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IMPACTED THIRD MOLARS

Colgate Dental Education Programs
Special Topic No. 16

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IMPACTED THIRD MOLARS

DECISION MAKING ON EXTRACTING IMPACTED THIRD MOLARS: INFORMATION FOR DENTAL PRACTITIONERS

Third molar surgery is the most commonly performed oral surgical procedure with most of the young adults having one or more impacted third molars[1]. When impacted third molars are associated with pathology or recurrent symptoms, there is a consensus among clinicians about the need for extraction[2]. However, there is a debate regarding the need for prophylactically removing asymptomatic disease-free impacted third molars.

Unlike other countries including New Zealand[3], Australia does not have guidelines for third molar extraction (TME). Australia shows high rates of TME under general anaesthesia and most of these (85%) are prophylactic. The estimated annual direct cost of TME is $350 million[4] in addition to other indirect costs such as days absent from work/school and post-operative morbidities. Accordingly, it is recommended that clinicians discuss with their patients the current evidence on the necessity for TME and explain risks and benefits of TME. Additionally, clinicians need to explore patients' concerns and values and the best timing for TME. Also, patients need to be aware that there are some indications for prophylactic TME to facilitate orthodontic treatment, such as, gaining more arch length, or in preparing for jaw correction surgeries. Discussing all aspects related to TME with the patient is important not only medico-legally but also in improving the decision's quality. This pamphlet highlights the best available evidence for TME.

Current evidence for retention versus prophylactic extraction of asymptomatic disease-free impacted third molars

A Cochrane review published in 2016 investigated the impact of retention versus prophylactic extraction of asymptomatic disease-free impacted third molars on several outcomes[5]. The review identified only two studies: a prospective cohort and a randomized control trial (RCT), with a follow-up period of more than 5-years. This review shows that there is no increase in the prevalence of dental caries among patients who retained versus removed, their asymptomatic impacted third molar (soft tissue or bony impacted), in the cohort study. Very low-quality evidence (obtained from the same cohort study) indicates that retention versus prophylactic TME influences periodontitis of the second molar. However, periodontitis is not considered as an indication for prophylactic TME as periodontitis is treatable[6]. Additionally, there was a minimal decrease in arch length (1.03mm) in those who retained their asymptomatic impacted third molars compared with those who had them removed. A jaw dimension difference was reported in the RCT. However, the observed difference in arch length is believed to be clinically insignificant as a cause of late teen crowding[2]. No randomized clinical trials have reported adverse events, risk of developing cysts, tumours, or inflammation/infection in retention versus prophylactic TME. Therefore, the current evidence does not support or refute the practice of prophylactic extraction of asymptomatic disease-free impacted third molars.

Risks associated with third molar surgery

In general, TME is accompanied with intra-operative and post-operative complications which negatively impact on patients' quality of life[7]. Although most of these complications are transient, some of them might persist for longer periods or even become permanent. Most patients experience post-operative pain, swelling, trismus, tenderness and tiredness. Moreover, many patients (48%) experience a periodontal defect distal to the second molar. Other complications might include alveolar osteitis (2.7-26%), infection (0.7-4.2%) or secondary bleeding (up to 5%).

The incidence of inferior alveolar nerve injury varies from 0.35 to 8.4% however, most patients recover within 6-months post-operatively[8]. Permanent inferior alveolar nerve injury, the most common cause of litigation in dentistry, is observed in 0.9% of patients undergoing TME[9]. To reduce the risk of inferior alveolar nerve injury, it is recommended that a Cone Beam CT (CBCT) scan be used when the Orthopantomogram (OPG) shows that the third molar is close to the inferior alveolar nerve. The CBCT has a better risk prediction for inferior alveolar nerve injury than the OPG[10]. In situations where there is high risk of inferior alveolar nerve injury, coronectomy might be a safer option without increasing the risk of post-operative infection[11]. Moreover, lingual nerve injury risk varies based on the surgical approach used with less risk associated with avoidance of lingual flap retraction during the surgery (2.6%) [12]. Although most patients recover, 0.4% suffer permanent lingual nerve damage[12].

Unusual complications can include mandibular fracture (0.0049-0.2%) which is associated with patients' age. There are some case reports of severe infection, tooth displacement, aspiration of tooth fragments and even death. There is a reported variability in providing patients with information regarding the risks associated with TME among the oral and maxillofacial surgeons consulted when gaining informed consent from patients for the TME procedure[13]. The information provided here might help clinicians in better informing their patients about risks associated with TME.

Orthodontic treatment and the decision on prophylactic third molar extraction

The current evidence does not justify the practice of prophylactic extraction of asymptomatic impacted mandibular third molars to prevent lower anterior teeth crowding after orthodontic treatment[14]. Prophylactic TME might be performed to facilitate orthodontic treatment or jaw correction surgery (orthognathic surgery). This includes moving the first/second molar distally to correct Class II or Class III molar relationship or gaining space to correct crowding without extracting functional premolars. The procedure of moving molars distally is called molar distalization. Molar distalization is becoming popular, facilitated by the availability of temporary skeletal anchorage devices[2]. However, the decision should be based on the need for space gain of 3mm or less per quadrant, availability of distal bony support using Cone-Beam CT scan and good anchorage[2]. If more space is needed, extraction of premolars is recommended. If the decision is made to carry out prophylactic TME for molar distalization, it is recommended that this happens at the age of 17-24 years for more treatment compliance such as periodic device activation and immediately before distalization to reduce treatment time[2].

Orthognathic surgeries might need prophylactic TME to prevent the potential of a bad bony split although there is a lack of consistency in the published research data[2]. Repositioning the mandible using a specific cut bilaterally on the ramus and body of the mandible is called Bilateral Sagittal Split Osteotomy (BSSO)[15]. If the clinician and the patient agree on prophylactic TME in preparation for the BSSO, TME should be recommended 6-months before the BSSO. This period will allow for a complete bone remodelling. On the other hand, repositioning the mandible using a vertical cut in the ramus (Vertical Ramus Osteotomy) does not need prophylactic TME as the operation is distant from third molars. Repositioning the maxilla using a horizontal cut at the lateral maxillary buttress is called Le Fort I osteotomy[16]. The presence of maxillary impacted third molars might facilitate Le Fort I osteotomy[17].

Shared decision-making versus informed consent in third molar extraction

The current clinical practice in informing patients about TME is via verbal consultation and information leaflets. The receipt of this information is then confirmed by the signing of the informed consent document. Considering that clinics are often over-booked[18], third molar patients might be hindered in receiving adequate information[19]. As informed consent is medico-legally important, patients and clinicians need to share the decision on TME. The uncertainty about the evidence to recommend the removal of asymptomatic disease-free impacted third molars needs to be communicated clearly to patients as well as risks and benefits of receiving the surgery. Evidence suggests that knowledge of third molar patients is positively associated with participation in third molar extraction decision-making[20]. Therefore, patients should be encouraged to express their concerns and values and to take an active role in third molar extraction decision-making. When dental patients are involved in dental treatment decision-making, it is associated with a better oral health-related quality of life[21]. It is worth noting that patients who are privately insured are more likely to adhere to their dentist's recommendation for prophylactic TME than those who are not insured[22]. When a decision is made to retain an asymptomatic impacted third molar, patients need to be aware that active surveillance is recommended every 2-years which includes thorough clinical and radiographic examinations[5]. Active monitoring of the asymptomatic disease-free third molars every two years is argued to be a cost-effective alternative to prophylactic TME[4]. Figure 1 shows the decision tree for the management of impacted third molars.

Decision Tree

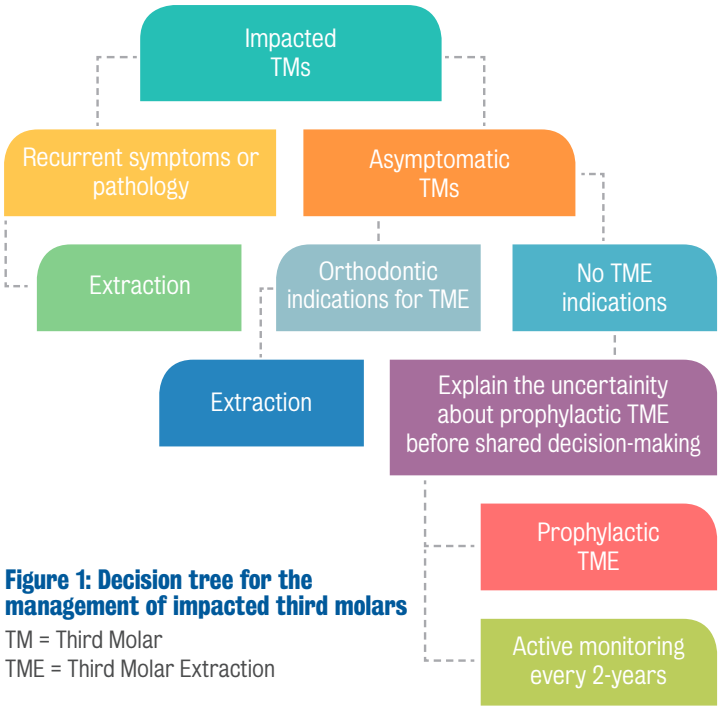

Figure 1: Decision tree for the management of impacted third molars

TM = Third Molar
TME = Third Molar Extraction

Summary

- Impacted third molars that are associated with recurrent symptoms or pathology are recommended to be surgically extracted.
- For the asymptomatic disease-free impacted third molars, the current evidence does not support or refute the practice of prophylactic extraction.
- The uncertainty regarding retention versus prophylactic extraction of asymptomatic disease-free impacted third molars should be clearly communicated to patients.
- Patients need to be adequately informed about the risks and benefits associated with third molar extraction.
- There are considerations in performing prophylactic third molar extraction for orthodontic treatment and/or preparation for orthognathic surgery that should be taken into account.
- Shared decision-making on third molar extraction might be an opportunity to improve the decision quality and thus, oral health-related quality of life.
- If a patient, under the guidance of his/her experienced dentist/oral surgeon, decides to retain his/her asymptomatic disease-free impacted third molars, active surveillance every 2-years is recommended to eliminate any potential adverse effects.
- Further studies including well-designed randomized controlled trials or high quality long-term prospective cohort studies are required to improve decision-making on asymptomatic disease-free impacted third molars.

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