canal and obstructing the view of the middle ear. After shrinking the polyp with cocain and adrenalin, part of it was removed, sufficient to give access to the tubal region. The tube was then curetted. After the operation the discharge became mucopurulent, but was so abundant that another portion of the polyp had to be removed to obtain drainage. The patient was using instillations of alcohol which had previously been prescribed for him, and he was allowed to continue them, but applications of nitrate of silver were made to the polyp twice a week. The discharge from the ear became very slight and

the polyp became gradually smaller. * * * Four months after closing the tube, examination showed that the ear had become quite dry and clean, the polyp having entirely disappeared." In another case the polyp was removed with the ossicles and the inner attic wall.

The questions which present themselves most manifestly to all of us are these:

1. Has the Yankauer operation any value if done with no other intratympanic manipulation?

2. In what class of cases is it distinctly of value?

3. Would a certain number of chronic suppurating ears cease discharging if properly taken care of medically and surgically, without submitting the patient to a closure of the tube.

4. Will the Yankauer operation, together with other intratympanic procedures, supersede the severe radical mastoid operation in many cases?

1. I think that certain cases which Dr. Yankauer has shown, and others operated upon by other men, will lead us to definitely state that this operation *per se* will clear up a great many cases which have persistently suppurated for years. Dr. Yankauer claims that there are certain cases which constantly become reinfected through the Eustachian tube. We are literally blowing our noses through our ears whenever a perforation in the drum is present. "The mere presence of a perforation greatly facilitates the communication between the middle ear and the nasopharynx, and all the changing bacterial flora of this infected region are constantly being added to the already existing sepsis in the drum cavity." In such cases, closure of the tube at the isthmus should bring about an absolute cessation of discharge. In other words, in that class of cases where the discharge is more mucoid than purulent, where no lesions can be found in the middle ear than granulation tissue caused by the discharge, we should expect a complete cure by the Yankauer operation.

2. In what class of cases is the operation of distinct value? Beside the class enumerated above, there are certain cases in which all polypi, dead bone, etc., have been removed and yet the discharge has persisted. To this class belong most of the cases cited by Dr. Yankauer. It has become an axiom of surgical practice that, given a pathologic perversion of tis-

sue, no cure may be expected without the removal of this tissue. I do not think it would have been possible for Dr. Yankauer, or any one else, to have effected a cure in any of the cases he mentions by merely closing off the tube and nothing more. Although a great deal of the ear trouble may have been caused by the constant reinfection from the nasopharynx, once the pathologic condition is present, nothing but eradication of the diseased parts will help to effect a cure. However, we have had the experience of not being able to stop an aural discharge entirely, even by the most painstaking care, and it is under such circumstances that the Yankauer operation fills a long-felt want.

3. Would a certain number of chronic suppurating ears cease discharging if properly treated medically and surgically, without submitting the patient to a closure of the tube? I believe this a mooted question. A great many of the men to whom I have spoken on the subject have claimed that they could cure 80 per cent of these cases by simple means—such as removal of dead products and cleanliness. Granted that they have the ability to do so, what shall be done with the other 20 per cent, which they cannot cure, except possibly by a radical operation? I am inclined to the belief that 40 of the 80 per cent could not, or would not submit to treatment extending over months at a time. Patients who come to the clinic certainly would not benefit by such a delay. Economically, it is of a great deal of importance for such patients to get well as quickly as possible, and if the Yankauer operation will help them to get well in weeks instead of months, it is certainly a valuable procedure. Again, this other 20 per cent have no alternative but to submit to the radical operation.

4. Will the Yankauer operation, with other intratympanic procedures, take the place of the severe radical mastoid operation in certain cases? It is in this class of cases, I believe, that the chief value of the operation lies. There are any number of radical operations in which no necrosis is found in the mastoid cavity, in which the pathologic processes are distinctly confined to the middle ear cavity and attic. It is rational to suppose that cleaning the ear of all diseased bone, granulations, etc., by itself would effect a cure. But it has been within the experience of us all that such is not the case.

Moreover, the fact is so well recognized that the Eustachian tube plays an important part in these cases that a radical operation is not considered complete unless the Eustachian tube is curetted and closed off. In such cases, as Dr. Yankauer so aptly says, we should place the horse before the cart. One should clean out the middle ear cavity as well as possible, and also close off the Eustachian tube. If the discharge does not cease, see what has been overlooked, and if the tube is not closed, operate again. If after a reasonable length of time suppuration continues, it is still time to do a radical operation. Moreover, there are some few patients with suppurating ears who object to the radical operation. These patients are surely deserving of some attention, and, up to the present time, the operation proposed by Dr. Yankauer, taken in conjunction with other remedial measures, offers the best hope of relief.

I have offered these few facts in the form of an argumentative essay, in order to provoke a free discussion of the subject. None of us is in a position at present, considering the newness of the subject, to condemn the operation. It should receive the fair trial it justly deserves, and I believe that in time it will become one of our most important surgical procedures. I believe that every one of my cases has been improved by the operation, and that in the course of the next few months they will cease suppurating entirely. The only other alternative I could offer these patients would be a radical operation, and I could not be sure that the final results would not be as bad, or worse, than the disease itself.

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