

David Kyle: Minor Surgery

Chapter 4: Ear, Nose and Throat

The Ear

Trauma

Wounds of the Pinna

Wounds of the ear, varying from a small nick to almost complete avulsion, occur as a result of road accidents, usually in conjunction with other head or facial injuries. After routine cleansing, débridement is kept to the minimum compatible with viability and every effort is made to restore the normal anatomy of the part. There are enough landmarks on the ear to make accurate apposition of the cut edges fairly easy, and after suture of one or two such key points some semblance of order begins to emerge. Small defects can be corrected with Steri-strips or with narrow strips of adhesive plaster, which on the whole are kinder to the wound than sutures and less likely to result in a collection of exudate and the infection which mostly follows it. The blood supply is good, and healing is usually satisfactory as long as there is not any undue tension on the edges of the wound. Antibiotic treatment is a help, but must not be expected to compensate for poor surgical technique.

Haematoma Auris

Boxers and Rugby footballers are particularly liable to this injury. The haematoma forms between the skin and the cartilage, lifting the skin off the cartilage. The fluid can be aspirated, and a small quantity of Hyalase - about 0.5 mL or less, depending on the size of the haematoma - is injected to encourage absorption of the fluid. Alternatively, it can be drained through a small incision. Whichever course is taken, the effusion usually recurs, because it is almost impossible to maintain sufficient pressure on the ear to prevent the fluid reforming. A second aspiration is done or a second incision made, and the treatment is repeated until the condition finally clears. Systemic therapy with Chymoral tablets appears to help, but a degree of thickening and crumpling of the ear is usually left. Repeated attacks may occur, each adding its quota of permanent damage, and the ultimate result is the 'cauliflower ear'.

Foreign Bodies in the Ear

These are commonly found in children, who deliberately push small stones, beads, broken matchsticks, rolled-up paper and similar objects into their ears. In adults the foreign body is most often a piece of cotton wool which has been accidentally left in, or the end of a matchstick which has been broken off while attempting to remove wax, or occasionally a moth or fly or wasp which has somehow found its way inside.

The first line of treatment, if the object is visible and not too deeply placed, is to grasp it very gently in a pair of angled forceps and carefully extract it. If this is not practicable, syringing with warm water is often successful, provided that the foreign body has not become swollen or the meatus inflamed and oedematous, causing the object to become impacted. As long as the water can pass beyond it, the body will usually be expelled with the return stream.

If the foreign body is irregular in shape, like a piece of grit or gravel, it may become wedged in the meatus. For its removal, general anaesthesia is advised both for adults and for children. Careful examination with an auriscope will as a rule show a gap somewhere between the meatus and the object. Through this gap a small hook is insinuated and the foreign body is gently eased out.

By one of these methods, or by a combination of them, success will in most cases be attained. Rough or hurried movements must be avoided, and everything must be done under clear vision; otherwise the object will be jammed in so firmly as to be inextricable, except by detaching the auricle as in the early stages of a mastoid operation. This must be left to the consultant.

Occasionally a hair, piece of straw or similar object may become wedged with one end on the drum and the other against the wall of the meatus. This may cause severe vertigo and vomiting, which will be relieved when the object is removed by syringing.

Rupture of the Drum

The drum may be torn by direct injury while attempting to remove wax with a matchstick or other long thin object. It may also be damaged by accident. The tear can be seen through the auriscope, and there is usually some bleeding from the edges. The blood is gently wiped away, and if there is no infection the rent will heal quickly without any disability. A course of an antibiotic is given as a precautionary measure.

Rupture may be caused indirectly by the reverberation of an explosion - for example, a gunshot very near at hand - or by the pressure of a column of air generated by a vigorous slap across the ear. In this type of injury, infection is not likely.

Finally, a ruptured drum may be associated with a fracture of the middle fossa of the skull, and here the bleeding may be more profuse. This is a serious condition and outside the scope of this work.

Infections

Boils

These occur in the skin of the ear as they do in the skin elsewhere. Boils of the external auditory meatus constitute a special case because the skin in this position is very closely adherent to the cartilage, and the inflammatory oedema gives rise to great tension and consequently to great pain. The swelling may block the lumen of the meatus completely, or so distort it that the drum cannot be seen.

If the meatus is patent, hearing is normal. If it is blocked, hearing is impaired or even absent, but will be restored if a speculum can be introduced. The pre-auricular or post-auricular gland may be enlarged, depending on the position of the boil.

It may sometimes be difficult to differentiate between a boil of the meatus and an acute mastoiditis. In the case of a boil, pulling on the ear is painful, and so are the movements of eating. With a mastoid this is not so: instead there is tenderness over the mastoid process, usually with a history of previous otitis media, and the constitutional effects are more marked. The boil is not dangerous to life, but a neglected or unrecognized mastoid infection may lead to meningitis or cerebral abscess, and if any doubt is felt as to the diagnosis a second opinion must be sought.

A boil of the meatus is treated conservatively by antibiotics and local application of heat. No incision is made unless there is obvious pus formation without any signs of the boil bursting spontaneously.

Infected Sebaceous Cysts

Small sebaceous cysts are common on the ear and frequently become inflamed, producing a sort of 'blind boil' which fluctuates but rarely bursts. Incision and drainage are the treatment, and if the incision is kept open by a gauze drain and the cavity curetted every day or two with a meibomian curette, it may ultimately be possible to extract most of the capsule and the cyst will not recur. Mostly it does recur and requires more formal removal after the inflammation has subsided. The capsule does not always have a clear plane of cleavage, and dissection may be difficult.

Otitis Externa

In the same way as it is important to distinguish a boil of the meatus from an infection of the mastoid, it is important to distinguish an otitis externa from an otitis media. The first is only a nuisance, while the second is sometimes dangerous.

Otitis externa is primarily an eczematous condition of the skin of the meatus. Desquamation occurs and there is some exudate, which keeps the desquamated skin moist and causes irritation and discharge. Infection - either bacterial or fungal - soon supervenes and the

skin becomes hypertrophic or oedematous, with the result that the meatus may be completely blocked. The infecting organism is identified and an appropriate antibiotic is given.

Initially any débris must be removed, and this is done by gentle syringing. The old treatment of inserting a wick of ribbon gauze soaked in aluminium acetate 8 per cent, or 5 per cent ichthyol in glycerine, has been largely replaced by similar application of an antibiotic and steroid ointment or lotion, although the former method is still often useful. In fungal infections the older remedy of painting with 1 per cent gentian violet aqueous solution has been superseded by the insufflation of Nystatin powder.

Otitis Media

Infection spreads to the middle ear from the nasopharynx by way of the eustachian tube. The prominent symptoms are pain and deafness, and the diagnosis is confirmed by the appearance of the drum, which first loses its brightness, then becomes pink, and finally bulges because of the fluid which collects behind it.

Otitis media is usually treated conservatively by a full course of antibiotics. If the bulging persists for more than two or three days, especially in the presence of pain and deafness, myringotomy should be done. It is also needed from time to time in cases of catarrhal otitis which are not acute or heavily infected, but in which the exudate becomes viscous and consequently a threat to hearing. This is the condition so picturesquely described on the other side of the Atlantic as a 'glue-ear'.

Myringotomy

Anesthesia - Incision of the drum is a painful procedure which should be carried out under general anaesthesia in both children and adults, although in adults it can if absolutely necessary be done after local application of a 20 per cent solution of cocaine. In the preantibiotic era the operation was very common, especially in children, and was often performed in the patient's home. The older practitioner, while recognizing the benefits of modern anaesthesia, may sometimes regret that the apparatus cannot be carried in the pocket like the old-fashioned bottle of chloroform.

Technique - After the patient is anaesthetized, the meatus is cleaned with a swab soaked in surgical spirit and the drum is inspected through the auriscope, using the largest speculum which will fit. The normal magnifying end is removed and the small operating lens is swung into place. This allows ample space for the introduction of the myringotomy knife, which should be angled so that the handle does not interfere with vision, and long enough to reach the drum without the shoulder becoming caught up against the speculum. The drum is clearly visualized and an incision is made through it, posterior to the handle of the malleus and midway between it and the attachment of the drum to the periphery, in about the 7 o'clock position for the right ear and the 5 o'clock position for the left.

The operation is simple and safe, provided the landmarks are clearly seen and the incision is made in the right place under direct vision (Figure 14). To jab the myringotomy knife hopefully in the required direction without really seeing where it is going is to ask for trouble and usually to get it.

The point of the myringotomy knife penetrates the drum with a characteristic little 'pop', and there is usually some bleeding, so that at first the pus or serous exudate which emerges is blood-stained. Antibiotic therapy is continued, and usually the discharge has ceased within a few days.

Cysts, Tumours and Allied Conditions

Sebaceous Cyst

These cysts are common, especially on the posterior surface of the ear and in the sulcus behind the ear. They are liable to attacks of inflammation, and are often very adherent to the skin so that it is difficult to define a plane of cleavage around the capsule. When this happens, it is easier to begin by making an elliptical incision over the cyst and working carefully down each side at an angle in an attempt to find the right plane. If this is not found, the mass of tissue containing the cyst is removed by sharp dissection. Occasionally this is discovered to consist not of one large cyst but of two or three cysts matted together. Under these circumstances it is wise not to be over-optimistic when assessing the possibility of recurrence.

Dermoid Cyst

The front of the ear, just above the mandibular joint, is a recognized site for a dermoid cyst, which presents as a small globular swelling. It may be attached deeply to the periosteum, and in some cases may have a connection with the dura. It does not always shell out, and dissection may be awkward because of the vascularity of the part. If the cyst's deep prolongation appears to be leading into uncharted seas, it should be ligated and the superficial part only removed. The practitioner of minor surgery must at all costs avoid being driven into a position which he cannot control and from which he cannot retreat.

Warts and Cutaneous Horns

A variety of warty excrescences are found on the skin of the ear and are treated *secundum artem* according to their size, shape and site. Some will respond to CO₂ snow; others may be curetted or ligated; while others will need more formal excision, perhaps with removal of a small ellipse of skin.

Congenital Deformities

The commonest of these is a small fleshy polyp just in front of the tragus, probably analogous to the small extra digit sometimes found attached to the thumb or fifth finger. Treatment consists of ligating the base after pulling the polyp well up to ensure that all abnormal tissue is removed. It usually drops off in three or four days.

Another congenital defect is the pre-auricular sinus, which is a relic of the first branchial cleft and presents as a small pit just above the tragus. It gives no symptoms in itself, but may become inflamed from time to time and need incision and drainage. If repeated attacks occur, the sinus is excised during a quiescent period. A small area of skin is dissected up around the depression, and the track is followed down and excised. Here again, beware of entering uncharted waters.

Hyperkeratosis

Hyperkeratotic patches are found frequently on the ear, which because of its exposed position is liable to be affected by sunshine, cold and winds. The lesion is painful to lie on and may interfere with sleep. It can be curetted under local anaesthesia, and the raw area left is cauterized with silver nitrate or an electrocautery.

Rodent Ulcer

From the hyperkeratotic patch to the rodent ulcer is a short step. An early rodent ulcer may be treated in the same way, by vigorous curetting followed by application of the electrocautery. In the later stages radiotherapy is usually advised, although if the lesion is suitably situated on the helix, excision with a small segment of skin and cartilage is very satisfactory and avoids the risk of any necrosis of the cartilage.

Epithelioma

The epithelioma or squamous cell carcinoma occurs on the ear and is treated by radiotherapy. The prognosis is not as good here as in many other places.

Other Procedures

Politzerization

Catarrh of the eustachian tube is a complication of almost every 'cold in the head' and commonly causes some degree of deafness, which is usually only slight and transient. If, however, it does not clear spontaneously, clearing the eustachian tube by forcing air into it from a Politzer bag is a useful treatment, although this must not be carried out until the acute nasopharyngeal infection has subsided. If inflation is performed while infection is still active, there is a considerable risk of starting an acute otitis media by blowing infected material through

the tube.

When the time is ripe, the technique is as follows and the course of events should be explained to the patient. The Politzer bag is fitted with a rubber tube which has an acorn end. The end is inserted in one nostril and the other nostril is closed by the finger and thumb, which also hold the acorn in position. The patient is then asked to blow out his cheeks, and as he does this he closes his glottis. At this moment the bag is squeezed, and this raised the air pressure in the nasopharynx considerably above normal because the air cannot escape through the nostrils nor pass beyond the glottis. But it can pass along the eustachian tube, and if the obstruction there is not too great, air passes through and the block is relieved. Hearing is tested before and after, and in a successful case the improvement is immediate.

Sometimes it is difficult to get the timing right, with the result that the air is blown in before the glottis is closed or after it has reopened, and the air goes down the throat with no build-up of pressure. An alternative method is to ask the patient to take a small sip of water and hold it in his mouth. He is then told to swallow, and as he does so the thyroid cartilage will be seen to rise as the glottis closes. The bag is squeezed sharply, and if it is done at the right moment the air will enter the eustachian tube as before.

Though the hearing may improve immediately and dramatically, the improvement does not always last and it may be necessary to repeat politzerization daily for a few days, and then if required every few days for a few weeks until cure is effected. Provided no acute infection remains in the nasopharynx, it is a procedure which carries little risk and may do a great deal of good.

Ear Piercing

This is the process of making a permanent opening in the lobe of the ear for the attachment of earrings. The exact site for piercing is marked out symmetrically on each ear with a ballpoint pen. With a syringe containing 1 to 2 per cent Xylocaine, a small skin wheel is raised on the anterior and posterior surfaces, and a further small amount is injected more deeply in the area of the cartilage. A straight cutting needle is threaded with strong braided cotton and pushed through the lobe, exerting counter-pressure against a folded pad of lint or similar substance. The thread is tied into a loop and is kept moving for a few days until the track is epithelialized. Wire 'sleepers' are then introduced, and these maintain a permanent opening.

The Nose

Trauma

Wounds of the Nose

In all facial wounds a good anatomical repair is important, especially in women. In so conspicuous a feature as the nose, it is even more important. Fortunately the blood supply is good, and débridement can be kept to a minimum. Most of the skin of doubtful viability will survive and only the most hopelessly damaged bits are sacrificed.

All accidental wounds are potentially infected and therefore liable to be followed by an inflammatory exudate. If the wound is sutured too tightly and this exudate cannot escape, frank infection will follow. The wound must be closed accurately, but must not be under tension if this can possibly be avoided. It is often most satisfactory to insert a few sutures at key points, not too tightly tied, and to use adhesive strips of one sort or another to correct any minor defects.

A wound affect the aperture of the nostril must be closed with especial care. Here any irregularity of contour will be very disfiguring later. A small plug of wool is useful as an internal splint to prevent a 'step' in the outline of the nostril. It must be kept in for only 18-24 hours, by which time healing will have proceeded far enough to keep the skin edges stuck together. If left in too long, it will encourage infection and defeat its own purpose.

Broken Nose

The main deformities are deviation of the nose to one side or the other, and broadening due to bruising and oedema. If the injury is seen at once, as for instance on a football field, reduction can sometimes be effected by grasping the end of the nose between thumb and finger and pulling it out forcibly. Merely pushing the nose to one side or the other is of no value.

If the fracture is not seen until later or if primary reduction has failed, it is better to leave it alone until the swelling has subsided. Reduction is possible for at least 7-10 days after the injury. If the nasal bones are depressed, or if one nasal bone lies below the other, elevation of the fragments from inside the nose may be needed. Under general anaesthesia, a pair of closed sinus forceps or artery forceps protected by rubber tubing is passed up through the nose, and the fragments are elevated from inside and moulded against the pressure of the fingers on the outside. Very little force is required. The operation is not difficult, but a broken nose is one of those injuries with a high emotional content - particularly when a child is concerned - and it may be prudent to ask a specialist to carry it out.

Nose Bleeding

This is usually a trivial condition. In nine times out of ten the bleeding has stopped before the doctor arrives, although in elderly people with hypertension, or in those with blood dyscrasia or concomitant severe illness, it may be dangerous or even fatal.

Where bleeding persists and the patient is in good condition, he is first advised to sit down on a chair, lean forward over a basin, allow the blood from his nose to drop into it, and breathe through the open mouth. Above all he must not panic. This is the method advocated by one of the greatest of the early specialist in this field, Sir Morell Mackenzie. It is simple and often effective.

Cauterization

If the above procedure is not successful, nonetheless the haemorrhage may diminish sufficiently to allow the actual bleeding point to be seen, and it may be possible to cauterize it. The nose is first anaesthetized by plugging it with gauze soaked in a solution of 10 per cent cocaine and 1/1.000 adrenaline in equal parts. The bleeding point is then touched with an electrocautery, or with trichloroacetic acid or 40 per cent chromic acid on a probe. For children the chemical cauterization is usually preferred as being less severe. Cauterization must never be done too drastically, as it is not difficult to perforate the septum.

Plugging

When the bleeding point cannot be seen, some form of plugging is necessary. The simplest method is plugging with 1/2 in ribbon gauze, preferably after application of a local anaesthetic. All old clot is removed, and with a pair of angled forceps the gauze is thoroughly and systematically packed into the nose - beginning high up posteriorly, then in the middle fossa, and finally along the floor. This will control most cases of bleeding, but where it does not the other nostril is plugged in the same way, thus making a sandwich of the nasal septum. The patient is kept in bed, propped up with pillows or a back rest, and given an injection of morphia gr 1/4, which often appears to have an almost specific haemostatic effect.

Another technique is to use the inflated finger of a rubber glove to apply the necessary pressure. The glove finger is cut off, a rubber catheter is inserted into it almost to the end, and cotton thread is tied securely round the base of the finger, making an air-tight seal round the catheter. The glove finger with the catheter inside it is lubricated with Vaseline or glycerine and pushed along the floor of the nose. It is then inflated with air via the catheter, which is chosen of such a size that a 20 mL syringe will fit firmly to it, and thus usually contains rather more air than will be required or tolerated. When the correct pressure is reached, the catheter is pinched and the end is bent over and securely tied. If the pressure falls and bleeding begins again, it will need reinflating.

Yet another way is to plug with one of the proprietary forms of haemostatic 'sponge'. This has the advantage that it can be left *in situ* indefinitely, without danger of infection, until it is absorbed.

The gauze packing or the glove finger should not be left in for more than 24 hours, or 36 hours at the most. Even after this period the nose will be very uncomfortable, and an acute otitis media may follow.

Foreign Bodies in the Nose

These are found almost exclusively in children, who introduce them thoughtlessly rather than deliberately, although occasionally a child is found who makes a habit of it. They come in a great variety of forms, from pieces of rolled-up paper, cardboard or cotton wool to small stones, beads, tin-tacks and drawing-pins.

If the foreign body is clearly visible and if the child is well-behaved and has confidence in his doctor, the object can occasionally be removed, very gently, without an anaesthetic, either with a pair of angled nasal forceps or by a hook passed beyond it. In the frightened or unco-operative patient, attempts at removal without general anaesthesia may well result in the object becoming more deeply impacted. It is therefore much more sensible, if there is any doubt, to arrange for a general anaesthetic in the first place. Using a speculum and reflected light from a head-mirror, or an electrically illuminated speculum, the shape and position of the foreign body are carefully reconnoitred, and the type of forceps or hook most likely to be successful in its removal is employed. Provided the operation is carried out deliberately and without undue haste, removal of the foreign body should not be difficult.

A child with a unilateral nasal discharge almost certainly has a foreign body in the nose. It may have been there for several days and may be invisible beneath a thick coating of mucus. The application of a few drops of ephedrine 1 per cent in saline will help to clear the mucus and shrink the mucosa. Under general anaesthesia the nose is carefully explored. If there appears to be a risk of the foreign body slipping backwards and falling into the larynx, a finger is inserted into the nasopharynx to prevent this happening.

Infections

Boils, Carbuncles and Similar Conditions

The region of the nose is one of the old 'dangerous areas' for these infections because of the risk of spreading a septic thrombophlebitis into the cranial cavity via the angular vein. The advent of antibiotics has greatly decreased the likelihood of cavernous sinus thrombosis or cerebral abscess, but even a boil, especially in the vestibule, can be a serious event. If it is injudiciously or prematurely incised or squeezed, an alarming degree of swelling may follow, involving the upper lip, the cheek and the eye to such a degree that a well-known face may be almost unrecognizable. The temperature is usually raised, and rigors may occur. A full course

of an antibiotic is given and hot bathing, carried out very gently, is the only local treatment allowed. No attempt must be made to 'burst the boil'. Even if obvious pus is present, it is usually better not to interfere and to leave the cure to nature.

Frontal Sinusitis

Where there is acute inflammation of the frontal sinus, pain over the eye - of a severity sufficient to make a strong man weep - is a cardinal symptom. In addition, the pain tends to come on every day about mid-morning and to pass off about tea-time, showing a periodicity found in no other condition.

As an adjuvant to the routine treatment by nose drops, inhalations, antibiotics and analgesics, there is a simple procedure which may give great relief. It consists in packing the upper meatus with ribbon gauze soaked in equal parts of 10 per cent cocaine and 1/1.000 adrenaline solution. This has the effect of reducing the oedema near the ostium of the frontal sinus and allowing some drainage to be established, even if only temporarily. The tension in the sinus is in some degree relieved, and the very severe pain with it. This treatment can be repeated once or twice a day as necessary.

Maxillary Sinus

This, more commonly described as an 'infected antrum', is not generally so painful as frontal sinusitis, except in rare cases where the ostium is completely blocked - as for instance by a polyp - and the tension inside the antrum becomes very high.

If resolution of an acute attack is not complete, the antrum will remain chronically infected, causing a nasal discharge, frequent 'colds' or a 'bad smell' in the nose, but on the whole not much pain. An x-ray will show a fluid level or chronic thickening of the lining of the sinus, and it is here, as well as in the case where there is an acute block, that proof puncture is required.

Proof Puncture

This should be well within the range of the average practitioner of minor surgery, but it is better learnt on the apprentice system from a master rather than from written instructions. There are, however, occasions when the latter are better than nothing, as the writer realized when it became necessary to do his first proof puncture on a trusting friend during a period of prolonged snow which made access to any consultant quite impossible.

The instructions then are as follows. A nasal speculum is inserted, and illumination is provided by a head-lamp or a mirror. To provide anaesthesia, ribbon gauze is soaked in a solution containing equal parts of cocaine 15-20 per cent and adrenaline 1/1.000 and is gently packed into the inferior meatus beneath the inferior turbinate. The gauze must remain in position for at least ten minutes to produce satisfactory anaesthesia.

The actual puncture is done with a special trocar and cannula (Figure 15), although if this is not available an 18 gauge spinal needle about 3.5 in long can be used. It is passed under the anterior end of the inferior turbinate, proceeding directly backwards for about 1 in before turning the point against the lateral wall of the nose. The handle of the trocar is moved towards the midline, against the columella, and the point is aimed at the middle of the eye. The end of the trocar lies against the palm of the hand, the shaft being held by the thumb and first finger, while the second finger exercises restraint against the canine fossa and steadies the operation (Figure 16).

The trocar is then pressed gently but firmly against the nasal wall of the antrum, and usually goes through quite easily with a characteristic little crunch as the bone is penetrated. If the point does not go through easily, it is moved slightly and an attempt is made in another place. When the puncture has been made, the trocar is removed, a 5 mL syringe is attached to the cannula, and any fluid in the antrum is aspirated. If nothing is found, a few mL of saline are injected and sucked back again to thin any pus which may be blocking the needle and to wash out the cavity. If all goes well, the 5 mL syringe is removed and a Higginson's syringe is attached instead. By means of this the antrum is washed through, the saline entering through the cannula and leaving via the natural ostium. The patient sits with the head bent forward so that the saline runs out of the nose rather than down the throat.

Various difficulties will be encountered from time to time. The bone may be abnormally thick in the place chosen, and another site a short distance away must then be tried. The cannula may be entered too far forward and end up in the tissues of the cheek; or too high, when the floor of the orbit will be damaged. These problems are bound to occur, and only practice and experience will provide the solution.

Nasal Polypi

A nasal polyp consists of mucous membrane which has become oedematous and distended with fluid, and hangs by a pedicle from the upper turbinate or from the vicinity of the ostium of one of the paranasal sinuses. Polypi develop as a consequence of infection or allergy or a combination of both, and for convenience are included in this section.

Quite large polypi will at times disappear spontaneously, and if a patient is nervous of operation it is quite justifiable to temporize and hope for the best. Provided there is no contra-indication, a short course of prednisolone can be given - 5 mg four times a day for two or three days, then 5 mg three times a day for two or three days, then 5 mg twice daily for three or four days, finally tapering off at 5 mg daily for three or four days more. Alternatively, a few drops of hydrocortisone can be injected into the polyp, repeated if necessary three or four times at intervals of 7-10 days.

Surgical Removal

If the polyp still persists, surgical removal is needed. The nose is anaesthetized with 10 per cent cocaine and adrenaline 1/1.000 solution on ribbon gauze, and the polyp is removed either by a wire snare or by special polyp forceps with a ring end (Figure 17).

If using a snare, it is helpful to begin by passing a pair of blunt-ended forceps through the loop. The polyp is held in these, and the loop is passed to the base of the pedicle and then tightened. The forceps continue to hold the polyp, which is then avulsed from its base by the snare and withdrawn from the nose, still held in the forceps. Without the forceps, the polyp may easily slip down the throat.

Where polyp forceps are used, the polyp is grasped as near its pedicle as possible and is pulled out. Quite often it is a compound lobulated structure, and this rather more rough-and-ready method of attack may result in the whole mass being pulled in one piece, whereas the snare may remove only part of it. Whatever method is employed, bleeding is rarely severe, but if it does give trouble the nose is packed with ribbon gauze or haemostatic 'foam'.

Simple removal is curative in simple cases. If the polyp is not completely removed at the first attempt, the operation can be repeated as necessary until the nose is clear. If the situation is complicated by chronic infection of the sinuses, the polyp will almost certainly recur, and the case must be handed over for major surgery.

Cysts, Tumours and Allied Conditions

Of the Skin of the Nose

Sebaceous cysts - These are found on the nose, though not commonly, and are removed surgically in the usual way.

Warts, papillomata, hyperkeratotic patches - These are removed - according to shape, size and position - by curetting, ligation, excision or CO₂ snow.

Carcinoma - The basal cell carcinoma or rodent ulcer is treated by excision or radiotherapy according to size and site. If small, it may be curetted and the base cauterized.

Squamous cell carcinoma or epithelioma is a serious condition and is referred early for radiotherapy.

Of the Nasal Passages

Warts, papillomata and similar conditions - These are found inside the nose, and the papilloma may be the cause of quite severe bleeding. If small, they can be destroyed by cautery; if large, they should be referred for radiotherapy.

Carcinoma, sarcoma, melanoma - These tumours will all be found from time to time, and early diagnosis is of great importance. Unilateral nasal obstruction with earache or deafness must always be regarded with suspicion, and a patient with such symptoms must be referred at once for specialist advice.

The Throat

Trauma

Wounds and Lacerations

Wounds and lacerations of the throat are not common and are usually the result of a fall while holding something between the teeth. They are therefore found mainly in children who tumble while chewing a pencil or piece of stick, but the pipe-smoker is also at risk if he falls, or if he turns his head suddenly and knocks his pipe against some unexpected obstacle.

The tear may involve the mucous membrane of the hard palate or the tissues which comprise the soft palate, the uvula and the pillars of the fauces. The mucous membrane of the hard palate is closely attached to the periosteum, and there is not much tendency for it to gape when divided. It is best left to heal on its own without sutures unless it is bleeding freely or gaping more than usual.

The soft tissues of the palate, uvula and fauces contain some muscle fibres, and in the case of a tear their inco-ordinated action may produce distortion and wide separation of the cut edges. Wounds in this region must therefore be repaired by a few catgut sutures, using a small curved needle and a needle holder: this is most easily done under general anaesthesia, with a gag to hold the mouth open and a head-light to see by.

Foreign Bodies

In Back of Tongue, Tonsils or Fauces

Foreign bodies become lodged in the back of the tongue, in the tonsils or in the fauces. They are usually fish-bones or splinters of other bones, but they may also be objects which have found their way accidentally into food, such as fragments of wood or glass, or even small pieces of wire or other metallic substances. They are all within range of direct vision, but because the patient is frightened he finds it difficult to relax and there is a tendency to 'gag'. It is therefore better to spray the throat with a 3 per cent solution of cocaine before any attempt at removal is made.

If the foreign body is in the tonsils or fauces, a spatula is used to keep the tongue out of the way. If it is in the back of the tongue, the spatula may hide it, and it is then better to hold the tongue in a swab and pull it forwards. Every movement must be gentle and deliberate, and when the foreign body is seen it is removed with a pair of small artery forceps. It is important

to ensure as far as possible that the first attempt is successful. If it is not, the foreign body may be broken or pushed out of sight and the patient becomes even more nervous, making the second attempt more difficult than the first.

In the Pharynx

Other foreign bodies become wedged in the pharynx. These are usually larger objects such as a lump of meat, an artificial denture, or one of those large sweets appropriately known as a 'gob-stopper'. Occasionally a large pill or capsule may be swallowed awkwardly and try to 'go the wrong way', and a piece of chewing-gum may do the same.

A child can be held upside down and thumped hard between the shoulders, and this will often result in the foreign body being expelled. In an adult, similar treatment should be tried with the patient bending over a chair unless there are people around strong enough to hold him upside down. Very few patients are fortunate enough to have a friend with a genius of the engineer Brunel, who a hundred years ago designed on the spur of the moment a machine making use of centrifugal force and successfully treated a friend with a foreign body impacted in his gullet.

If the airway becomes obstructed an extreme emergency develops. If the foreign body cannot be removed, death will rapidly ensue unless an opening is made into the air passages below the obstruction. However inexperienced the surgeon may be, some form of emergency tracheostomy must be performed, even if it is not in accordance with the best surgical practice. A simple standard technique for laryngotomy and tracheotomy is described on pages 117-119, and the broad principles underlying the operation should always be kept in mind.

Allergic Manifestations

Allergic manifestations are considered here for convenience. They include angioneurotic oedema and reactions to wasp-stings, bee-stings and so on.

Angioneurotic oedema is a condition characterized by the sudden development of large urticarial swellings and sometimes affects the throat. Usually it can be controlled by a combination of adrenaline, antihistamines and steroids, but there may be occasions when a tracheotomy is needed.

Stings. There are also people who are unusually sensitive to wasp-stings or the poison of other insects. If a wasp is swallowed, perhaps in jam or fruit, the back of the tongue may be stung and the reaction may be overwhelming. Here again, if conservative treatment fails, tracheotomy must be considered.

Infections

Acute Laryngo-Tracheitis

Before the introduction of routine immunization, diphtheria was the infection commonly found and justifiably dreaded. Now it has virtually disappeared, and the doctor who qualified after 1945 is unlikely to have seen a case. Nonetheless acute laryngo-tracheitis still occurs, either on its own or in association with bronchitis or bronchopneumonia. It is usually seen in young children, and the combination of spasm and oedema of the larynx with diminished pulmonary function may prove fatal unless a tracheotomy is performed.

Quinsy

A quinsy is a peritonsillar abscess and was common before the days of antibiotics. At present it is rare, but it may arise where an organism is resistant or where the dose of antibiotic is inadequate. The infection develops around the upper half of the tonsil and tends to point about half-way between the base of the uvula and the third upper molar tooth.

If the quinsy does not burst on its own, it will ultimately require incision, but not before it is certain that pus is present. With a co-operative patient the operation can be done under local anaesthesia, produced either by applications of Xylocaine or by spraying with 5 per cent cocaine. Where the patient is unco-operative or unable to open his mouth widely enough, general anaesthesia is necessary.

The incision goes through the mucous membrane only and is made by a guarded knife, prepared by wrapping adhesive strapping round the blade so that only about 1/3 in is left uncovered. The pus usually lies deeply, sometimes as much as an inch below the surface, and to reach it sinus forceps are pushed directly backwards through the incision. When pus is reached, the blades are opened to allow free drainage (Figure 18).

The recipe for success is to delay any active treatment until the presence of pus is beyond doubt. An incision made before pus has formed will do no good. It can actually spread the infection, and may cause troublesome or even dangerous bleeding.

Acute Retropharyngeal Abscess

This is even rarer than a quinsy, and presents as a swelling on the posterior wall of the pharynx, usually to one side or the other. It is the result of pus formation in the chain of deep cervical glands, and occurs almost exclusively in children under five.

In infants it is safer to open the abscess without anaesthetic. The infant is held firmly upside down, so that any pus which escapes will not enter the larynx. The mouth is widely opened with a gag, and the tongue kept out of the way with a spatula. Under direct vision with a head-light or mirror, the abscess is opened with a pair of sinus forceps.

With older children a general anaesthetic is necessary. In this case the patient's head is fully extended over the head of the table, but otherwise the same procedure is adopted. If a sucker is available, so much the better.

Tumours

Benign Tumours

These include the papilloma, the angioma and the fibroma.

Papillomata and other warty tumours are seen occasionally on the pillars of the fauces or on the soft palate. They can be excised under local or general anaesthesia according to circumstance. The resultant small wound usually needs one or two catgut sutures to close it and to control bleeding. The *angioma* also occurs in the soft palate or fauces, and is best treated by radiotherapy. The *fibroma* is found mainly in the nasopharynx: it is very vascular, and its removal is not a minor procedure.

Malignant Tumours

Carcinoma, *sarcoma* and *melanoma* are found in the pharynx and nasopharynx. These are outside the scope of minor surgery and should be referred without delay to the consultant.

Emergency Procedures

Deliberate Tracheotomy

This operation is done when there is a fair measure of emergency, though the emergency is not so grave that every minute counts. General anaesthesia is more satisfactory but is not always available. If it is not, the line of the incision is infiltrated with local anaesthetic.

A sandbag is placed beneath the patient's shoulders, and an assistant holds the patient's head fully extended and is instructed to maintain it in this position until the operation is completed (Figure 19). The incision is made in the midline, beginning at the upper border of the cricoid and extending downwards for 2.5-3 in (Figure 20). The cricoid is exposed by deepening the incision, and the fascia below it is divided transversely, revealing the trachea. A pair of artery forceps is insinuated gently along the surface of the trachea and separates the isthmus of the thyroid from it. The isthmus is clamped on each side of the midline and divided between the clamps, which are then turned laterally, allowing the thyroid tissue to be peeled off the trachea by either gauze stripping or sharp dissection. The stumps of the isthmus are then tied with catgut (Figure 21).

The trachea is now clearly exposed. If circumstances permit, three or four drops of 5 per cent solution of cocaine are injected into the trachea before it is opened, to reduce reflex coughing. After waiting for two or three minutes, the second and third tracheal rings are divided,

with the knife held so that the blade points upwards. There is always some coughing, and after this has subsided the slit in the trachea is converted into an oval by snipping off small portions on each side with scissors. The tracheotomy tube is inserted, the pilot is removed and the tapes are tied (Figure 22). Any bleeding is controlled, and one or two skin sutures will be required.

Urgent Tracheotomy

This is a quicker procedure, employed where there is no time to be lost. With the patient in the same position as above, a midline incision is made just below the thyroid cartilage, extending downwards for 2-3 in. The cricoid cartilage is secured by a hook, and by pulling on the hook the larynx is drawn upwards and the trachea kept on the stretch. The pull is kept up by an assistant until the operation is finished.

With the blade of the knife directed upwards, the trachea is opened with a sharp stab, and the knife is then twisted to open up the slit and allow the air to enter. The end of a closed pair of artery forceps is guided into the hole, and after withdrawing the knife the ends of the forceps are opened to allow the introduction of the tracheotomy tube or whatever tubing is available.

Laryngotomy

In this operation, which is reserved for the most dire emergency, an opening is made through the crico-thyroid membrane. The head is extended, and a transverse incision about 1 in long is made at the level of the cricoid. This is done most easily by picking up and transfixing a vertical fold of skin. The crico-thyroid membrane is then opened horizontally by stabbing it with a knife or a pair of sharp-pointed scissors. The wound is opened by twisting the knife or opening the scissors until some sort of tube can be inserted.

This is a remedy for a desperate situation, and can be done very quickly as a life-saving measure so long as a knife or a pair of pointed scissors can be found. In some cases a formal tracheotomy is required later.

Chapter 5: The Mouth

Trauma

The inside of the mouth may be damaged by the teeth - for instance, during a fit, a fight or an accident - or by a foreign body such as the stem of a pipe or any other object held in the mouth and pushed forcibly into it. The tongue, the buccal surface of the cheeks and lips and the palate are considered separately since the treatment varies. Dental bleeding, which is the result of therapeutic trauma, is also dealt with in this section.

The Tongue

Here the blood supply is good and wounds heal readily. Small wounds, unless gaping widely or bleeding, need no suturing. Large ones are repaired by one or two catgut stitches, as few as possible consistent with achieving reasonable coaptation. When bleeding is difficult to control, a mattress suture may be useful.

If a flap has been formed, it must always be secured at the angle to prevent its rolling up and healing into an awkward protuberance which may need removal later. Occasionally a suture at each side of the flap is needed as well. As long as there is some attachment remaining, however small, every flap should be conserved and stitched back loosely into place. So good is the blood supply that it will usually survive.

Buccal Surface of Cheeks and Lips

Wounds in this region generally need no stitches and, in view of the generally septic state of the mouth, probably heal much better without them. An unusually extensive wound may require one or two catgut sutures and so may persistent bleeding, but on the whole these wounds are best left to themselves.

The Palate

The soft palate may be torn and the muco-periosteum may be scraped off the hard palate. Because of the action of the palate muscles, any tear of the soft palate tends to be distorted, and as it mostly occurs in children it must be sutured under general anaesthesia. In a stoical adult, local anaesthesia may suffice.

When the rough muco-periosteum of the hard palate is divided or torn, it can usually be left alone unless it tends to curl and produce a gaping wound, when it too is better sutured.

Dental Bleeding

This is very frightening to the patient and, if it persists, may be actually dangerous. This is especially so in the case of children with their comparatively small blood volume, which means that emergency treatment may be needed in the middle of the night or at short notice.

1. The first step is to wash out the mouth and clean away all the clots so that the site of the bleeding can be clearly seen. If there is any loose fragment of bone, this must be removed, and the same applies to any piece of gum that may be hanging almost but not completely detached. Both these factors may prevent or delay the normal sealing off of the wound, and their elimination may be all that is necessary.

2. If this fails, the next step is to plug the cavity. This is done with a pledget of gauze, lint or Oxycel gauze, on top of which is placed a folded piece of lint on which the patient bites. The pressure is kept up for half an hour or so, and in most cases this is successful.

3. Where bleeding still continues, sterner and more specific measures are required. A mattress suture of catgut or thread is inserted under local anaesthesia with a small curved needle, tied preferably on the side opposite the bleeding point. In children, where suture is difficult because of the small size of the parts and the intolerance of the patient, the socket is plugged with Oxycel or a special dental haemostatic gauze such as Calgitex, and pressure is maintained by biting on a small cork. If there is a sound tooth on each side of the bleeding socket, the cork can be cut to fit the gap and is then wedged in between the teeth for up to 12 hours. Where this is not feasible, suture under general anaesthesia may be required.

4. If the treatment is still unsuccessful, some form of blood disease may be responsible. The blood must be thoroughly investigated, and a transfusion may be needed as an emergency measure. It is best to transfer the patient to a dental hospital, where the care of such cases is a routine matter. Often a dental mould is needed to exert pressure on the bleeding site.

Infections

Dental Abscess

This is the infection most commonly found in the mouth. As a result of bacterial invasion through a fault in the enamel of the tooth, infection develops in the pulp and then finds its way along the root canal. From here it enters the bone of the alveolus, ultimately emerging as a subperiosteal abscess.

When there is obvious fluctuation, a quick incision with a fine-bladed scalpel will relieve the situation, and if it is done deftly enough no anaesthetic is required. In the nervous patient, spraying with ethyl chloride will give the patient confidence even if it achieves nothing more. Subsequent treatment is in the hands of the dentist.

Ulcers

Ulcers of the mouth may be classified as simple, systemic, and specific.

Simple ulcers. These originate in local lesions caused by irritation due to badly fitting dentures, broken teeth, scalds from over-hot food, biting the cheek, and so on. Treatment consists in removing the local irritant and then cauterizing the ulcer, after drying it with gauze, with pure carbolic acid on a probe.

Systemic ulcers. This group is found in patients suffering from systemic conditions such as leukaemia, diabetes or nephritis. Treatment is basically that of the underlying disease, together with cauterization by pure carbolic acid or repeated application of 1 per cent aqueous solution of gentian violet.

Specific ulcers. These are rare, but must not be forgotten in the differential diagnosis. They may be syphilitic, carcinomatous or tuberculous. A small portion is excised under local anaesthesia for biopsy, and the treatment depends on the findings.

Cysts, Tumours and Allied Conditions

Papilloma, Fibroma, Lipoma, Angioma

These simple tumours arise on the tongue and also in the wall of the buccal cavity. They are removed by an elliptical incision with a small margin of normal tissue, usually under local anaesthesia, and the wound is closed with a few catgut sutures.

'Ranula' and Mucous Cyst

The '*ranula*' is a cystic swelling found under the tongue and on the floor of the mouth. It is sometimes as large as a pigeon's egg, and is a retention cyst containing mucoid fluid. It may be derived from salivary glands, but this is not universally accepted, and some authorities have suggested that it may be a dermoid. The *mucous cyst* is a similar swelling, not as a rule so large, caused by the blocking of mucous glands, and may occur anywhere in the mouth where these glands are present.

Both these conditions are treated by removal, usually under local anaesthesia. It is almost impossible to remove them complete, as the wall is thin and ill-defined and is mostly torn in the process of removal. As long as the greater part of the wall is removed and the base is cauterized with the electro-cautery or pure carbolic acid, this is in most cases sufficient discouragement, and recurrence is rare. Any bleeding points are ligated and the cavity is left to heal by granulation, except in the rare instances where removal appears to be complete and the wound can be closed without risk of recurrence.

Salivary Calculus

A calculus may form in one of the salivary glands, usually the submaxillary gland because of its high mucin content, and may become impacted in the duct.

If it lies near the opening of the duct, it is held firmly in dissecting forceps through the duct wall, which is incised over the calculus. It is then picked up or levered out by another pair of forceps. If it tends to slip back along the duct, a length of catgut on a curved needle is passed round the duct behind it; when this loop is pulled tight, the calculus cannot retreat and the duct is then incised over it. There is as a rule little or no bleeding.

If the calculus is in the gland itself, the gland is removed. This may prove a trying and tedious procedure, best referred to more expert hands, not only because of technical difficulties but also because accidental damage to some important structure may lead to unwelcome action in a court of law.

Epulis

This is included for the sake of completeness although it is mainly a problem for the dental surgeon. 'Epulis' is the term applied to a tumour arising from the alveolar periosteum, and four types are described: the granulomatous epulis caused by dental caries or dead teeth, the fibrous epulis, the fibro-sarcomatous epulis and the giant-celled epulis. Their origin is described by their names. The granulomatous form is treated by removal of the tooth, followed by curetting, while the treatment of the other three lies outside the field of minor surgery.

Other Conditions

'Tongue-Tie'

The fraenum of the tongue is a crescentic fold at the base of the tongue in the midline where the mucous membrane is reflected from the floor of the mouth. If this fold is very short, or if it is attached too near the tip of the tongue, it is conceivable that it could interfere with movements of the tongue and perhaps cause difficulty in feeding or talking. In fact this seldom occurs, and if the tongue can be moved forward to touch the teeth there should be no trouble.

In the very exceptional case where the tongue does appear to be tied, a small operation may be required. The fraenum, put on the stretch by holding up the tongue, is nicked in a downward direction by a pair of blunt-ended scissors and then torn by the finger-nail for as far as required - a method of attack which, although primitive, has the advantage of causing very little bleeding. The operation is usually done without any anaesthesia. If bleeding should persist, the bleeding point is picked up in mosquito forceps and ligated or under-run with catgut. In 35 years, operation for 'tongue-tie' has been done by the writer on two occasions only, probably both unnecessarily.