

# NEW PERSPECTIVE ARTICLE

## Prophylactic Extraction of Third Molars: Evidence-Based Dentistry

### Extracción profiláctica de terceros molares: Odontología Basada en la Evidencia

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#### ABSTRACT

This new perspective article was performed to investigate the evidence from published dental literature about the prophylactic extraction of asymptomatic (or disease-free) impacted third molars (ITM) in adolescents and young adults. This clinical procedure is common until today and has been the origin of controversy among the dental community worldwide. However, evidence-based data from well-conducted clinical studies and systematic reviews are not sufficient to justify the routine prophylactic extraction of ITM. Active surveillance at regular intervals has been proposed as a better management strategy. As a conclusion, surgical removal of ITM is only justified in the presence of specific pathosis, independently of the patient's age.

#### KEYWORDS

Prophylactic removal; Impacted third molars.

#### RESUMEN

El presente artículo se realizó para investigar la evidencia en literatura dental publicada sobre la extracción profiláctica de terceros molares impactados asintomáticos (o libres de enfermedad) (TMI) en adolescentes y adultos jóvenes. Este procedimiento clínico es común y ha sido el origen de la controversia entre la comunidad dental en todo el mundo. Sin embargo, los datos basados en evidencia de estudios clínicos y revisiones sistemáticas no son suficientes para justificar la extracción profiláctica rutinaria de TMI. La vigilancia activa a intervalos regulares se ha propuesto como una mejor estrategia de manejo. Como conclusión, la remoción quirúrgica de TMI sólo se justifica en presencia de patología específica, independientemente de la edad del paciente.

#### PALABRAS CLAVE

Remoción profiláctica; Terceros molares impactados.

## INTRODUCTION

Third molars or “wisdom teeth” are the final teeth to erupt in the oral cavity. In some cases, the eruptive process of these molars may be inhibited due to the lack of sufficient space in the dental arcades (1, 2). Impacted third molars (ITM) are the most common developmental disorder of the human being (3). Removal of third molars is the most commonly performed oral surgery worldwide (1, 4-6). According to Friedman, ten million third molars are extracted in the US each year, with an annual cost of over \$3 billion (7); while in England and Wales, expenditures for the same reason amounted to around £ 5.2 million between 1995 and 1996 (4). So, third molar surgery generates significant income for dental professionals, particularly for oral and maxillofacial surgeons (7).

A high percentage of unerupted third molars may remain asymptomatic throughout life (8). Otherwise, in only 12% of total cases, ITM are related to pathological important conditions such as third molar malposition/non-functionality (e.g. absence of antagonist tooth), infection, cellulitis, non-restorable carious lesions, pericoronitis, periodontal disease, cysts, tumors, and second molar and/or bone destruction (4, 5, 9, 10). Therefore, little controversy exists about their surgical removal when they are properly diagnosed. However, the justification for prophylactic extraction of disease-free ITM has remained less clear for many years (4, 6, 9, 11, 12).

## DEFINITION AND REASONS FOR PROPHYLACTIC EXTRACTION

Mettes et al. (13) defined the prophylactic removal of asymptomatic ITM as “the surgical removal of wisdom teeth in the absence of local disease”. (The term “asymptomatic” means that the patient has not manifested pain, complaint, or discomfort, or exhibited radiographic signs of pathosis related to one or more ITM (2, 14).

According to this statement, the American Academy of Pediatric Dentistry (AAPD) guidelines (15), a radiographic examination is indicated in late adolescence to assess the presence, position, and development level of third molars. Likewise, the American Association of Oral and Maxillofacial Surgeons (AAOMS) recommends that a decision to remove or retain third molars should be made before 25 years old (16).

In general, prophylactic removal of third molars has been suggested in young patients in order to reduce the morbidity due to the tooth retention, mainly the high incidence of tooth impaction (13, 17, 18), and following the concept “an asymptomatic third molar does not necessarily reflect the absence of disease” (19). Thus, some clinicians have advocated the prophylactic extraction for reasons comprising lack of a vital role in the oral cavity, increased risk of distal caries in second molars, pericoronal pathosis like cysts or tumors if these teeth are retained, and for avoiding a higher trauma or discomfort when the surgical extraction is performed at older ages (1, 13, 20). For example, in a retrospective study, Srivastava et al. (20) concluded that prophylactic extraction of mandibular ITM is strongly suggested when these teeth exhibit a mesial angulation between 30° and 70°, in order to decrease the incidence of distal caries in the second molars. Furthermore, many orthodontists also propose the premature removal of ITM to stabilize the normal occlusion after completing the orthodontic therapy, and to prevent the late mandibular incisor crowding, a phenomenon related to the pressure exerted by erupting third molars. Even, some clinicians have proposed removing these teeth while they are still developing in jaw bone (7). However, different several single well-conducted clinical studies and systematic reviews have shown that there is scarce evidence to support all these assumptions or recommendations, and that it is almost impossible to predict whether an ITM will develop any pathological condition in the future (2-4, 7- 9, 11, 13, 14, 17, 18, 21).

## NEED FOR PROPHYLACTIC REMOVAL OF ASYMPTOMATIC THIRD MOLARS

At present, there is no general agreement among oral clinicians regarding the need for prophylactic removal of asymptomatic third molars (2, 12, 17). Although a substantial number of clinical studies have been published on this topic, the conflicting results still hinder the decision-making process in the clinical setting (18, 22). These controversial findings are the product of differences among the studies, regarding to diverse methodological issues, such as study design, sample size or monitoring (follow-up) time (6, 18). Additionally, Friedman (7) expresses that, even currently, five “historical” myths regarding third molars prevail among the dental community: (i) third molars have a high incidence of pathology; (ii) early removal of third molars is less traumatic; (iii) pressure of erupting third molars causes crowding of anterior teeth; (iv) the risk of pathology in ITM increases with age; and (v) there is little risk of harm in the removal of third molars.

Published dental literature argues that the pathological processes caused by ITM have been excessively overestimated (22). Furthermore, and according to Lopes et al. (8), ITM surgeries on patients with no good reasons involve an unnecessary expenditure to purchasing materials and equipment, cost to the patient in both time off school and/or work and postoperative complications, and further, it may result in potentially ethical or legal problems. Additionally, there are potential intra and postoperative complications associated with the removal of ITM, including pain, bleeding, local swelling or infection of soft tissues and bone, trismus, mandibular fractures, oro-antral communication, dry socket, and nerve injury – resulting in a possible paresthesia or anesthesia–, which may cause school or work absenteeism up to 10 days (5, 17, 23). It is a better strategy, therefore, to implement a watchful monitoring of asymptomatic third molars (2, 13). In the same

context, Marciani (9) has mentioned that, in the absence of demonstrated pathosis, symptoms or orthodontic considerations, patients may be subjected to unnecessary pain, surgical risk, and adverse economic consequences. In summary, these authors in general consider that asymptomatic or disease-free ITM should be left untouched and screened.

## INDICATIONS FOR THE SURGICAL EXTRACTION

Dentists’ management of partially or fully ITM is based on the individual assessment on the presence of symptoms or clinical and radiographic evidence that indicate oral disease (12). However, diverse studies have demonstrated considerable intra- and inter-dentist variability –including wrong diagnosis– concerning to decisions to extract or not asymptomatic impacted third molars (9, 24). Regarding this, the criteria defining the indications for the surgical extraction of these molars are still the origin of considerable debate among dental practitioners (6, 8, 9, 19). Due to these reasons, diverse clinical practice guidelines have been developed in an attempt to increase the professional performance, and to assist the clinicians, patients and parents in making decisions about the appropriate management of ITM (22). Some noteworthy examples of recent clinical guidelines, which can be consulted on internet, are the “Prophylactic removal of pathology-free wisdom teeth: Rapid assessment” from the Belgian Health Care Knowledge Center (25), the “Clinical practice guidelines for oral and maxillofacial surgery” from the AAOMS (16), the “Surgical removal of third molars” from the Institute of German Dentists (26), or the “Prophylactic removal of wisdom teeth: A review of the clinical benefit and guidelines” from the Canadian Agency for Drugs and Technologies in Health (1).

Prophylactic removal of asymptomatic disease-free ITM is a surgical procedure still common nowadays. According to Camargo et al. (6), the management of partially and fully ITM

differs among practitioners, dental schools and countries; even within the same country there can be different philosophies of treatment. Along with their clinical expertise and individual patient values, oral/maxillofacial surgeons, general dentists and researchers must determine if there are valid and reliable evidence to support this practice.

## CONCLUSIONS

Based on the information provided above, we can conclude that:

- There is a lack of reliable evidence to support the prophylactic removal of disease-free ITM in adolescents and young adults. As routine procedure, this treatment is unjustifiable.
- Due to misinformation and myths, this clinical procedure continues to be promulgated by many dental practitioners worldwide.
- A more suitable strategy is the active and careful monitoring, at regular intervals, of asymptomatic ITM, based on clinical experience.
- Each case of ITM should be carefully and individually assessed, estimating the balance between risk, benefit, and cost.
- Patients should be completely informed about all possible treatment options. Their perspectives and values must be taken in account in the clinical decision-making process.

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