THE TREATMENT OF DEAFNESS

PAUL M. MOORE, M.D.

The treatment of the deaf patient has for its objective, first, the improvement of hearing, second, the prevention of further hearing loss, and third, the development of the patient's morale. All three are important but the third is forgotten all too frequently when the first two have failed. When these first two objectives cannot be attained and the unfortunate patient is doomed to a world of ever-increasing silence, he needs the help of his physician more than ever.

The first objective, the improvement of hearing, is perhaps the most difficult to attain. It is of the utmost importance that the patient be seen as early as possible after the onset of deafness. If the case is one of nerve deafness or otosclerosis, even this is of no avail. If the hearing tests do give the classic findings of a nerve deafness, a positive Rinne test associated with loss of the high tones and retention of the low tones, the patient should receive a few inflations of the eustachian tube. It has been found that, following treatment, a certain percentage of these patients will regain a large part of the hearing lost. It is not known just what the condition under these circumstances is but it must mean that there is no real involvement of the organ of Corti or of the nerve, but rather a disturbance of the delicate balance of the mechanism of hearing due to improper ventilation through the eustachian tube.

If the findings are those of a conductive deafness, a *negative* Rinne test associated with loss of the low tones, and if there is some obstruction in the eustachian tube, there is an excellent possibility that the hearing may be improved. On the other hand, if the eustachian tube shows no obstruction, treatment will probably be of no value.

No examination of the ear is complete without a careful study of the eustachian tubes. The openings in the nasopharynx must be carefully studied with the postnasal mirror and the nasopharyngoscope. There may be adhesions in the nasopharynx or a mass of adenoid tissue encroaching on the opening. An early malignancy or a benign growth may be present. The lips of the tube may be inflamed and swollen because of a chronic infection in the nasopharynx or because of a purulent drainage from an infected sinus. The eustachian tube should be inflated to determine whether it is obstructed.

Nor should examination of the nose and throat be neglected. A suppurative sinusitis may be responsible for the condition in the ear. A deviated septum may so interfere with the normal ventilation of the nose and ear that the eustachian tube becomes the seat of a pathological process. Infected tonsils may also tend to produce and maintain an inflammatory process in the surrounding tissues and so con-

tribute to the deafness. Nasal allergy is a definite factor in some cases and, when present, should be treated because it may definitely interfere with proper ventilation or tend to prolong an infection in the sinus.

One should carefully evaluate the findings and eliminate those structural defects and infectious processes which seem to have a direct bearing on the case. If active infection is present, this should receive the first attention. The infected sinuses should be irrigated and cleared up. The infection in the nasopharynx should be treated by direct application of a 20 per cent solution of argyrol or Massier's solution. The direct application of a solution of 3 per cent ephedrine or 20 per cent argyrol to the eustachian opening is often of great benefit. Nasal sprays or drops should be prescribed for the patient's use at home.

The eustachian tubes should never be inflated in the presence of an active infection because such a procedure is likely to blow infected material into the middle ear and set up a suppurative otitis media. After the active infection has subsided, the tubes should be inflated at regular intervals of four days to a week until the maximum improvement has been attained or hope of improvement has been abandoned. If there is no improvement after five or six treatments, further inflations are useless.

The inflation should be made by the eustachian catheter. All manipulations must be very gentle for, if there is any trauma, further edema and closure of the tube will ensue. An anesthetic spray with a solution of 2 per cent cocaine or ½ per cent pantocain should precede the manipulations.

I am convinced that a great many cases of advanced conductive deafness in later life are due to neglected episodes in childhood and early maturity. Repeated colds accompanied by a slight otalgia and deafness occur. These individual episodes are so slight that they are neglected and so the individual goes on, each insult leaving its mark on the mechanism of the ear. Inflations are out of the question during the acute attack, but the nose and nasopharynx should be treated. If even slight deafness or stuffiness persists after subsidence of the active infection, the ear should be inflated. The most important development in recent years is the periodic testing of the hearing of school children. This is now done in most of the larger centers and many of the smaller communities. It should be extended until every school child can be tested and watched. In many communities where this procedure has been instituted, some degree of deafness has been found in about 13 per cent of the children tested. In most instances, the child had been thought to be normal before the test. These children would have been neglected and would, in all probability, have had gradually increasing deafness as they grew older. This is the only way that the incipient

early loss of hearing can be detected in the majority of children. When it has been found, the child should be carefully examined and treatment instituted for the correction of the defect and prevention of further loss of hearing. It is to be hoped that this procedure will become universal and that, by careful special examinations and treatment, we may be able to materially reduce the number of individuals who are hopelessly deaf.

We must strive for the second objective, the prevention of further hearing loss, in that group of patients in whom the damage already done is such that improvement cannot be obtained.

In patients with early nerve deafness, all foci of infection should be removed. A careful survey should be made to detect any habits or medications that might have a toxic effect on the acoustic nerve. The Wassermann reaction of the blood should always be determined and, if lues is found, it should receive adequate treatment. Over-indulgence in tobacco or alcohol should be controlled. The use of quinine is another factor which should be checked.

The cases of subacute and chronic otorrhea also fall in this group. The longer the otorrhea is allowed to exist, the greater the loss of hearing will become. In the acute stages, it is better to do a myringotomy very early rather than to allow a spontaneous rupture to occur. The clean surgical wound will leave much less scar than the irregular necrotic hole of the rupture. Therefore, it is less likely to produce hearing loss later. The otorrhea should not be allowed to continue indefinitely. If conservative measures fail to clear it up in a few months, the mastoid should be operated upon. A chronic suppurative otitis media and mastoiditis invariably destroy hearing.

Unfortunately, we are still unable to improve the hearing in the majority of the patients who come to us. The loss of hearing is usually too far advanced and the pathology too well established. These patients should be told frankly that there is no known form of treatment which will improve their hearing, but one should not stop there. It is not enough to render a diagnosis and say there is no treatment. The deaf person almost invariably has an attitude of defeatism and he is greatly in need of psychological guidance. He feels that he is a burden to his friends and that he appears stupid to strangers. He tends to remain aloof from human contacts and becomes more and more introspective. He is sadly in need of help. A great deal of urging and skillful guidance are necessary if he is to overcome his handicap. If he can be persuaded to take up lip reading and if he becomes proficient at it, there will be the greatest change in his outlook on life. He again becomes self-reliant and meets life and people.

The hearing device is not yet accepted as we accept glasses. The

patient who wears one still feels that he is a marked man. The mechanical devices are of value to the patient who has a great loss of hearing unless the deafness is of the nerve type. If the hearing loss is only moderate, the individual is annoyed by the static and other extraneous noises that still exist in the machines. If he will not or cannot take up lip reading and if his deafness is of the right type and of sufficient intensity, he should be urged to acquire one of the better makes of electrical hearing devices.

Many are the forms of treatment advocated in the past which have proved disappointing. The electrophonoide of the Continent and its American equivalent have each been heralded by some as being of great benefit to all types of deafness. The majority of physicians who have used them have found them to be of little or no value. Massage of the drum by the use of alternating negative and positive pressure and treatment by infra-red and roentgen rays have failed to give results of any magnitude. The use of the eustachian bougie is losing favor. There is a definite feeling in a great many quarters that it traumatizes the tube and so results in more adhesions and greater obstruction. One of our leading otologists recently attacked even the inflation of the eustachian tube. He feels that this tends to blow particles of mucus into the middle ear and that these act as irritants to further increase the pathological process. I agree with him to the extent that such inflations should not be continued if no improvement in hearing can be shown, but I have seen too many patients definitely improved by this form of treatment to be willing to abandon it. I do feel that the blowing of medicated liquids into the ear may be harmful.

It is to be hoped that some of the more recent lines of investigation may give us a better understanding of the problem of deafness. The studies of the reaction current thrown off by the cochlea during stimulation by sound or the meticulous microscopic investigation of serial sections of the cochlea of patients who have had definitely recorded hearing loss may lead to some measure of solution. In the meantime, we must proceed clinically along the old established lines. The percentage of good results can be increased only if the patients come for treatment early.