COMPLICATIONS ASSOCIATED WITH THE THIRD MOLAR TEETH

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ABNORMAL positions and pathologic changes associated with the third molar teeth are frequently the cause of inflammatory processes within the mouth and associated parts. These morbid conditions may be classified as inherited or acquired. Malposition of the third molar teeth, as with other teeth, is often an inherited tendency and not uncommonly observed. Every dental practitioner sees in his own practice many cases of malposed and impacted third molars, or even third molars in apparently normal position, but having difficulty in erupting.

There are few problems with which the dentist has to concern himself that demand more thought and care than the treatment of a mandibular third molar that is causing trouble. The tooth may be only slightly malposed, but may be irritating the overlying soft tissues to such an extent that the patient will experience considerable pain, especially when eating. Lack of space for the third molar to erupt in normal position may be due to a progressive diminution in size of the jaws, attributable in a measure to the influence of civilization. Failure of teeth to erupt, with impaction in the bone and freedom from contact with other teeth is probably due to some departure from the normal in cell formation at the time of conception and may be inherited.

Abnormal eruption of the third molar teeth may cause only a mild inflammatory process, readily treated by such conservative methods as cleansing the area beneath the irritated gum flap and irrigating it with an antiseptic solution. At times, the gum overlying a partly erupted lower third molar may be irritated by the cusps of a fully erupted upper third molar, and trimming of the cusps becomes necessary to relieve the constant trauma to the gum over the lower tooth. Extraction of the upper tooth may be advisable in some cases to relieve the irritation of the lower gum. When the gum over a partly erupted lower third molar is adherent and swollen and trismus is present or in the process of developing, lancing of the gum with the scalpel or the cold cautery is indicated. The incision should be carried from the anterior margin over the occlusal surface and well beyond the coronal edge of the tooth; otherwise, insufficient drainage from the retromolar area will result. Failure to obtain relief in pericoronitis is often due to an insufficient incision of the gum in an effort to free it from obstructing the inflammatory exudate or pus formed just posteriorly from the tooth crown.

After adequate incision, thorough irrigation of the wound is carried out with a saline solution. The wound is then dried and flooded with tincture of metaphen or tincture of mercresin, and the patient is instructed to use a hot hexylresorcinol solution over the part every hour or so. Daily hot irrigations are carried out, and when the inflammatory process has subsided, the tooth can be extracted if necessary.

Extraction of a lower third molar

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tooth during acute inflammation of the overlying soft tissues invites complications. Extensive cellulitis of the face, jaws and associated structures of the neck not infrequently follows extraction of the tooth during this stage. Several cases of diffuse toxic cellulitis, involving the face, forehead and scalp, and at times spreading by the venous system of the face into the skull and ending fatally, have been observed. This complication is not so rare as the average dentist may believe.

Recently, in consultation, I examined a semicomatose patient who had had a very stormy ten days following the extraction of a partly erupted lower third molar, and who, at the time of my examination, showed signs of a fatal termination. Edema and induration involved all of the left side of the face, the eyelids, the forehead and the scalp and extended down the neck to the breast. Induration and edema of the back of the neck and occipital region were severe and some areas were fluctuant. The external ear was markedly edematous. Multiple through-and-through incisions, with drainage, were present beneath the mandibular border, in the neck and below the clavicle. The need for further incision and drainage above the breast and in the scapular area was pressing. From all incisions, an extremely foul, putrid-smelling pus drained. Ten days before, the patient, a young woman, was well, with the exception of a troublesome partly erupted lower third molar. The tooth was extracted under local anesthesia during the acute stage of pericoronitis.

Cases like the one just described are not so readily visualized by the average general dental practitioner, who usually sees the patient in the early stage of an infection, but is likely to lose contact with him when severe complications arise. Therefore, it seems necessary that the dentist view all early pericoronitis cases from the bacteriologic as well as the purely surgical aspect. He should constantly bear in mind that the virulent organisms always present in these cases may become extremely active. Overlying gum and gum pockets around partly erupted third molars furnish an excellent lodging place for Vincent's organisms, as well as different strains of the streptococcus and the staphylococcus. Many recurrent cases of Vincent's gingivitis are due to the harboring of these organisms around partly erupted lower third molars, and recurrent Vincent's gingivitis will persist unless the offending third molar teeth are removed. The extraction of these teeth, or of any tooth, should be postponed until all active lesions of Vincent's infection have been brought under control and have been quiescent for about two weeks.

The presence of hypertrophied tonsils, with enlarged and deeply formed crypts usually containing virulent pathogenic organisms, is not infrequently the cause of bacterial invasion of a tooth socket, with resulting complications, such as a rapidly developing cellulitis from three to five days after tooth extraction. The same lymphatics drain the tonsillar area and the third molar region, and undoubtedly a certain percentage of submaxillary abscesses requiring external incision and drainage are due to infection primarily harbored within the tonsillar fossa. Partly erupted lower third molars and infected tonsils must be considered as cesspools of infection, likely to cause a wide variety of toxic bacteriologic disturbances.

In suppurative pericoronitis associated with trismus, cellulitis of the adjacent structures may be well established before the patient seeks relief. If such is the case, a careful examination for areas of fluctuation should be made. A fluctuant area may be found in the buccal vestibule between the second and the third molar. This area is easily approached and the gum can be lanced to free the pus beneath the periosteum. This should be followed by hot antiseptic irrigation of

the part and the patient should be advised to use cold external applications. If the tissues beneath the mandibular border are edematous and tender on palpation, nitrous oxide-oxygen anesthesia may be required in order to open the mouth to permit inspection of the lingual vestibule, where an area of fluctuation is often found just below the mylohyoid ridge. This can be incised and drained. Early incision on the lingual side will often obviate external incision later. When fluctuation is definitely established in the submaxillary area and can be felt externally, external incision is, of course, indicated. Extraction of the tooth is postponed in these cases until the acute symptoms have subsided, which will usually be in about seven to ten days if proper drainage has been obtained.

Removal of the third molar teeth presents problems peculiar to itself, depending upon the position these teeth occupy in the jaw and the type of bone which surrounds the tooth. Probably the most common postoperative complication following extraction of a lower third molar is so-called dry socket. The socket is seldom dry as there is usually foul-smelling semiliquid matter present, and the term, necrotic socket, suggested by Berger, is much more appropriate. While the condition is of a minor nature, it can be, and usually is, a most troublesome and painful aftermath to tooth extraction. Much can be done to prevent this condition by preextraction prophylaxis and careful sterilization immediately before operation of all instruments to be used. The free use of tincture of mecresin beneath and around the gum prior to extraction, with protection of the socket from saliva immediately after extraction, and at least until the blood clot has sealed the socket, will do much to lessen the possibility of a troublesome socket condition. The question whether more cases of necrotic socket follow local anesthesia than general anesthesia is often asked. There was a time when more cases undoubtedly followed local anesthesia, but this is not true today. To my way of thinking, based upon a fairly wide experience, local anesthetic solutions as now supplied by reputable pharmaceutic houses play a very minor part, if any at all, in causing this troublesome condition.

The treatment of dry socket is best carried out in a conservative manner. All necrotic or semiliquefied blood clot is gently washed or removed from the socket with a warm antiseptic solution containing sulfanilamide and allantoin. The socket is then dried and isolated by cotton rolls and flooded with a mixture of iodine and glycerin. This is permitted to remain a few minutes and is then removed by suction. The socket is now dressed with iodoform gauze, in which has been incorporated an analgesic agent of choice. Most of these cases will require treatment for about a week or ten days.

The use of sulfanilamide in a tooth socket immediately after extraction as a precautionary measure against bacteriologic invasion and disintegration of the blood clot has been widely recommended. In my practice, I have not found this procedure so infallible as some advocates state it to be. As far as I have been able to observe, the use of sulfanilamide or any of its derivatives will not do any harm or hinder the healing process of a tooth socket when locally applied, but the amount that can be inserted in a socket is so small that its efficiency is questioned. The drug is not a bacteriocide, but rather bacteriostatic in action and, consequently, requires the use of a much greater quantity than can be inserted in a tooth socket. The internal administration of sulfathiazole for infections in and about the jaws has proved most satisfactory.

Probably among the most frequent sources of infection of an open tooth socket are periodontal lesions throughout the mouth. Pyorrhea alveolaris might be

considered the original "fifth column" group ever to attack man. The number of bacteria in pyorrhea pockets throughout the mouth is enormous, and such bacteria are ever ready to invade a new and fertile field, such as a tooth socket. Three cases of extensive cellulitis of the face, one ending fatally, have recently been observed at the Pennsylvania Hospital. All three resulted from attempts at "self-extraction" of loose pyorrheic teeth. The aim in attempts to prevent or reduce the incidence of bacterial complications following tooth extraction is to clean up gingival lesions prior to extraction.

Complications secondary to removal of third molar teeth are rather common. Fracture of the tooth and inability to remove it, fracture of the jaw, displacement of the upper molar into the maxillary sinus or into the pterygoid fossa or severe sepsis following extraction is not so rare as some dentists think. There is scarcely a day when the oral surgeon is not called upon to take over a "messed up" case—and I mean just that.

There are times when one might ask the question, "Is the oral surgeon an asset or a liability in dentistry?" When the general practitioner continually uses the specialist as some one to help him "out of a jam," oral surgery as a specialty is not an asset to the profession, no matter how highly skilled individual oral surgeons may be. There are certain types of impacted third molars whose removal is not in the field of the general dentist. Before undertaking the responsibility of operating in such cases, the dentist might well ask himself, "How much trouble am I going to cause this patient if I operate? Am I, as a busy dentist, capable of undertaking and successfully finishing what appears to be a difficult surgical procedure?" This might be the line of thought of a general dentist trying to evaluate himself in an honest manner. Probably, the improvement in local anesthesia solutions and the technic of their use has much to do with the many cases of mutilated mouth and jaws seen. The dentist, busy with the many problems of general practice and having a meager knowledge of surgical principles, with little, if any, training in surgery, is not infrequently tempted to go, with the aid of local anesthesia, far beyond his capacity in this field. This is one of the present-day tragedies of our profession. Extraction failures and complications following the extraction of teeth, especially the third molar, are an economic loss to the dentist. It is a wise man who recognizes his limitations.

Tooth extraction should be viewed as a surgical procedure at all times, and especially so when removal of a deeply impacted tooth is being considered. Well-planned and carefully executed operations, having consideration for the structures involved, will materially lessen traumatization of both the hard and the soft tissues. A hurried, unclean, sloppy method or the attempted removal of impacted teeth by operators having little knowledge of the principles involved always leads to complications. Gum flaps properly executed and permitting clear visualization of the overlying bone are most important. Failure to see the bone that obstructs the eruption of the tooth and will obstruct its surgical delivery is one of the most frequent causes of failure in the removal of an impacted tooth. It is the main reason for excessive trauma. Overlying bone which can be seen can be removed by sharp chisels and the tooth can be delivered from its socket with little trauma to either soft or hard tissues. Removal of teeth in this manner does not invite complications and subsequent discomfort. The use of the roentgen rays in preoperative study is almost an absolute necessity. Routine use of the roentgen rays so aids an operator that many difficult operations are simplified, because of a preoperative visualization of what is to be encountered and overcome.

An x-ray film may show the third molar to be impacted, but unless the crown and the entire root are fully shown, a proper interpretation cannot be made. It is sometimes necessary to take several exposures of an impacted molar in order to show the position of the crown in its relationship to the second molar, and also the position that the tooth occupies in the bone; i.e., whether it is lying toward the buccal or the lingual side or is centrally located. The preoperative x-ray study should also show the type of roots, whether straight, fused or curved. The density and thickness of the overlying bone can also be determined in this preliminary study. Because of failure to avail himself of such a preoperative study, the operator may face problems that he did not anticipate and, thereby the difficulties of the operation are increased. This is especially true if proper visualization of the size of the crown and its relationship to the second molar are not considered prior to extraction. If the x-ray study shows the crown to be abnormally large and situated well under the convexity of the second molar, much time can be saved by bisection of the crown. This procedure will also conserve the bone structure inasmuch as less bone will have to be removed and trauma will consequently be lessened. The technic of sectioning the tooth at the dentino-enamel junction or splitting the tooth in its long axis, once mastered, marks a distinct advance in the removal of impacted teeth.

When an unsuccessful attempt has been made to remove an impacted tooth, careful examination of the soft tissue, the bone and second molar should be made before any further operative procedure is undertaken. Not infrequently, such cases have been poorly handled, with resulting laceration of the soft tissues, considerable trauma to the bone and, possibly, fracture of the tooth. That the wound may be infected should not be overlooked. It is my practice, in the majority of these cases, to cleanse the parts, remove all loose spiculae of bone or tooth structure and insert a sedative dressing as often as necessary until the wound has partly or completely healed. The case can then be further studied by x-ray examination and removal undertaken. Unless this procedure is followed, the operator to whom the patient was referred may find himself "holding the bag" because of failure of the first operator, who may possibly have introduced infection into the wound.

Root apices which have fractured and are not readily accessible are, with wisdom, often left *in situ*. Repeated or prolonged attempts to remove a small apex of an upper or lower third molar, especially when it is difficult to see, often results in forcing the root further beyond reach. In the lower jaw, the contents of the mandibular canal may be injured and the root still not be recovered; and, in the upper jaw, a small apex can quite easily be forced into the maxillary sinus. The majority of third molars removed are vital, and leaving a small apex *in situ* is better judgment on the part of the operator than subjecting the patient to possible complications, as not infrequently seen after prolonged attempts at removal with resulting traumatization of the hard and soft tissues.

Many impacted teeth, especially in middle-aged or elderly patients, present considerable difficulty in removal, even for skilled surgeons. Not only should the degree of impaction be given careful thought, but also the temperament and physical condition of the patient should be taken into consideration. With multiple and difficult impactions, we have reduced our difficulties by hospitalizing patients. A well-equipped hospital operating room, properly staffed, with a skilled anesthetist, will simplify to a great extent the problem of removing these teeth. After a little practice, a dentist will find operating on a patient on a table to be considerably less fatiguing

than operating on the patient in the dental chair. In a hospital, difficult impaction cases can be given preliminary study and medication and, what is most important, can have immediate and adequate postoperative care and rest. In addition, the dentist can control the postoperative care of the patient, which he often cannot do in the office operations.

I am convinced that dentists should train themselves in hospital procedure and avail themselves of hospital facilities for the care of difficult impactions, which are seldom minor surgical cases. My experience shows that in difficult impactions, patients make a more comfortable recovery when hospitalized than when operated upon in the office.

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DENTISTRY'S OBLIGATION TO SOCIETY—WHAT CAN WE DO?

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GOVERNMENTS are ever changing, even the most stable governments. Forces, for the most part of an economic nature, tend to alter and direct governments as to both form and extent. To cope with the conditions which an economic upheaval creates, a government must adjust itself to these conditions.

It is of the greatest importance to those governed, regardless of the fundamental type of government, that the price of adjustment shall not in the end be a permanent diminution of personal liberty. Governments can be coercive, or they may tend to increase personal liberty. It is, I believe, generally agreed that meeting emergencies tends to restrict personal liberty, and that a true democracy must plan to withdraw whatever restrictions are imposed, once the emergency is past.

This is recognized in the authority given the President in time of war, and it is true if we are to adhere to the belief of our founding fathers who wrote into the preamble of our constitution the following objectives of government: "To form a more perfect union; establish justice; insure domestic tranquility; provide for the common defense; promote the general welfare and secure the blessings of liberty to ourselves and our posterity."

Samuel Joshi, of the University of Bombay, while exchange professor to the University of Nebraska in the early 1920's, stated that, as nearly as he could discern from history, a greater number of people in India than there are in the United States tried our form of government hundreds of years ago, and that it had failed. Our prohibition amendment, adopted in 1918, was pointed to as one which would not stand, and the fifteenth amendment, giving all citizens, regardless of previous conditions of servitude, the right of franchise, was cited as a section of our constitution not complied with in the true spirit of the law. Professor Joshi predicted continued alteration and adjustment of our constitution, declaring us only an infant as a government. His remarks were accepted with tolerance.

The late H. B. Alexander, of the Uni-

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