THE SUCCESSFUL TREATMENT OF CATARRHAL DEAFNESS.

WITH ESPECIAL REFERENCE TO CONDITIONS IN THE FOSSÆ OF ROSENMÜLLER.*

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It might reasonably be supposed that since Manuel Garcia invented the laryngoscopic mirror, more than half a century ago, nothing of importance could remain to be learned of the commoner pathologic phenomena occurring in the larynx and nasopharynx. A little more than two years ago, in glancing over a report of a discussion on some nasopharyngeal subject, my attention was arrested by a line or two casually mentioning the occasional pathologic existence of adhesive bands across the fossæ of Rosenmüller, from the cartilaginous ring of the Eustachian orifice to the nasopharyngeal walls. These formations had often been observed by me, but I had failed to grasp their significance. I consulted many text-books, but no reference was made to these bands. In April, 1906, I reported¹ six cases of this condition, with astonishingly gratifying results following treatment. Since that time I have operated on about 100 cases. On the whole, the results have been remarkable.

PATHOLOGY.

These formations in the fossæ of Rosenmüller consist apparently (1) of mucofibrous bands, or webs (like the web of a duck's foot), generally in a perpendicular plane to the long axis of the fossa, and (2) of masses of what seem to be granulation tissue or hypertrophied glandular (lymphoid) tissue, similar to the familiar soft adenoid, lying above, between and below these bands, sometimes quite filling the fossa. Their etiology is, perhaps, uncertain, but as they are found almost invariably in persons who have passed the period of adolescence, and in whom a lymphatic tendency has existed, it is not unreasonable to consider them as being, to some extent, the residua of an old adenoid, which may or may not have been operated on. Any catarrhal inflammation, attended by swelling of the membranes, might create a starting point for the formation of the adhesions.

It is well to remember, too, that the Eustachian orifice is moved physiologically, and that the tube is opened for middle-ear aeration by the act of swallowing. Any acute or chronic swelling, causing postnasal obstruction and mouth-breathing would necessarily favor the formation of adhesions, because the very act of mouth-breathing, by rapid evaporation of saliva, makes the act of deglutition much more infrequent, thus leaving the swollen adjacent structures in the nasopharynx in more undisturbed contact. The normal movement of the Eustachian orifice is inward, upward and backward, and this is accomplished chiefly by the levator and tensor palati muscles during the act of swallowing, and in phonation of some of the consonant sounds, and also by the act of yawning. The natural object of this movement is to open the tube for the access of air into the middle ear. In this movement, the tubal orifice is opened in irregular triangular fashion, and the tube is stretched longitudinally, thus opening the lumen, which lies, while at rest, in a collapsed position. The normal excursion of the tubal end is astonishing to one who will observe it, as can often be easily done, through a

widely patulous nostril. It is from one-quarter to three-eighths or even one-half of an inch, the two orifices sometimes almost meeting in the middle of the nasopharyngeal space.

It is very clear that these adhesions and granulations in the fossæ exercise a marked inhibitive influence on the range of the tubal excursion. Hence, in these cases there is an incomplete, or perhaps total absence of opening of the tube at the intervals necessary for middle-ear aeration, and there is provided a good and sufficient cause for the appearance of catarrhal deafness.

DIAGNOSIS.

The diagnosis of the condition is easy by means of the rhinoscopic mirror. Occasionally, when the fossæ are almost or quite filled with formations which happen to present a more or less smooth surface, the appearance will be that of very shallow or absent fossæ. A mistake should not be made. The fossa is never absent and never very shallow in the adult. At least three-eighths of an inch of natural depth is always present, and sometimes considerably more.

The granulations or glandular hypertrophies sometimes extend down below the end of the fossa, and appear, on oral examination, as reddish elevations or thickenings just behind the posterior faucial pillar. This appearance is often given the name of lateral pharyngitis, and its treatment by the ordinary routine has heretofore been rather unsatisfactory.

If the patient has a wide open nostril all the way through, anterior rhinoscopy will show a limited excursion of the tubal orifice during the act of swallowing. Inspection of the tympanic membranes will show a lessened or absent light reflex, a ground-glass, lusterless appearance, with more or less depression. The hearing will usually be perceptibly dulled, and if the condition is of long standing it may be almost lost. Bone conduction of sounds will be good, while air conduction is seriously impaired, showing that the disorder is of the passages and not of the perceptive apparatus.

SYMPTOMS.

The subjective symptoms are numerous and sometimes very distressing, and one or another of them may completely overshadow, in the indications for its suppression, the deafness which may or may not be very slight. Prominent among these is tinnitus aurium, which is often entirely relieved by appropriate attention to these formations.

It seems probable that the lesions in the fossæ offer a considerable reflex symptomatology, and that they cause direct symptoms in neighboring structures by pressure on the muscles, the stylo-pharyngeus, the palatopharyngeus, and the constrictors of the pharynx. Thus, as a result of this irritation, there is sometimes present a periodic or occasional laryngeal irritability and congestion, with hoarseness or an irritating cough, for which no cause can otherwise be assigned. I have seen one case where this symptom persisted and progressed for several years. The cough was severe and distressing, and the voice raucous. A diagnosis of chronic bronchitis had been made, and, finally, tuberculosis was suspected. The whole gamut of therapeutics was run. Recovery occurred after the removal of the adhesions in Rosenmüller's fossæ.

A bronchial inflammation may be set up by the constant cough, as probably occurred in this case. A feeling of stuffiness and fullness in the ears is often com-

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plained of, often with a tense, drawn, uneasy feeling extending from the ears down the throat and neck, behind the angles of the jaws. There may be a deep dull pain around and through the ears, perhaps radiating toward one or more adjacent parts. Sometimes the patient will be quite unable to locate the discomfort with precision, though more than once I have heard a patient exclaim as the adhesions were broken up: "Ah, Doctor, you got right to the spot! I have frequently had an insane desire to run my own fingers up behind there and tear something loose," or words to that effect.

There is always present in some degree a form of postnasal catarrh. Even if the catarrh existed prior to the lesions, which is likely, the latter would increase the catarrhal tendency, for the bands across the fossæ form little pockets which are ideal lodging places for mucus and dust and infection of any sort that may be inspired by the patient. There is frequently a sensation of popping or cracking in the ears while swallowing, or yawning, or moving the jaws. There may be a persistent and irresistible desire for frequent yawning. I have seen one case where frequent, long continued and distressing attacks of sneezing could be controlled only after clearing out the fossæ. A subjective sense of a lump or ob-

ger tip is placed over the top of the cartilaginous ring of the tubal orifice into the upper end of the crescentic fossa. Pressing the finger firmly and deeply into the fossa, it is swept backward and downward throughout the fossa's length, breaking down all resisting tissues, repeating the movement if necessary, and not failing to break up the mass of granulations which frequently occupies the extreme lower end of the fossa behind the posterior faucial pillar. By inclining the finger to the opposite side it can then be treated in the same fashion, thus attending to both sides without withdrawing the finger. After the bleeding, which is usually slight, has ceased a cotton-tipped, curved, postnasal probe, dipped in a 5 to 10 per cent. silver nitrate solution or a 30 per cent. argyrol solution, is firmly swept through the fossæ. This application should be repeated every forty-eight hours for ten days or two weeks.

RESULTS.²

Results are excellent, sometimes brilliant, even apparently miraculous, and often immediate. I have several times seen the hearing of a patient improve from

Fig. 1.—Sagittal section of nasopharynx (enlarged), showing left side (author's illustration). 1. Nasopharyngeal vault, rudimentary adenoid. 2. Fibromucous bands of inflammatory origin, attached anteriorly to the posterior lip of Eustachian ring, and posteriorly to the latero-posterior wall of the nasopharynx. 3. Masses of granulation or lymphoid tissue in the fossa. 4. The fossa of Rosenmüller. 5. Lateral pharyngeal wall. 6. Posterior end of left inferior turbinate. 7. Eustachian orifice. 8. Cartilaginous Eustachian ring. 9. Uvula. 10. Left anterior faucial pillar. 11. Faucial tonsil. 12. Posterior faucial pillar.

struction in the throat, that can not be swallowed, may be noted. Itching in the external auditory meatus is not unusual.

Symptoms of vertigo may be present. Distinct mental depression and the phenomena of nervous derangement may result from the constantly recurring attention of the patient to the unlocated and therefore unrelieved uneasiness and annoyance.

TREATMENT.

The treatment of the condition is simple and painless. After thorough cocaineization the operator, facing the patient and slightly to his right, passes the right index finger (palm of the hand up) through the mouth, behind the soft palate and into the postnasal space (Fig. 2). After locating the landmarks of the space, the fin-

Fig. 2.—Correct position for operation.

200 to 300 per cent. within a half-hour of the operation. The improvement is a permanent one, which usually improves still further under persistent catheterization and routine applications. The latter should always be carried out faithfully in these cases. It should be stated, however, that there seems to be a relatively constant point in the loss of hearing, which, if exceeded, must provoke a prognosis of arrest of the progress of the dis-

2. Since taking up this subject, I have found in the current medical literature of the past few years the following articles bearing on these conditions in the fossæ of Rosenmüller. It is striking to note that all the writers reported brilliant results following proper attention to these conditions.

Phillips, W. C.: *Manhattan Eye and Ear Hospital Reports*, N. Y., 1894, i, 98.

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Politzer, A.: *Diseases of the Ear*, 1902.

Royet: *Rev. hebdomadaire de laryngol.*, etc., Par., July 7, 1906.

Brunk, T. L.: *Laryngoscope*, August, 1906.

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Pynchon, E.: *Laryngoscope*, March, 1907.

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case rather than of an increasing hearing power. According to my experience, it can be stated in a general way that if the hearing has become dulled to a point where the ordinary watch can be heard ticking only on contact with the auricle, little is to be expected in the way of increasing hearing. But the progress of the disease is checked, and when we consider the usual distressing course of this condition that is a good deal to accomplish. The most favorable and remarkable results are obtained in those cases where the watch can still be heard four to five inches or more away from the auricle. Of course, the more recent the impairment of the hearing has been in these cases the brighter is the outlook.

Just as gratifying, and often equally as brilliant, are the results of this treatment when the other common symptoms mentioned above are dependent on these lesions. Of course, if a long-standing symptom, such as chronic irritative cough, has produced organic changes elsewhere we can not expect immediate disappearance of the trouble, but the removal of the cause will surely pave the way for the cure.

Fig. 1.—Bodkin points of forceps blades at beginning of insertion. The back half of the enclosing suture inserted.

Fig. 2.—Completion of suture circuit. Last stitch loosely drawn around blades. Insertion of enterotome.

Fig. 3.—Cautery blade to follow cutting blade, being heated in alcohol flame preparatory to use.

RAPID AND ASEPTIC ANASTOMOSIS OF THE HOLLOW VISCERA BY A NEW METHOD.

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To be able to unite two hollow viscera rapidly without exposing the lumen of either is an ideal technic which many have believed unattainable. Asepsis, speed and simplicity of operating are attained by the McGraw ligature, but not a rapid anastomosis. The fact that the opening is not produced until the elastic ligature can cut through prohibits its use in purely intestinal work or where obstruction must be relieved promptly.

The first device to overcome this objection was the method of Dr. Werelius of Chicago who used a silk cord in place of the rubber of McGraw. The ends of this cord were allowed to hang out between two stitches and at the last moment were drawn back and forth with

a sawing motion until the included walls were cut through. As this cutting took place in tissue surrounded by an encircling suture no leakage was possible.

If we analyze the results obtained by the McGraw ligature we find that in spite of certain great drawbacks they involve new and important principles never obtained before in abdominal surgery. These are:

1. Exclusion of mucosa: No hole but the needle puncture is made in the viscus, hence no clamps are needed and no leakage can occur.

2. Anemia of the tissue divided. No bleeding can occur because of the pressure and because no cutting is done.

3. Saving of time: In my clinic the time of the visceral part of the work ranged from four and one-half to eight and one-half minutes.

To offset these advantages several serious drawbacks are met:

1. It does not create at once an opening. This limits its use practically to stomach work.

2. It crumples and puckers the bowel and stomach wall so that the surrounding Lembert stitch becomes irregular and may narrow the opening. By care we can avoid this, but it is a drawback. Any new method yielding the large immediate opening of the Kocher or the Moynihan gastro-enterostomy and having the safety and celerity

of the McGraw ligature would be a step in advance; even if it gave only the half-sized opening of the channel in the Murphy button it would do as well. The method and new appliances about to be described seem to me to accomplish all these aims.

The device consists essentially of forceps having blades equal to the length of the openings desired in the viscera, these blades being bodkin pointed, like the McGraw needle, and rather slender.

They are thrust into the two opposing organs after the preliminary suture exactly as the McGraw needle is used. When the handles are closed, as in Figure 1, they act as clamps holding the parts in a straight line instead of crumpled up and shortened as the rubber ligature holds them. This makes an excellent splint and guide for placing the anterior part of the suture. The latter is now continued until it meets the starting point, when one loop of the last stitch is made to surround blades near their point of insertion (Fig. 2).