The Extraction of Wisdom Teeth: Information on Procedures and Problems

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General Information

Removal of wisdom teeth, referred to as third molars, is one of the most frequently performed oral surgery procedures. Trumpet players dread the thought of having any teeth extracted, but wisdom teeth seem to be particularly notorious because of their reputation for causing pain and complications. This article is designed to present, as clearly and concisely as possible, what brass players should know regarding the procedures and risks associated with the extraction of third molars.

Wisdom teeth usually come in between the ages of seventeen and twenty-three. As such they are the last adult teeth to erupt, and come in at an age when we are older and presumably “wiser.” Dentists number our teeth beginning with the upper right going across to the upper left, from one to sixteen, and then from seventeen to thirty-two on the lower left going across to the lower right. Therefore, the four wisdom teeth are properly numbered as follows:

I. Upper right third molar = tooth #1
II. Upper left third molar = tooth #16
III. Lower left third molar = tooth #17
IV. Lower right third molar = tooth #32

The best way to see how third molars are developing, and whether or not they may have to be extracted, is to have an X-ray taken of the jaw in the third molar area. This is the point at which a regular dentist may recommend an oral surgeon. The X-rays taken for regular check-ups by a general dentist (bitewings and periapical X-rays) are taken on small X-ray films. These are excellent for detecting cavities and for viewing the depth of decay in various teeth. They are not always advantageous, however, in detailing third molar development, since third molars often form farther back in the mouth than the standard X-ray films can comfortably reach. This is especially true if the patient has an active “gag” reflex to the placement of bitewing X-rays. For this reason oral surgeons typically take panoramic X-rays.

Panoramic films give doctors a more complete view of the entire jaw and root structure for both upper and lower teeth. This view helps determine spatial relationships for surgical purposes. As third molars develop, it is advisable to have panoramic X-rays taken and examined by an oral surgeon. Ideally, one would have this done at the age of sixteen. In most cases a general dentist refers a patient to an oral surgeon for this purpose.

When oral surgeons study panoramic X-rays with regard to third molar development and possible extraction, they are concerned about two crucial areas. These are: the relationship of the lower third molars (nos. 17 and 32) to the mandibular nerve, and the proximity of upper molars (nos. 1 and 16) to the maxillary sinuses. The maxillary sinus is a cavity which is lined by a thin epithelial (skin-like) tissue. If the sinus is perforated, it could create a direct opening between the sinus and the oral cavity. This will be discussed in detail later.

The mandibular nerve (sometimes referred to as the inferior alveolar nerve) is actually the third division of the trigeminal (“three-headed”) nerve which provides sensory information to the mandible (lower jaw), the lower teeth, the posterior one-third of the tongue, and the lips and face. There are two mandibular nerves, one on each side of the face extending to the midline. Therefore, if damage were to occur to the right mandibular nerve, this would affect the lower right jaw to the midline of the face, including the lower right teeth, the right posterior one-third of the tongue, and the lower right lip to the midline. The resulting numbness is called paresthesia (anesthesia due to physical trauma to a nerve, as opposed to anesthesia induced by medication). To a trumpet player it is obvious how important the proximity between root structures and the mandibular nerve becomes when evaluating the risks of extraction. If the roots of a third molar closely approximate the mandibular nerve, then extraction of the tooth could impinge on the nerve even to the point of completely severing the nerve. If paresthesia results it can last for several weeks, several months, or in extreme cases, indefinitely. The extent (i.e., the amount of tissue involved) and longevity of paresthesia are directly related to the degree of trauma inflicted on the nerve. If this unfortunate circumstance is severe...
enough, it can potentially be a career ending injury to a brass player.

The keys to minimizing the possibility of paresthesia appear to be early detection and extraction of third molars before root structures are fully formed. A recent clinical study of more than 9,500 patients by Drs. Osborn, Frederickson, Small, and Torgerson (four Detroit-area oral and maxillofacial surgeons) found that the optimum time for third molar extraction is between the ages of twelve and twenty-four. These doctors concluded that paresthesia was four times more prevalent among twenty-five to thirty-five year-olds than in twelve to twenty-four year-olds, and was an even greater risk after thirty-five. They further observed that the cause of this increased risk was directly related to the completion of root formation and the proximity of the teeth to the inferior alveolar nerve (mandibular nerve). Fortunately, the study found that when paresthesia did occur, 55.3 percent of the patients who suffered from this condition had normal sensation within two months, and 78 percent recovered within three months. However twelve percent still had nerve dysfunction six months after surgery. Of the 16,127 mandibular third molar extractions done in this study, 16 percent were erupted, while 84 percent were impacted (not erupted). The findings were summarized at the conclusion of an American Association of Oral and Maxillofacial Surgeons Surgical Update:

...as patients become older there exists an increased chance of surgical morbidity with reference to nerve paresthesias and alveolar osteitis. Also indicated – as patient's age and teeth continue to develop and remain unerupted, the incidence of postoperative complications rise and become more significant and prolonged. The oral surgeons thus concluded that, if indicated, removal of third molars should be completed in the teenage years to decrease both operative and postoperative morbidity. Functional third molars should be retained and restored. Because this study indicated significantly fewer complications among younger age groups, one should evaluate patients for removal by the time skeletal growth is complete (16-18 years of age).

A recent review of the literature shows that most paresthesias will resolve in one to two years if left alone. It should also be noted that removal of teeth at an early age results in more rapid healing, and that this in turn avoids long delays in the resumption of normal practice routines for musicians.

Example Cases

Example I reveals how critical the proximity of fully formed root structures to the mandibular nerve can be. In this panoramic X-ray, the lower left third molar (#17) is fully impacted (not erupted). The close proximity of #17 to the second molar (#18) would make the eruption of #17 virtually impossible. The roots of #17 are directly on top of the mandibular nerve. If this impacted third molar presses against the second molar (#18) as #17 tries to erupt, it could cause extensive pressure and subsequent pain. Infection and decay could result if an opening in the gum tissue developed between #17 and #18 which could allow saliva to “leak” along the length of #18’s root surfaces. Pressure created from impacted teeth can cause overcrowding and irregularity of other teeth. Because of the relationship of root to nerve, however, extraction here could cause paresthesia. Had the third molar in Example I been removed before the root structure was fully formed, an easier and safer extraction with less chance of nerve damage would have been possible. This is an excellent argument for early detection of impaction and subsequent early extraction.

Example II reveals a different set of concerns. This X-ray views the upper left third molar (#16) and the lower left third molar (#17). Both of these wisdom teeth are partially erupted, both are coming in straight, and both have room to erupt further. If it became necessary for an oral surgeon to extract these teeth at the time of this X-ray, the problems could be as follows: (Upper left #16) The roots of this example are in close proximity to the maxillary sinus. Removal could possibly cause sinus perforation. If the maxillary sinus is ruptured, several undesirable consequences can result. These include oral-antral (sinus) infection due to the direct contact between oral and sinus tissue fluids, chronic drainage, and subsequent sinus inflammation. When a rupture does occur it is treated in the following manner:

1) The socket is “packed” with resorbable sterile gel-foam to close the wound.
2) The surgeon employs multiple tight sutures (stitches).
3) The patient is advised to avoid “blow- ing his nose” for ten to fourteen days, or longer if necessary.²

4) For trumpet players, practicing should be discouraged for at least two to four weeks.³

The lower left third molar (#17) in Example II is in close proximity to the mandibular nerve. Even though the potential for problems here is much less than in Example I, the patient should be aware of the relationship of tooth to nerve and of possible complications. This patient could very likely be advised to wait one to one-and-a-half years to allow for any additional eruption to occur and then to have #16 and #17 extracted.

Example III illustrates a different type of third molar impaction known as mesioangular impaction. Here the lower right third molar (#32) is impacted at a right angle towards the adjacent teeth. Failure to extract this tooth could cause pressure against other teeth in the vicinity, creating swelling. The pain this creates can be severe and often radiates towards the ear. This can cause the entire side of the face to ache. Eventually this condition could endanger the alignment of the teeth on that side of the jaw. Possible paresthesia from nerve damage here is less likely than in Examples I and II because the roots are not near the mandibular nerve. However, the incision necessary to remove this third molar will be longer than in the other examples. This may create more post-operative soreness and carry a greater risk of infection. If #32 had been extracted when the root structure was less developed, or even non-existent, the incision would have been shorter, therefore healing time would have also been shorter.

As we have seen, spatial relationships between teeth, bone, nerves, and oral and nasal cavities, often necessitate the extraction of wisdom teeth. Another condition called pericoronitis involves the gumline and can also indicate necessary extraction. Pericoronitis usually occurs when a lower third molar does not erupt entirely through the gumline while simultaneously, the upper third molar is erupted. This results in the “sandwiching” of gum tissue between opposing third molars and subsequent swelling of the gumline to the extent that it interferes with occlusion (biting). As a result of this swelling, every time the patient occludes he bites down on the gum, causing pain and further inflammation. Resultant pain can be severe and is further complicated by the possibility of infection.

Example I: Fully impacted left third molar (#17, large arrow). Smaller arrows follow the path of the mandibular nerve revealing the close proximity of the nerve to the root structure of #17.

Example II: Upper left third molar (#16). Arrow shows the close proximity of #16’s root structure to the maxillary sinus.

Example III: Lower right third molar (#32) is impacted at a right angle towards the adjacent teeth. This is classified as a mesioangular impaction.
**Decisions Before Surgery**

When it is decided that a patient would benefit from the removal of third molars, decisions must also be made on how many to extract and what kind of anesthesia to use. General anesthesia, which renders a patient totally unconscious, is normally recommended if teeth are impacted because the procedure is often too traumatic for the patient to experience. It is also used for multiple extractions – again for trauma related reasons. Whenever general anesthetic is used, it is almost universally recommended that all planned extractions be done at one time in order to minimize the number of exposures to the anesthetic. Most patients find that there is not much additional postoperative discomfort from multiple extractions as opposed to single extractions, especially if the teeth were impacted. Also, the practicality of going through one surgical ordeal and one post-operative period makes good sense to a working brass player. If a local anesthetic such as Novocaine is used, patients often elect to have only right or left side third molars extracted at one time in order to lessen the anxiety level of consciously sitting through four extractions.

If only one third molar on a given side is removed, and the opposing molar is retained, the patient runs the risk of the remaining molar supraperuputing (continuing to erupt beyond its normal range of occlusion). This takes place because the retained third molar has no antagonist during normal occlusion, and is consequently free to continue erupting. Failure to extract this antagonist often results in supraperupuration to the point that teeth can occlude into opposing gum tissue, a situation similar to pericoronitis. For this reason dentists almost universally recommend extracting third molar antagonists.

**Breakage**

Another area of concern, and one which may determine whether or not nerve or sinus membrane damage takes place, is the possibility of fracturing a third molar during surgery. Approximately one out of every three third molars breaks during extraction. This can be caused by abnormally hard bone, brittle teeth, or badly decayed teeth. If this occurs, the surgical digging that takes place in order to remove the remaining root structure can increase the risk of nerve damage and maxillary sinus membrane perforation, and can increase overall tissue trauma. The earlier in the development of root structures that third molars are removed, the less likely breakage will occur. A clean extraction, with no breakage, rarely causes nerve or sinus complications.

**After Surgery**

Once a nonimpacted extraction is completed, the patient will be asked to bite down on sterile gauze for thirty to sixty minutes to help create a clot and stop the bleeding. Additional gauze is often provided should bleeding continue later in the day. Normal amounts of food can be eaten, but spicy foods, alcoholic beverages, and sharp-edged foods such as pretzels or potato chips should be avoided.

Several methods exist for keeping the wound clean and free of food particles. Some doctors give patients water syringes. This is not the method of choice because of the potential a jet-spray of water has to dislodge the clot, creating a "dry socket". A better method is a solution of hydrogen peroxide used as a rinse three times a day after meals. This kills bacteria around the wound and dislodges food particles from the area without risking clot damage.

Dry socket, known medically as localized acute osteitis occurs when the blood clot that forms in a wound socket breaks down and is dislodged, or when a poor blood supply to the wound exists, thus hindering the formation of a clot. These situations create a "dry socket" where raw bone and nerve endings are exposed. This condition is very painful. Treatment is palliative (pain reducing) but does not normally require an anesthetic. Dry socket paste containing eugenol (clove oil extract), camphor, benzocaine, and other ingredients is placed onto sterile gauze. The gauze is then positioned into the socket with tweezers and left in place. This is repeated daily for five to ten days, or until the condition resolves itself.

For many extractions, sutures (stitches) are used to close the wound. Sutures are utilized in instances involving a "wide" socket, and are needed for surgical extractions where an incision is necessary along the gumline in order to gain access to the molar, such as is seen in a mesioangular extraction (Example III). Suturing promotes quicker healing, less chance of infection, and less bleeding.

**Planning for Surgery/Recovery**

It is unrealistic to plan on playing trumpet immediately after having oral surgery. Certainly
performances and “pressure situations” should be avoided entirely for several weeks after surgery. It is best to plan on having oral surgery done over an extended vacation so that recovery can occur without worry about a deadline or playing commitment. Should the patient suffer from paresthesia due to nerve damage, it may be impossible to play. In most cases this condition, should it appear, will resolve itself in a short period of time.

The decision to resume playing should be determined by consulting with the oral surgeon and by using common sense. The doctor can give you a realistic appraisal of how difficult the procedure will be, and an estimate of how long it will take to facilitate proper healing. When practicing resumes, the player would be wise to stop playing immediately if acute pain or bleeding affects the area of extraction. Physically demanding playing – i.e. high-register work, extremely loud dynamic levels, or long etudes requiring maximum effort, should be avoided in favor of a more fundamental approach to musical as well as physical recovery. Warm-up exercises including long tones, scales, lip slurs, moderate to soft dynamic levels and tonguing exercises will help attain a quicker return to form. After not playing for an extended period, these types of activities seem to make good sense and will help areas of lip sensitivity and endurance at the same time. Trumpeters can select solos and etudes which are less demanding physically but satisfy the need to begin working again.4

If patients rush the recovery process in favor of a quick return to playing, they risk a much higher probability of bleeding, infection, and additional discomfort. This in turn will needlessly delay the healing process and be much more costly in the long run. A musician’s best ally during the recovery period is his doctor. If questions arise that the patient cannot answer, the oral surgeon should be notified. Doctors are generally very understanding when they realize the concerns trumpet players have regarding these procedures. If a doctor will not take the time to answer questions to your satisfaction, find another who will.

Conclusion

This article stresses the need for early detection and treatment of third molar problems. It is often difficult to face dental care and easier to put off facing these decisions to some nebulous date in the future. We justify our negligence by rationalizing that we are simply too busy to deal with this condition now. As careers progress, however, they generally tend to get busier, and the stakes become even higher should serious problems arise. It is in a young musician’s best interest to have panoramic X-rays taken between the ages of sixteen and eighteen by an oral surgeon and, if necessary, have third molars removed. This can alleviate the increased potential for complications that exists if third molars are left to be dealt with later in life.

Notes

2 Penicillin is often prescribed as the antibiotic of choice to prevent oral-antral infections. If a patient is allergic to penicillin the dentist will probably substitute a drug like erythromycin. The reason for this precaution is that a sudden sneeze (if the patient catches a cold) can re-rupture the healing membrane.
3 This is recommended because of the pressure created between the nasal and oral cavities when playing trumpet, and the likelihood that practicing would delay the healing process, aggravate the wound, or rupture the sutures, opening the cavity once again.
4 Excellent examples of this type of therapeutic recovery material could include Arban’s The Art of Phrasing found in his Complete Conservatory Method (pp.191-245) or the Reinhardt Selection of Concone Studies.

Panoramic X-rays were provided by Dr. Wayne F. Wagner, an oral surgeon from Park Ridge, Illinois.

This article is a revised version of “Understanding the Procedures and Risks Involved in the Extraction of Third Molars,” which was first published by Mortenson and Kolar in Medical Problems of Performing Artists, Vol. 3, September, 1988.

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