SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

TREATMENT OF OTITIS MEDIA

BY

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Chronic Catarrhal Otitis Media

This is an insidious sclerosis of the middle ear, often referred to as dry catarrh, causing deafness of varying degree which is almost always progressive. Frequently the ear condition is associated with definite pathological changes in the upper respiratory passages, but in some instances no such changes can be discovered. In other

sinuses, teeth, tonsils, and adenoids should be eradicated, and deformities of the nose interfering with the normal airway corrected. While gross abnormalities requiring surgical intervention will often be present, many cases will be met with in which no abnormality is evident. In these the prognosis is bad, but the patient's general health should be maintained at the highest possible level and every effort be made to safeguard him against catarrhal infections of the nose and throat. The patency of the Eustachian tubes is of the utmost importance, and obstruction of them leads to a rapid loss of hearing and to changes in the middle ear which soon become permanent. The condition of the Eustachian tubes is ascertained by

FIG. 1.—Eustachian catheter.

cases the ear affection occurs some months or years after an acute otitis media.

Starting at any age, there is a history of increasing deafness in one or both ears, usually tinnitus, and frequently a "blocked feeling" in the affected ear. The variations from the normal seen on inspection of the drums over a series of cases are numerous, but in any one patient little alteration may be visible. Unfortunately the condition of the membrana tympani has no direct relation to the degree of deafness. The most constant alteration in the drum-head is an increase of its normal concavity, usually called retraction. The cone of light is distorted, the long process of the malleus is drawn upwards and backwards, and the

inflation with a catheter or by Valsalva's method. The latter is a simple procedure, and should be tried first. Viewing the drumhead through a Siegle's speculum, instruct the patient to close the anterior nares by pinching

FIG. 2.—Auscultation tube.

short process projects conspicuously into the meatus. The outer surface of the drum is dull instead of shiny, whiter in colour, and irregular in texture. In some cases this latter change is due to patchy thickening of the tissues of the drum, and in others there are areas of atrophy. Viewed with a Siegle's speculum these irregularities are more evident, and it will be found that the mobility of the drum is altered as a whole and often is not uniform over its extent. General retraction produces a lax and very mobile drum; atrophic areas move freely while the remainder is stationary. Not infrequently adhesions form between the drum and the inner tympanic wall, and in these cases portions of the membrane are fixed and slight variations of air pressure produce no movement.

PREVENTIVE MEASURES

Every case of chronic catarrhal otitis media must be thoroughly investigated with a view to determining the aetiology and giving treatment likely to prevent rapid increase of the deafness. Infection of the nasal accessory

FIG. 3.—Poltizer bag.

the nose between the thumb and first finger, and then to swallow. In the absence of Eustachian obstruction the drum will be seen to move. The patient is usually conscious of a "click" in the ear when there is free movement of the tympanic membrane.

EUSTACHIAN CATHETERIZATION

This is a means of determining the degree of freedom with which air can enter the middle ear via the Eustachian tube in cases where Valsalva's test is negative or doubtful and as a method of treatment for Eustachian obstruction. The requirements are a local anaesthetic (a solution containing 5 per cent. cocaine hydrochloride and 1 per cent. ephedrine), a nasal atomizer, a malleable cotton-wool applicator, cotton-wool, a Eustachian catheter, a Politzer bag, and an auscultation tube.

First spray the nose with some of the local anaesthetic mixture in the atomizer. This makes the subsequent manipulations less painful, and facilitates the passage of the catheter by shrinking the nasal mucosa. After four

or five minutes paint the orifice of the Eustachian tube and adjacent area of the lateral wall of the nasopharynx with more of the local anaesthetic. A brush is made for this purpose by twisting a small piece of cotton-wool firmly on one end of the applicator and bending the latter into a shape resembling a Eustachian catheter. A six-inch length of thin copper wire flattened at one end to hold the wool makes an excellent applicator. Applied in this manner the anaesthetic diminishes sensibility of the nose and nasopharynx still more, and at the same time, by its local vasoconstrictor effect, tends to open the orifice of the Eustachian tube.

Choose a catheter of suitable size—Nos. 2 and 3 are the most serviceable; make certain that its lumen is clear, by a preliminary blowing through with the Politzer bag, and that the attachment on the latter fits the catheter easily and securely; sterilize, and introduce. The introduction is made by gently pushing the catheter along the inferior meatus of the nose, the distal end being in contact with the floor until it glides over the upper surface of the soft palate and the convexity of the curve touches the posterior wall of the nasopharynx. The point is then rotated outwards into a horizontal position, where it meets the lateral wall immediately posterior to the Eustachian cushion. Keeping the proximal part of the catheter on the floor of the nose, withdraw it slowly, and the point will be felt to pass over the Eustachian cushion. In this position rotate the point of the catheter upwards and outwards, and it will come in contact with the orifice of the tube. The amount of curve on the catheter has to be adjusted to the width of the nasopharynx. If, after touching the posterior wall of the nasopharynx, the catheter cannot be rotated into a horizontal position, the curve is too large and must be lessened. If, on the other hand, the lateral wall cannot be felt, the curve is too short. Having placed the catheter in position—a manipulation that must be performed with the utmost gentleness—steady it with the thumb and index finger of the left hand, resting the remaining fingers on the patient's nose. One end of the auscultation tube is placed in the operator's ear, and the other the patient holds firmly in his ear on the side being inflated. Instruct the patient to breathe quietly through the mouth, attach the Politzer bag to the catheter, and gently blow. If the Eustachian tube is patent air will be heard to enter the tube with each inflation, and the loudness and pitch will vary with the diameter of the tube and the force with which the air is blown in. When obstruction is complete no air entry is audible, and a blockage removed by inflation is heard as a sudden "pop," which usually causes the patient to jump. In most cases in which the lumen of the tube is unobstructed the patient is conscious of the pressure of air on the inner surface of the drum. Complete obstruction, unrelieved by inflation, is treated by the passage of bougies.

The above method of politzerization should be employed to relieve Eustachian obstruction that persists after an acute coryza, and in the treatment of those cases of chronic catarrhal otitis media in which the lumen of the tube is unduly narrow and is occluded from time to time. The frequency with which the process has to be repeated depends upon the response. This is estimated from the state of the hearing and the readiness with which an obstructed tube can be relieved after the lapse of one or more weeks. Between treatments many cases derive much benefit from an inhalation of menthol each night.

In spite of every attention there is often a steady increase in deafness to a degree that necessitates the employment of a suitable aid to hearing or instruction in lip-reading.

Chronic Suppurative Otitis Media

In this condition, for weeks, months, or years there is a continuous or intermittent discharge of pus from the middle ear unassociated with pain or pyrexia, with a perforation of the tympanic membrane and some degree of deafness. The initial infection is a specific acute suppurative otitis media which for some reason has not resolved. A consideration of the factors likely to lead to chronicity is the first step towards determining the correct line of treatment. These factors may be classified under three main headings:

1. *Mastoiditis*.—Inadequate drainage in acute suppurative otitis media leads to adhesions in the middle ear, persistence of infection, and not infrequently its spread to the mastoid antrum and cells. The so-called chronic suppurative otitis media is then associated with a chronic mastoiditis, and must be treated as such. Mastoid infection is to be suspected as the cause of the chronic otorrhoea in cases where the perforation is in the attic region, where polypi persistently re-form in spite of cholesteatoma removal and cleansing, and when flakes of cholesteatoma are present in the discharge. An acute suppurative otitis media continuing to discharge for more than four to six weeks in the absence of an obvious cause should be drained by mastoidectomy.

2. *Poor Hygiene*.—This leads to chronic suppuration through mixed infection and as a result of a lack of resistance on the part of the patient. Proper cleansing, good food, and improved environment will terminate the condition in many suppurating ears that are apparently becoming chronic.

3. *Infection via the Eustachian Tube*.—This is the pathway by which the acute infection reaches the middle ear, and not infrequently it is the path by which the suppurative process is kept alight from a focus of infection adjacent to the nasopharynx. Strictly speaking, no case of otorrhoea should be labelled chronic suppurative otitis media while gross infection is present in the teeth, tonsils, adenoids, or nasal accessory sinuses. The middle ear is reinfected in a manner comparable to that occurring in mastoiditis, and it is the source of the infection that must first be treated.

Having excluded cases that can be classified under the above three headings, there remain those in which suppuration appears to be limited to the middle-ear cleft, and these may be designated uncomplicated chronic suppurative otitis media. No one method of treatment is satisfactory for every case: the most suitable therapeutic measure is indicated by certain individual characteristics.

Large Perforations

Where the whole or a large portion of the tympanic membrane has been destroyed, the mucous membrane, normally moist, which lines the middle ear is exposed, and is readily irritated by foreign particles gaining access via the external meatus. The natural response is an excess of mucus, which is discharged into the outer ear. If the Eustachian tube is patent an acute coryza will similarly produce a profuse discharge. The correct treatment for such an ear is to provide adequate protection, and a convenient method is to keep the external auditory meatus well greased with a mild antiseptic ointment—for example, ung. hydrarg. oxid. flav. 1 per cent. The patient must be warned against allowing water to enter the outer ear, and should be persuaded to co-operate in constantly affording the necessary protection. The hearing in these cases is

often quite good, and measures employed to "dry up" the middle ear destroy the mucous membrane and greatly increase the deafness.

Small Perforations

A tiny hole in the drum hinders drainage and prevents any treatment being applied directly to the middle ear. In dealing with the condition, therefore, first enlarge the perforation with a myringotome: this can be done under local anaesthesia. Six to eight drops of Bonnain's fluid (equal parts of phenol, menthol, and cocaine hydrochloride) introduced into the meatus after it has been thoroughly cleansed will produce complete anaesthesia in from ten to fifteen minutes. Subsequent treatment consists in daily cleansing with peroxide drops, followed by syringing with boric lotion and the application of spirit drops. If simple cleansing fails to terminate the suppurative condition zinc ionization will probably do so.

Otitis Externa

This has been dealt with in a separate article. (See April 30, p. 958.)

Granulations and Polypi

When present these must be removed. Small collections of granulation tissue are best destroyed by touching the surface with solid silver nitrate, having first anaesthetized the area by applying 10 per cent. cocaine hydrochloride for ten minutes. A convenient way of applying the silver nitrate is by fusing a small bead on to one end of a copper wire probe. Larger collections should be removed with a small scoop or aural curette after anaesthetizing with Bonnain's fluid. Apply a few drops of adrenaline, 1 in 1,000, to stop the bleeding, then cauterize the area with silver nitrate.

Polypi

The main mass is removed with an aural snare. If the meatus is not obstructed to a degree that prevents the introduction of a local anaesthetic Bonnain's fluid will suffice, but many cases will require a general anaesthetic. The snare is introduced over the polypus and slid down to its base, which is then cut through. On no account must a polypus be dragged away from its attachment, which may be to the inner tympanic wall. Bleeding is controlled by adrenaline and packing. Any pieces of the polypus remaining after the use of the snare are removed with a curette and by cauterization. After-treatment entails regular cleansing and frequent inspection, so that any recurrence can be immediately dealt with by the further application of caustic.

Marginal Perforations

These and the presence of polypi and granulations usually indicate infection of bone. The carious area is frequently quite small, and can often be eradicated through the meatus. As mentioned above, the base of a polypus should be scraped with a curette or be cauterized. Marginal perforations often continue to discharge because of the existence of caries in the tympanic ring, where it forms one edge of the perforation. Removal of the diseased area with a small sharp scoop, and subsequent cleansing, will usually terminate the otorrhoea.

On the occasion of the appearance of the hundredth volume of the *Klinische Monatsblätter für Augenheilkunde* the publisher, Ferdinand Enke of Stuttgart, has founded a Theodor Axenfeld Prize for the best paper published in that journal during the past two years.

INTERFERENCE WITH WIRELESS RECEPTION BY ELECTRO-MEDICAL APPARATUS

At the suggestion of the Postmaster-General the Minister of Health has issued a circular letter to local authorities (No. 1695), enclosing a memorandum on the prevention of interference with radio reception from certain types of electro-medical apparatus. A leading article on this subject appeared in the *British Medical Journal* of April 9, 1938, p. 786. The memorandum was prepared by the Radio Branch of the General Post Office, and its purport has already been brought to the notice of the principal voluntary hospitals in this country, through the British Hospitals Association, in the issue of *The Hospital* for September, 1937. The memorandum is primarily concerned with certain types of diathermy installations working on medium waves, short waves, and ultra-short waves.

Electrical Screening of Rooms

Radio receivers situated at up to one mile or more from the electro-medical apparatus may be affected, so that a single apparatus may affect a very large number of receivers. The radio services which may be affected are not only the B.B.C. broadcast and television transmissions on long, medium, or ultra-short waves, but also Government services, Air Force, civil aircraft, police, shipping, and other commercial services, in some of which the safety of life on land, at sea, and in the air may be involved.

The interference may reach a radio receiver by two means—either by conduction from the source along the electric supply mains, from which it is eventually radiated to the aerial, or by radiation from the source directly to the radio receiving aerial. The former method of propagation is known as "mains-borne," the latter as "direct radiation." Mains-borne interference can be suppressed by connecting in the mains supply to the diathermy apparatus a suitable filter consisting of condensers and/or radio frequency inductors ("chokes"). Directly radiated interference can only be suppressed by enclosing in an electrical screen or Faraday cage not only the apparatus but also the patient and the operator. This is not practicable in the case of the mobile ward unit, but may be applied to the considerably more common case in which the bulk of the treatment is given in one room set apart for the purpose. This latter case is the one which in practice gives rise to the large majority of complaints of interference with radio reception.

It is obviously undesirable to enclose the apparatus, patient, and operator in a closely fitting screen, and the methods of screening which have been developed by the G.P.O. Radio Branch rely on fitting the screening material to the surfaces which enclose the room in which treatment is given. Two methods in particular have been developed, one primarily for dealing with an existing room, the other for application to a building which is in course of erection. In the former case metallized paper is applied to the walls, doors, and ceiling of the room above the plaster, the floor being covered with either heavy-gauge metallized paper or else with quarter-inch wire netting. The floor screening material is covered by linoleum or other floor covering. The recommended type of metallized paper consists of aluminium foil (not sprayed aluminium or aluminium paint) supported on a paper backing. The windows are covered with wire netting.

It is desirable that provision should be made, in any new hospitals or extensions to existing hospital buildings in which apparatus of this kind is likely to be used, for the inclusion of screened rooms of the type outlined in the memorandum. The Radio Branch of the General Post Office is prepared to advise on any problems arising in the provision of screened rooms for future installations, as well as on the prevention of interference which may be found to be caused by existing plant.

Pending further consideration of the important question discussed in our leading article regarding the suitability of certain wave-bands which might be reserved for the users of electro-medical apparatus, the Secretary of the British Medical Association would like to have as much information as possible from members possessing expert knowledge.