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ORIGINAL ARTICLES.

OTO-MASSAGE IN SUPPURATION OF THE EAR; ITS VALUE FOR THE RELIEF OF DEAFNESS AND IN THE TREAT- MENT OF THE SUPPURATION.

Read by title in the Section on Laryngology and Otology, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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Upon several occasions I have presented various aspects of oto-massage, but, beyond having noted in one of my papers that I considered the deafness occasioned by suppurative disease of the middle ear peculiarly favorable in its reaction to massage, I have not publicly considered suppurative disease in connection with the subject. I have often been asked the value of the method in the deafness and tinnitus, the results of suppurative disease. On expressing my opinion that it was of especial value in both conditions, I have naturally been led to explain why this was the case.

In considering the value of massage in the treatment of cases of suppurative disease or of the defects from suppurative disease, the subject naturally divides itself into two parts: 1, the consideration of its application and value in cases undergoing suppuration; 2, its importance in those in which the suppuration has ceased, deafness being present with or without tinnitus.

Eliminating for the present all the acute suppurative cases, those attended with extreme pain and swelling of the parts, we will study a typical case of chronic suppurative disease. It will present, in addition to the discharges, which may be meagre or profuse, watery or ropy, colorless, pustular or bloody, a greater or less degree of deafness with or without tinnitus, accompanied usually by a full or swollen feeling within the ear, with perhaps a little tenderness and with occasional attacks of pain.

The usual treatment for such cases has been careful cleansing of the meatus and middle ear, usually by syringing with warm or medicated water, followed occasionally by cleansing with peroxid of hydrogen solution, and then after thoroughly drying the ear with cotton and perhaps using the Politzer bag or the Siegle speculum, or both, the insufflation of some drying or absorbent powder, such as aristol, iodoform or boracic acid. The ordinary mild cases are apt to do fairly well under such routine treatment, especially if it be persisted in, and they often develop a decided improvement in hearing, as well as a marked diminution and, frequently, an entire cessation of the ear discharges.

In contradistinction to this the dry method is used by many. The meatus is carefully wiped out with

cotton, after which, if a probe can be passed through the perforation, the middle ear is cleansed as thoroughly as possible. Then by means of the Politzer air bag and Siegle speculum, the discharges lying low down in the ear are forced toward and through the perforation in the membrane and the middle ear and meatus are again cleansed with dry cotton, after which drying powders are used.

An objection to be urged against the first method above outlined is the syringing of the ear. In my opinion this, in many cases, prevents the cessation of the discharge; the water or medicated liquid finds its way into the deeper parts of the ear and not being removed, lies there and acting as a foreign substance, excites irritation and inflammation in the surrounding tissues and thus increases the amount of the discharge. Of late, the dry method has come more and more into vogue. It has the advantage of removing foreign matters from the ear cavity without subjecting the ear to the possible disadvantages of having the pus replaced by other foreign particles. But both methods fail in entirely removing the exudated materials from the middle ear cavity—the former method washing out much of the discharge and diluting the rest—the latter removing considerable but allowing some of the discharge to lie on the floor of the tympanum, as well as leaving a layer of the discharge adherent to all the surfaces and an especially large amount to remain in the attic and on the ossicular structures. In these cases to remove the discharges which otherwise are irremovable I employ massage instruments, using them as cleansers and dryers of the middle ear cavity. To illustrate this method of using massage I will briefly outline the treatment of an average case of middle ear disease with suppuration. Finding that I am dealing with a case of suppuration of the chronic type, I dry out the meatus with a cotton-covered probe and if the perforation in the drumhead be sufficiently large to allow of it, I by the same means cleanse the middle ear as much as I am able, then by the Siegle speculum I suck out as much of the pus as possible and dry the meatus once more, then I inflate with the Politzer bag and force out a little more discharge, which I remove with the dry cotton. I then apply to the patient a pneumo-massage apparatus of medium strength and gradually increase the suction. I succeed in drawing into the meatus and about the perforation of nearly, if not, all of the discharge which may have adhered to the crypts and along the walls of the middle ear. After drying with cotton, I once more use the pneumo-masseur and again dry, after which I use the drying powders or astringent antiseptics, if any of these be necessary. If the ear discharge be too thick or too firm for removal in this manner I then soften the discharge by the use of 3 per cent. solution peroxid of hydrogen, after which I proceed as above outlined.

In using the pneumo-masseur for the purpose of

removing the adherent discharges from the middle ear cavity, I try to use it as forcibly as necessary without in any way imperiling the integrity of the structures, especially avoiding the production of any hemorrhage. I have found by experience that I can usually commence with an exhaust pressure of two ounces to the square inch, and gradually increase it to about half a pound to the square inch, often as much as a pound, and rarely up to two pounds to the inch. With an exhaust from half a pound to a pound, the discharges are usually quickly removed, in from three to ten minutes, 300 or less strokes per minute usually sufficing.

Previous to my using the metronomic masseurs, I endeavored to accomplish this same effective cleansing by the use of the Siegle speculum but, necessarily, the results were indifferent. Since I have used the pneumo-masseur in the manner described I find that I can stop the suppuration more quickly than formerly, and often accomplish this result without any therapeutics to the ear whatever. This, however, is not usually the case, and to a considerable extent I rely upon stimulating and drying powders in connection with thorough cleansing and drying.

In acute cases I apply the suction massage just as soon as is possible, believing that adhesions, ulcerations and destruction of the tissues result often from the pressure of the discharge, from its direct corrosive effect and its fermentative results as well as from the progress of the inflammatory affection.

As soon as the pain is sufficiently allayed so that the treatment is bearable, I apply to the ear either the metronomic ear masseur or a little electric suction pump and clear the middle ear of all its discharges and accumulations. By securing a clean surface early in the course of the disease I hasten reparative action and avoid the oftentimes destructive effects of the decomposition of unhealthy pus.

These ear discharges lying in the middle ear, envelop the ossicles, fill up the space between the promontory and the membrane, and generally occupy all possible spaces, gluing all together. As a result of this we have occasioned abnormal adhesions between the ossicles and between the ossicles and the surrounding walls, as well as occasionally ligamentous bands between the membrane and surrounding structures; again, in other cases, the disease results not in a tying together of the various parts, but a rending asunder of normal structures, in ulcerations, necroses and sloughings.

In the one case we have ankyloses, adhesions, abnormal growths and thickenings followed often by sclerotic changes, in the other we have necrotic changes with often loss of one or more of the ossicles or greater destruction of the tympanic membrane or ulceration of the mucous lining of the middle ear with inflammation extending, perhaps, into the mastoid or involving the internal ear. It is on account of these often serious results that there is an urgent necessity for prompt action, with the idea of restoring the parts as soon as possible to as nearly a normal condition as can be attained. It is therefore necessary if anything can be gained by pneumo-massage, to apply it as early as is admissible.

In some cases I have used the masseur during the acute stage of the attack with marked benefit, allaying the pain and for the time being increasing the amount of suppuration and apparently shortening the attack. I presume the reason for this is that

much of the pain in these cases is occasioned by the retention of the discharges, the tissues being filled with discharges which, finding no outlet, have commenced to burrow more and more deeply, the infiltration ever extending, and when the pressure from the central inflammatory area is released by means of the exhaust apparatus, the tissues adjoining empty themselves of their contained discharges, thus relieving much of the abnormal tension of the surrounding infiltrated zone, the lessening of the pressure relieving the pain, and the frequent application of the method tending to prevent extension of the inflammation.

From my experience with this method of cleansing the ear, I am convinced that there would be fewer cases of secondary involvement of the internal ear if the practice above outlined was more generally followed. When we consider that the cases of internal ear disease are the most difficult and unsatisfactory with which the ear surgeon has to deal, the necessity of their avoidance is evident. I know of no other measure of relief which exercises such a powerful influence in the avoidance of this complication.

I very much desire to go more deeply into the subject and illustrate it by cases, but I find this to be impossible as I wish to refer to another aspect of the matter, the improvement in hearing brought about by oto-massage in suppurative cases as well as in cases of deafness occasioned by suppurative disease.

Strange as it may seem, I have found in no class of my chronic ear cases such marked improvement of impaired hearing as in those in which the defect was caused by suppuration. Sclerotic changes are rare in these cases until long after the subsidence of the suppurative disease. I will refer to two such cases of deafness, the result of suppurative disease. Two years ago I reported the case of a woman 38 years old who had scarlet fever in her first year. When I saw her the ears were discharging and there was very poor hearing power. After she had been using the massage treatment for some months, not only did the discharge stop, but the hearing improved so much that she had no conscious difficulty in hearing conversation; the watch being heard twenty inches ($\frac{20}{32}$) from the ear. The progress of this case was a steady gain in hearing power from the commencement. From the time of my report to the present there has been no diminution in hearing power.

I will briefly note another case. Miss C. M., 15 years old came to me Dec. 1, 1894, for chronic suppurative disease of the left ear. There was a large perforation and a fair amount of whitish discharge, not very gluey. There was no watch hearing on contact. I treated her ear without massage and succeeded in about four months in stopping the suppuration, but the perforation did not heal. I endeavored during another two months to heal the perforation, without success. The hearing distance had improved at this time to hard contact hearing for the watch. I then endeavored to restore the hearing by means of massage, using the pneumo-masseur, but especially the phono-masseur, neglecting the perforation, hoping it would heal spontaneously. Now, after ten months of such treatment (one visit per week), she hears the watch at ten inches, the perforation remaining unhealed.

In these cases the two kinds of massage are valuable—the phono to stimulate the nerve, which is more easily accomplished in such cases by reason of the

perforation allowing the sound to be carried more directly to the internal ear—the pneumo-masseur being used to break down adhesions and restore abnormal or diseased parts to more healthy action by reason of the stimulation thus produced.

To indicate the value of phono-massage, the following experiment will serve. April 26, 1896, I tested the hearing of the right ear of Mr. C. M., aged 28, and found it to be for the watch one-quarter inch. His is a case of old suppuration with bone involvement—one which has gone on for twelve or fifteen years and which he thought was incurable. The strong phono-masseur was used on his ear for forty minutes with the result that the hearing for the watch was increased to one and one-quarter inches. This increased hearing usually gradually disappears unless the treatment is regularly applied. If this be done it usually increases, the amount depending on the nature of the case. This immediate increase in hearing is a very frequent experience in my work, and one which I usually secure except where there has been most extensive destruction of the middle or internal ear structures. In dry suppurative cases where I do not succeed in producing an almost immediate temporary increase in hearing distance, my conclusion is that permanent results are very difficult to attain.

In conclusion the facts may be summed up as follows: In acute suppurative conditions, pneumo-massage should be tried and if the application be not too painful it will relieve the swelling and the severity of the inflammatory pain and shorten the attack; the purpose of this suction massage being to remove from the ear all possible suppuration and thus, by relieving the tension, lessening the frequency of ulcerations and necrotic processes and preventing adhesions and deep infiltrations of the surrounding tissues.

In cases of suppuration that have passed the acute stage the pneumo-masseur is to be used for the purpose of relieving the ear of its discharges and for the relief of extreme tension, preventing ulcerations and necroses, as well as to overcome the formation of adhesions and for the stretching, absorption and destruction of these adhesions when formed, and to stimulate the drumhead and its connecting structures to normal, functional action. The phono-masseur is to be used in these cases for the purpose of restoring to the ear nerve and its terminals the normal tone and overcoming the sluggishness to response engendered by inaction and disease.

In cases of deafness following upon suppurative disease the pneumo-massage is useful for limbering up the diseased and stiffened tissues, to restore their normal action and tone, and to break or stretch abnormal adhesions, to overcome ankylosed joints and give to the ossicles their normal motion, while at the same time improving the circulation of all the middle ear structures—the phono-massage being again used for its effect upon a sluggish, diseased and non-responsive nerve ending.

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Intravenous Injections of Sublimate in Ocular Affections.—Angelucci has found rapid and thorough recovery follow the use of intravenous injections of 20 centigrams of sublimate and 60 centigrams of chlorid of sodium, in 100 grams of distilled water. The dose increasing from 2 to 16 milligrams. The cases favorably affected were all of syphilitic origin: Iritis, irido-choroiditis, papillo-retinitis, etc., but the results were negative in all non-syphilitic troubles.—*Revue Gen. d'Ophth.*, August 31, from *Arch. di Ottalm.*, No. 3.

STRICTURE OF THE UPPER PORTION OF THE TRACHEA SUCCESSFULLY TREATED BY DIVULSION THROUGH THE LARYNX.

Read in the Section on Laryngology and Otology, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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The following case of stricture of the upper part of the trachea, due to organic contraction, can not, on account of its rarity, fail to be of interest.

On November 23, 1895, Miss D., aged 27 years, was referred to me on account of frequent and urgent attacks of dyspnea, which had for a considerable time been exceedingly distressing to her. She gave the following history: In March, 1888, she had a severe attack of diphtheria, from which it was thought at the time she had fully recovered. During the following year, however, it was noticed that she had edema of the feet. The edema was found to be associated with albuminuria and was ascribed to that cause. Notwithstanding this she enjoyed a fair degree of health.

In October, 1890, she became hoarse nearly every day as evening came on. This hoarseness continued until December, when she began to have considerable difficulty in breathing. The family physician found a swollen condition of the larynx, which he regarded as a consequence of the albuminuria. He treated her with steam inhalations, compelling her to remain in bed for about three months continuously with the object of maintaining a uniform temperature and preventing her from contracting cold. During this time her health was very good and she gained ten or twelve pounds in weight; although she had one or two severe attacks of dyspnea, lasting three or four days at a time. These were attributed entirely to the renal disturbance, since albumin and casts were found in the urine.

After a time the dyspnea subsided and in April, 1891, she began to go out. Shortly after, however, she took cold, and had another severe attack of dyspnea, lasting several days. As warm weather came on her dyspnea disappeared. Her voice during the period, since her first attack of hoarseness, had remained quite clear.

In August, 1891, she went to Canada and remained there until fall, feeling quite well. She continued to feel quite well during the fall, but during the winter she had frequent attacks of dyspnea, very similar to those of previous winters. During the following summer she had no special difficulty in breathing, although during July, August and September she was aphonic.

During the fall of 1892, she had at times much difficulty in breathing, and that winter she spent in Southern Pines, South Carolina, where she gained much in general health. Her breathing, however, was not materially improved, although the atmosphere there was remarkably dry. She came home May 1, 1893, and during the following summer was quite well, having little or no difficulty in breathing.

During August the cartilaginous portion of her nose began to diminish in size and for about a year afterward there was a gradual settling of this portion of the nose. During November, 1894, she had inflammation of the right lung, which nearly proved fatal and very much increased her difficulty in breathing.