

Conundrum behind Impacted Third Molar- A Review of Literature

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ABSTRACT

Objectives: The purpose behind the present article is to review the mysteries behind the most commonly encountered condition in dentistry, impacted third molar.

Materials and methods: Literature was selected through Pubmed, Cochrane electronic databases, International Journal of Oral and Maxillofacial Surgery. The keywords used for search were impaction, impacted third molar, wisdom teeth impaction, aetiology of third molar impaction. The search was restricted to English language articles, published from 1965 to December 2018. Additionally, a manual search in the major oral surgery books was performed.

Results: In total 27 literature sources were obtained and reviewed. Hidden reasons behind the impacted third molars were discussed.

Conclusions: The factors discussed here based on the literatures collected from trusted databases are expected to be a helpful tool for assessment of reasons for the presence of unerupted third molar in the oral cavity.

Keywords: impacted tooth, third molar, wisdom teeth impaction, aetiology for impaction

INTRODUCTION

According to Peterson, impaction refers to the lack of eruption of a tooth into the dental arch within the expected time. [1]

Mead defined an impacted tooth as one that is prevented from erupting into position because of malposition, lack of space, or other impediments. [2]

Further Lytle JJ, categorized impacted teeth as a medical deformity brought about by the dietary changes of modern population. [3]

According to Thompson B Dodson and Dr Srinivas M Susarla, [4] the incidence of impacted third molar is high with 72% occurrence in Swedish population aged 20 to 30 years, having atleast one impacted

third molar. Basically, eruption of third molar has been found to occur between the ages of 17 to 22 years. [5] Compared to females, the average eruption age of mandibular third molars in male is approximately 3 to 6 months ahead of female. [6] Hellman studying a small group of university students, found the incidence of impaction to be 9.5% in males and 23.8% in females. [7]

Further, third molar eruption time has been reported to vary among different races in which earlier eruption was reported in rural children in North-eastern Finland than in other parts of the country. [8] In a population of rural Nigerian adolescents, the average age of initial eruption of third molar

was found to be 15 years in male, and 13 years in female population and the incidence of eruption showed a rise after the age of 16 in male and 14 in female subjects. [9]

The occurrence of agenesis was found among 1492 maxillary and 1718 mandibular third molar in case of prehistoric settlers of Gan Canaria, Tenerife and La Gomera Islands. [10]

MATERIALS AND METHODS

Literature was selected through various databases such as PubMed, Cochrane electronic databases and International Journal of Oral and Maxillofacial Surgery. The keywords used for search were impacted tooth, third molar, wisdom teeth impaction, aetiology for impaction. The search was restricted to English language articles, published from 1965 to December 2018. Further, manual search in the major surgery journals and books was performed.

DISCUSSION

To understand the reasons for higher incidence of third molar impaction, many theories have been proposed. One of the most common theory proposed is the insufficiency of the retromolar space that led to the obstruction in the path of the third molar eruption in the mandible. [11] The alveolar arch space behind the second molar is found to be reduced in 90 per cent of the cases, evaluated based on cephalometric profile roentgenograms. The space for the mandibular third molar is found to be reduced when the growth rate in length of the mandible is slight; the direction of condylar growth is vertical or when the eruption of the dentition is directed backwards. [12] The other group of thoughts says that the third molar impaction has become more common in the modern generations because of the softer diet practices. [13] Impacted teeth are considered to be a medical deformity occurring due to the diet changes in modern population due to the lack of coarse, abrasive and attritive diet, which also led to the condition of

smaller lower jaw resulting in Class II malocclusion. [13]

According to Hellman, jaws of females stop growing when third molars begin to erupt whereas in males the growth continues beyond the eruption time. [14] The findings of Sandhu and Kalpila [15] and Narda and Chawla [16] reported that females have impacted teeth more often than in men. Smaller size of the mandible, smaller arch size and larger teeth are found to be the major risk factors associated with the impacted third molar. [17]

CBCT analysis showed that the absence of gubernacular canals led to a disturbance in the eruption and may contribute to the increasing risk of developing the condition of impacted third molar. [18]

Angulated root of third molar had a higher incidence of impaction when compared to the normal non angulated roots. [19] Genetics also considered to play an important role in the impaction of teeth by hereditary malpositioning of the tooth germ and agenesis, [20] lack of sufficient eruption force and the theory of phylogenetic regression of the jaw size - insufficient mesial movement of the dentition of modern human due to lack of interproximal attrition were also found to be a contributing factors in case of impacted third molar. [21]

Compared with the erupted teeth, the impacted third molars are more commonly associated with the narrow, acute angled, shorter mandible of Skeletal Class II malocclusion. [22] There was a reduced amount of mandibular growth in case of impacted teeth and possibility of impacted teeth to be larger than those erupted was high. [22] The space present between the erupted second molar and third molar in the early developmental stages was not found to be significantly associated with the eruption of third molar. [22] Higher developmental angulations of eruption were found in the impacted third molar group. [22]

According to Bjork, the third molar impaction was not only associated with the

reduced amount of growth but also with a more downward as opposed to forward growth direction. [23] Ricketts proposed that the space for the eruption of developing third molar was provided by the forward direction of eruption rather than resorption of anterior border of the ramus of the mandible. [24] Richardson found that the extraction of an existing eliminates the occurrence of impaction off third molar. [25] Henry suggested that smaller size of the third molar produces lower incidence of impaction. [26] All these findings indicate that the impaction of third molar is a manifestation of crowding and insufficient space.

Acute gonial angle was found to be a common factor among the impacted third molar cases. [26] In case of crowding, the possibility of extraction therapy reduced the incidence of third molar impaction. [26] It has been shown that the impaction of third molar may occur in the following ways- the third molar can follow the pattern of a normal developing one by decreasing its angulations' to mandibular plane and becoming upright but the up righting may be insufficient to erupt, its angular developmental position relative to the mandibular plane may not change, it can increase its angulations to the mandibular plane and become more mesially inclined. [26]

CONCLUSION

The incidence of impaction of third molars depends on factors such as size of the arch, size of the teeth, genetic factors such as agenesis and malpositioning of the tooth bud, factors associated with the developing third molar such as its angulations, insufficient availability of retromolar space, dietary factors such as lack of coarse, abrasive diet arising from the disuse atrophy theory and additional factors such as phylogenetic regression of size of jaws. Hence all these factors existing alone or together adds to the condition of impacted third molar.

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