SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

MINOR DENTAL EMERGENCIES IN GENERAL PRACTICE

BY

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As most of the diseases of the jaws arise from the teeth and the hard and soft tissues surrounding them a general knowledge of their anatomy is important; a cross-section of a tooth *in situ* is therefore given below (Fig. 1).

FIG. 1.—Cross-section of a tooth *in situ*.

Pathological Conditions

Decay is the breaking down of the prisms of enamel of the crown of a tooth. Foodstuff collected on or between teeth ferments, and in the process of fermentation an acid is produced which dissolves the interprismatic substance holding the prisms together. The latter breaks down and a cavity into the tooth ensues. This may progress into the dentine and lead eventually to the destruction of the pulp. It is also believed that a metabolic form of caries exists, due to deficiency of the calcium which is necessary for hard and resistant teeth. This view is supported by the occurrence of the pregnancy type ("white") caries, in which the internal dentine structure breaks down before a flaw appears in the surface enamel.

Toothache may arise from two factors: (1) pulpitis, and (2) periodontitis. It ensues when the decay reaches deep into the dentine, which shows nerve endings in its substance. Irritation of the latter, due to the progressing decay, causes a pulpitis, or irritation of the pulp, which is the so-called "nerve" of the tooth.

Pulpitis

The pain of pulpitis is throbbing and intermittent; thermal changes, especially heat, cause pain owing to the expansion of inflamed tissues within the solid walls of the tooth. Cold at this stage gives relief, as it constricts the tissues. *Tapping of the tooth causes no pain.* This is important in distinguishing pulpitis from periodontal inflammation, which is dealt with below.

Sedative dressings of oil of cloves, carbolyzed resin, or eugenol, inserted into the carious cavity on a pledget of cotton-wool, usually give immediate relief. If no relief results the pulp must be removed. When the pain abates the cavity should be cleaned of all decayed substances and

then filled with some replacement material. If the disease has progressed too far the pulp dies and disintegrates, resulting in the formation of an abscess at the apex of the root.

Periodontitis

This is an inflammatory condition of the periodontal membrane, a thin fibrous membrane which surrounds the tooth and which can be likened to the periosteum of bone. Its fibres sling the tooth into its bony surroundings and therefore act as a cushion or buffer during mastication. Inflammation and swelling of this membrane force the tooth from its socket, and the patient will complain of the tooth being too long. *Pressure and tapping on the tooth are very painful.* The pain is dull and constant, but is not evoked by thermal changes.

The condition may arise from two causes.

(a) *Trauma*.—When this arises from a blow on a tooth counter-irritants such as aconite and iodine are best applied to the gum around the tooth for twenty-four to forty-eight hours. If no relief results, or the pain gets worse, extraction is indicated.

(b) *Degeneration of the Pulp*.—This may cause inflammation of the periodontal membrane, in which case the tooth should be opened, the pulp removed, and drainage established. Again if no relief is obtained the tooth should be extracted.

Neuralgia

This may be local or be referred by either a pulpitis or a periodontitis. Certain teeth affect certain areas (see Head's classification). The pains are always associated with a tooth or teeth on the same side of the head as the neuralgia: referred pains never cross the midline. The offending tooth should be treated or, if no relief is obtained, removed.

Extractions

For straightforward extractions two pairs of forceps only are necessary. For the lower jaw a pair of "duck-

FIG. 2.—Duck-bill and universal forceps used for removing lower and upper teeth.

bill" forceps are required, and for the upper jaw a "universal" pair (Fig. 2). For the actual removal, be it of tooth or root, it must be remembered that one blade of the forceps is inserted buccally or labially and the

other blade will automatically follow on the palatal surface in the upper jaw and the lingual surface in the lower jaw.

The secret of extraction is to drive the forceps as high or as low as possible (depending on whether it be the upper or the lower jaw) and then to close the forceps until a good grip of the tooth or root is obtained. Once the tooth has been firmly gripped, the correct movement of dislodging it is undertaken. This latter varies with almost every tooth, but it is of the utmost importance to remember that *pressure should be maintained towards the apex of the tooth throughout the extraction*. The idea of this is to make the apex the fulcrum, otherwise the crown, or part of the tooth, fractures. The operator stands in front of the patient for the removal of all teeth except those in the right lower jaw, when he stands behind and to the right. The left hand should always be used to hold away the lip or cheek with one or two fingers and to guide the forceps into position (Fig. 3). In the case of the lower teeth the left hand is used to support the jaw. The left lower teeth are removed by placing the index

FIG. 3.—Position of operator's hands for removal of left upper teeth.

FIG. 4.—Position of operator's hands for removal of left lower teeth.

finger into the sulcus, the middle finger on the lingual side, and the thumb below the horizontal ramus of the jaw. This gives a grip and the necessary support to the mobile lower jaw during the extraction (Fig. 4). The right lower teeth are removed by supporting the jaw with the whole hand, the thumb being placed on the lingual aspect, the index finger into the sulcus, while the rest of the fingers and hand support the horizontal ramus, and the operator stands behind and to the right of the patient (Fig. 5).

FIG. 5.—Position of operator's hands for removal of right lower teeth.

INDIVIDUAL FORCEPS MOVEMENTS

Upper Molars.—As these are three-rooted teeth the movement of the forceps is outwards (Fig 3).

Upper Premolars.—The first premolar has bifid roots, and the movement should be only outward. The second premolar is single-rooted, and slight rotary movement can be applied at the same time as the outward movement.

Upper Canines and Incisors.—These are conically rooted teeth, and rotation and an outward movement should be combined.

Lower Molars.—These are two-rooted, with anterior and posterior roots that are flattened on these aspects. The movement is inward towards the tongue and then out-

wards. In other words, a to-and-fro movement should be employed (Figs. 4 and 5).

Lower Premolars and Canines.—These teeth have conical roots, and rotation is indicated.

Lower Incisors.—These have roots flattened on their medial and lateral sides, and only a to-and-fro movement, towards the tongue and then outwards, should be undertaken.

Lower Wisdom Teeth.—These are of especial interest, as their position is so far back that removal by forceps is not always easy or even possible. Furthermore, the roots often tend to curve back sharply, and their removal is

FIG. 6.—Straight levers used for removing wisdom teeth.

FIG. 7.—Right and left right-angled levers used for removing roots.

therefore much more easily undertaken with a straight elevator or lever (Fig. 6). The lever has two surfaces, rounded on one side and flattened on the other. The point is inserted and driven downwards between the second and third molars with the flat surface against the third molar or tooth to be removed. The lever is then bent downwards and the point engages against the surface of the anterior root of the tooth to be extracted, the second molar and the outer alveolar plate being used as a fulcrum. The second molar can well be removed by the same procedure. Two levers are necessary, one for the left and one for the right-hand side.

Complications of Extractions

Fractured Roots.—These occur most frequently in the lower jaw. If an empty socket is present next to the root its removal is undertaken by inserting the right-angled

FIG. 8.—Lever to remove root.

elevator (Fig. 7) into the empty socket and twisting it so that its point penetrates the septum or intervening piece of bone and engages the root, which is then easily displaced (Fig 8).

Fractured Alveolus.—If a piece of bone is fractured during extraction it is best removed.

Fracture of the Mandible.—As a temporary measure a four-tailed bandage should be applied to the jaw and held in position until the splints have been made and the jaw set and splinted in the correct position.

Septic Socket.—Wash out with hydrogen peroxide and then follow with some mild antiseptic solution. If very painful a "dry socket" has occurred, and this is usually due to the septum of bone between the roots having become necrotic. It is advisable to remove this, and when the socket has been syringed out a sedative dressing, in the form of a light tampon dipped in "dentalone," should be inserted. If the socket is too painful to treat, pain is best relieved by the insertion of a 5 per cent. or 10 per cent. solution of cocaine. The wound should then be cleansed and a dressing inserted.

Haemorrhage.—Primary and reactionary haemorrhages are treated in the same way. Reactionary haemorrhage usually starts several hours after the extraction. The clot should be removed and the socket syringed out with a mild hot antiseptic solution. Plugging is then undertaken with a strip of gauze dipped in a 1 in 1,000 adrenaline solution or oil of turpentine; or one of the modern drugs, such as sangostop, or snake venom from the Russell viper, which appears on the market under the proprietary name of stypven, can be used. The socket is replugged in twenty to thirty minutes if the bleeding has not ceased. In the case of haemophiliacs a local styptic is always indicated, and if bleeding is not brought to a standstill within a few hours a blood transfusion may have to be undertaken. Blood grouping, etc., should have been performed before the operation, and all arrangements made for an emergency.

Secondary Haemorrhage.—This is rare, and is always associated with sepsis. Its treatment is the same as that for primary haemorrhage. After the septic material has been removed and the cavity thoroughly irrigated re-plugging should be done frequently to prevent the further accumulation of septic material. Bone infection must be watched for as a likely possibility.

Dislocation of the Mandible.—This occurs more often than is usually supposed, and is especially liable to happen when extractions are done under a general anaesthetic. The dislocation may be unilateral or bilateral, the treatment being the same in either case. The thumbs are placed over the lower molars and the mandible forcibly depressed and pushed backwards. If the reduction does not occur—and this is rarely the case—the patient must be completely relaxed under a general anaesthetic. The dislocation is then easily reduced.

Root Driven into the Antrum.—If the patient is seen shortly after the penetration of the root into the antrum the opening is enlarged and the root is readily removed by plugging the antrum with long strips of gauze and gently pulling it out again. Invariably the root comes out with the gauze, although the process may have to be repeated several times. The hole in the antrum is closed by dissecting up the mucous membrane from the sulcus until a serviceable flap has been obtained. This is drawn over the hole and sewn to the palatal mucous membrane.

Root in the Antrum with Acute Infection.—Drainage must be established. Usually a probe inserted into the tooth socket will allow the pus to escape. This gives instant relief and converts the acute case into a chronic one. After a day or two the antrum can be washed out via the tooth socket. This is repeated several times,

if necessary, and then the same operation is undertaken as that described for the removal of a freshly fractured root in the antrum. It is advisable, however, to make an opening between the antrum and the nose, below the inferior turbinate bone, to establish free drainage, before closing the wound between the antrum and the mouth.

Treatment of an Acute Abscess.—The patient usually appears with a swollen face, the size of the swelling varying considerably. Sometimes it is localized over the apex of the tooth only, or it may be very much more diffuse. Treatment consists in the establishment of drainage. An incision is made into the abscess under general anaesthesia (gas), or the surface of the swelling is frozen with an ethyl chloride spray and the scalpel inserted. The incision should be made as near the tooth as possible—namely, into the muco-periosteum, and not into the cheek or its soft structures (Fig. 9). This prevents profuse

FIG. 9.—Incising an abscess.

bleeding or the possibility of carrying the infection deeper or of incising some important structure. The offending tooth should be removed a few days later. If it is loose and accessible (in contradistinction to a deeply buried root) it can be removed at the same time as the incision is made. In single-rooted teeth an incision with drainage of pus relieves the condition, and after the acute symptoms have subsided treatment of the tooth can be undertaken, and it can be saved—a useful entity. This is especially important in the case of young girls and children who have a more or less perfect complement of teeth, and in whom the loss of one incisor tooth would result in a great aesthetic blemish.

M. L.-M. Pautrier (*Ann. Derm. Syph.*, Paris, January, 1938) points out that lupus pernio of Besnier, sarcoids of Boeck, and small fibrotic lesions in the lung are probably all manifestations of a single reticulo-endotheliosis, and that although the condition is only recognized by dermatologists because of the skin lesions there are cases in which the lung and glands are affected without any skin manifestations. He describes the case of a small boy, aged 10, suffering from spinal caries, who developed subcutaneous nodules near the affected area, which, on microscopical examination, showed a large number of giant epithelioid cells surrounded by lymphocytic infiltration. Later cystic rarefactions were demonstrated at the base of the phalanges, diabetes insipidus developed, and finally, after a number of years, lupus pernio. The author recalls a case of diabetes insipidus, reported by Tillgren, in which there was generalized adenitis with enlargement of liver and spleen, and many epithelioid nodules and cells demonstrable on microscopical examination. Pautrier reports, too, a case in which an apparently fit man requested removal of cervical glands which had been enlarged for many years and only worried him on account of their appearance. He was found, on further examination, to be suffering from generalized adenitis and enlargement of the spleen, and typical giant epithelioid cell collections were found on biopsy.