

Third molar impaction

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ABSTRACT

Third molar impaction is a pathological condition in which a ‘wisdom tooth’, which is the last permanent tooth to erupt in each quadrant of the oral cavity, lacks enough room to accommodate them and consequently fail to erupt or does not erupt properly. Third molar impaction presents with a number of oral and related health challenges. Early diagnosis and prompt and appropriate management will improve prognosis and prevent the associated complications. This review paper provides summarized information on the concept, aetiology, symptoms, effects, dangers, complications, diagnosis, and management of third molar impaction.

INTRODUCTION

According to [Romer et al. \(2012\)](#), an impacted tooth is one that fails to erupt; they are retained throughout that individual’s life time unless extracted or exposed surgically. Teeth may become impacted because of an adjacent tooth, dense overlying bone, excessive tissues or genetic abnormality.

Tooth impaction is a pathological condition in which a tooth cannot erupt into its normal functioning position ([Bishara, 2000](#)). Reports of impaction and eruption failures in primary teeth are relatively rare compared to permanent teeth.

Impaction is usually caused by the overcrowding of teeth, which leaves insufficient room for a new tooth to emerge. Impaction can occur when a baby tooth is lost, before the corresponding new tooth is ready to emerge, which allows the remaining teeth to drift into the space reserved for the new tooth. However, most teeth that become impacted are called ‘wisdom teeth’ (third molar). Wisdom teeth become impacted because they are the last permanent teeth to erupt and, sometimes, the jaw lacks enough room to accommodate them. The mandibular third molars are the more commonly impacted teeth found in humans than their maxillary counterparts.

Impacted teeth are likely to become infected and are of little use in chewing, so they are usually extracted (James, 2018).

Most often, the common cause of tooth impaction is inadequate arch length and space in which to erupt. That is, the total length of the alveolar arch is smaller than the tooth arch (the combined mesiodistal width of each other). As a general rule all impacted teeth must be extracted unless otherwise indicated (Lima et al., 2012).

AETIOLOGY OF THIRD MOLAR IMPACTION

According to Malusyama et al (2015), the aetiology of tooth impaction is multi-factorial; these factors may include:

- Genetics: a number of twin and family studies of tooth impaction finger genetics as a cause of third molar impaction. Any mutation in the genes that are involved with odontogenesis and any disruption of regulatory molecules may result in tooth impaction (Cho, 2008; Cakano et al., 2013).
- Micrognathia: this is a condition in which a person has a very small lower jaw, sometimes called mandibular hypoplasia; it causes abnormal tooth alignment because there is no room for the individual's teeth to grow. (Cho, 2008).
- Supernumerary teeth (hyperdontia): this is a condition of having excess teeth, or teeth that appear in addition to the regular number of teeth. They can appear in any area of the dental arch and can affect any dental organ (Cho, 2008).
- Ankylosis: this is stiffness due to abnormal adhesion and rigidity of the bones of the joint, which may be the result of injury or disease (Gallagher, 2017).
- Premature extraction: this may cause space problem by mesialisation of the anterior section of the second deciduous molar (Ajith et al., 2014)
- Tooth displacement: when this happens, the tooth may begin to emerge at an odd angle, which can prevent full eruption (Degel, 2016).

Malusyama et al (2015) further stated that other factors that cause tooth impaction include:

- endocrinological deficiency

- clefts
- developmental abnormalities of germs
- root malformation
- pericoronary pathology
- ectopic germs position
- thick fibrous tissue

SYMPTOMS OF THIRD MOLAR IMPACTION

According to Mayo Clinic (2021), an impacted wisdom tooth is often asymptomatic. But may begin showing symptoms when it becomes infected, damages other teeth or causes other oral problems.

Symptoms include:

- bad breath
 - visible gap where a tooth did not erupt
 - redness and swelling of the gums around the impacted tooth
 - swollen lymph nodes of the neck
 - prolonged headache or jaw ache
 - pain or tenderness of the gums (gingivae) or jaw bone
 - occasional difficulty in opening the mouth
- (Degel, 2016; Mayo Clinic, 2021)

EFFECTS OF THIRD MOLAR IMPACTION

An impacted tooth can result in dental caries, pulp disease, periapical and periodontal disease, root resorption in the adjacent tooth, and even oral and maxillofacial tumors. Its diagnosis and treatment can be very troublesome to the dental operator. Its management is also ethically and functionally important to the patient (Akarslar & Kacoboy, 2009). Although extraction of an impacted tooth is the most common oral surgical procedure, many investigations have questioned the necessity of extraction in patients who are free of symptoms or associated pathologies (Chu et al., 2003)

DANGERS OF AN IMPACTED THIRD MOLAR

According to Malusyama et al, 2015, Scesa, 2016, and American Dental Association [ADA] (2016), the following are the dangers of third molar impaction.

Damage to other teeth: a crooked third molar can crash into the roots of neighboring teeth causing structural problems

Pain, swelling and a **stiff jaw** are symptoms of an impacted wisdom tooth

Gum infection: if the wisdom tooth has started to break through the gum line, bacteria can easily sweep through this opening, setting the stage for a gum infection

Extensive tooth decay: impacted third molar crowd teeth around them, trapping food particles in these hard to reach areas. The result is extensive tooth decay in areas where it is difficult to floss or brush

Cyst: an impacted third molar can create a cyst that damages the bone supporting teeth and the roots of neighboring teeth

Infection: infection can result from a tooth damaged by impaction, which may, in turn, lead to possible systemic infections and illness that affect the heart, kidneys and other organs.

COMPLICATIONS OF THIRD MOLAR IMPACTION

In the view of [Canadian Dental Association \[CDA\] \(2012\)](#), erupted teeth that are adjacent to impacted teeth are predisposed to periodontal disease. Since the most difficult tooth surface to be cleaned is the distal surface of the last tooth, in the presence of an impacted tooth there is always gingival inflammation around the second molar that is invariably present. Even this minor amount of inflammation can provide bacteria access to a larger portion of the root surface that result in early formation of periodontitis comprising the tooth, even in a situation in which no obvious communication exists between the mouth and a carious impacted tooth. The frequencies of complications after third molar removal are reported to be between 2.6% - 30.9%. The spectrum of complications range from minor expected sequelae of post-operative pain and swelling, to dry socket infection, permanent nerve damage, mandibular fractures and life threatening infections. Minor complications are generally defined as complications that can recover without any further treatment; major complications can be defined as complications that need further treatment and may result in irreversible consequences ([Hans & Robert, 2013](#); [Smith 2013](#)).

DIAGNOSIS OF THIRD MOLAR IMPACTION

According to [Issacson and Thoni, \(2001\)](#), [Gijibels \(2005\)](#), [Eriscon and Kuwl \(2005\)](#), and [Ajith et al. \(2014\)](#), the diagnosis of any tooth impaction should be established as early as possible in order to monitor its development and

implementation of appropriate therapy on time. The diagnosis is based on clinical and radiographical examinations.

Clinical examination

[Issacson and Thoni, \(2001\)](#), [Gijibels \(2005\)](#), [Eriscon and Kuwl \(2005\)](#), and [Ajith et al. \(2014\)](#) further reiterated that clinical examination is divided into:

Inspection

During inspection, the following conditions should be looked out for

- The persistence of a deciduous tooth in the arch beyond its normal replacement date
- The absence of permanent tooth when its normal time of eruption is exceeded
- The reduction of the space for tooth eruption by the underlying mesialisation of adjacent tooth, etc.

Palpation

Palpation of the buccal and lingual mucosa simultaneously, using the index fingers of the two hands is recommended to estimate the position of the teeth.

Lack of canines

The lack canines is also a presumption in favor of impaction but only an x-ray examination can establish, with certainty, the diagnosis of an impacted molar.

Radiographic examination

Conventional plain panoramic radiography (or orthopantomogram (OPT)) has been the main pre-operative tool for impacted tooth, providing information on the level of impaction, complications associated, pathology and relationship to mandibular canal. Dental panoramic radiography or the peri-apical radiography may also be used.

MANAGEMENT OF THRID MOLAR IMPACTION

No treatment may be needed if the impacted tooth is not causing any problems. Over-the-counter pain relievers may help if the impacted tooth causes discomfort. Warm salt water (normal saline) or over-the-counter mouth wash solution may be soothing to the gums. Removal of the tooth (extraction) is the usually treatment for an impacted tooth. Antibiotics may be prescribed before the extraction if the tooth is infected ([CDA, 2012](#)). The treatment plan depends on the complaint and the history of the patient, the physical evaluation, radiographic assessment,

diagnosis, and prognosis. Management includes observation, transplantation or removal of the impacted tooth (Haghnijan et al., 2014).

CONCLUSION

Third molar impaction presents with a number of oral and related health challenges. Early diagnosis and prompt and appropriate management will improve prognosis and prevent the associated complications.

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