

# Impacted Teeth Requiring Surgical Exposure for Orthodontic Treatment

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## Abstract

**Aim:** The aim of this study is to determine the prevalence of the different types of the teeth requiring surgical exposure as impactions of various teeth are frequently encountered in clinical problems, the treatment of which usually requires an interdisciplinary approach. **Materials & Methods:** Data collection was done from the department of oral surgery for patients undergoing surgical exposure of impacted teeth in course of their orthodontic treatment. A total sample data of 20 patients were obtained for a period of nine months (June 2019-April 2020). Statistical analysis was done by using chi-square test with SPSS software version 23. **Results:** 58% of patients requiring surgical exposure were in the age group of below 20 years and 42% patients were above 20 years. There was a higher female (74%) predilection than the males (26%) for the surgical exposure. The major cause for the teeth to be involved for the surgical exposure is in case of the impacted conditions and the most commonly impacted teeth is the canine. The observed findings were statistically significant ( $p=0.03$ ). **Conclusion:** Within the limits of the present study, the gender predilection for the prevalence of the surgical exposure of the teeth during the orthodontic treatment is mainly higher in females and of the age group below 20 years with canine as the most commonly impacted teeth.

**Keywords:** Impaction; Orthodontic treatment; Surgical exposure

## Introduction

One of the complicated aspects of orthodontic dentoalveolar surgery is the surgical exposure and orthodontic management of impacted teeth. <sup>[1]</sup> Tooth impaction can be defined as the intraosseous position of the tooth after the expected time of eruption. Such impacted teeth would need surgical removal or can be mainly brought out by the surgical exposure which is later on corrected by the orthodontic treatment. <sup>[2]</sup>

This is based on the position of the impacted teeth. The fact that is mainly clear is that canines are the more commonly impacted teeth than the third molar requiring surgical exposure in course of orthodontic treatment. <sup>[3]</sup>

The other common types of the impaction are mainly maxillary central incisors, mandibular second premolars and the mandibular second molars. <sup>[4]</sup>

There are mainly various causes for the impaction that can be classified as localized, systemic and genetic factors. <sup>[5]</sup> The localized causes are the tooth-size arch length discrepancies, ankylosis of the permanent canine, prolonged retention of the primary teeth, dilaceration of the root variations in timing of the lateral incisors formation.

The systemic causes are endocrine deficiencies, febrile disease and irradiation, and the genetic factors <sup>[6]</sup> are hereditary, malposed tooth germ, presence of the alveolar cleft.

Management of impactions is usually either by surgical exposure and forced eruption or surgical extraction. The decision depends upon the clinical and the radiographic evaluation before treatment planning.

The patient clinical evaluation <sup>[7]</sup> mainly includes assessment of age, oral hygiene and dental caries, depth of the impaction, displacement of the impaction and associated pathologies, <sup>[8]</sup> esthetics and morphological suitability of the impaction, treatment options for the impaction, Feasibility of surgical exposure <sup>[9]</sup> and orthodontic alignment.

Patient cooperation and compliance are additional determinants which should be considered before commencing treatment. The treatment planning decision to be made in such a way it is successful for the patient. <sup>[10]</sup>

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## Discussion

The procedure of the surgical exposure was mainly done to obtain an increased success rate of the orthodontic treatment so by which they can be done in the various methods. [31,32] The most common type of the reason for the surgical exposure is mainly due to the impaction of that particular tooth.

Frequency of surgical exposure was more in patients below 20 years than the patient above the age group of 20 years. This was mainly similar to the findings of the previous study of Stylianos *et al.* [33] where the pediatric patients are commonly involved for the surgical exposure of the teeth which was mainly due to the retained deciduous teeth and decreased arch size. The main reasons for retained deciduous teeth are pathological obstructions, misalignment of the permanent tooth underneath, trauma and infection. [34]

In this study, the findings of which the gender distribution of which females are more commonly involved for the surgical exposure than the males by which this findings was similar to the Parkin *et al.* [34,35] in which about 64% of the females taken in the study were prevalent for the surgical exposure of the tooth. The high frequency reported in females is due to the consequence of difference between the growth of males and females. This is mainly due to the reason by which females are more commonly involved for the orthodontic treatment, probably because of their higher aesthetic demands.

The most commonly impacted teeth in this study were canine (70%). This finding was similar to the study by Hassan Al-Zoubi *et al.* [36,37] in which they reported 68% of the canine teeth being impacted. The main reasons for the impaction of the canine were large tooth size, abnormal position of the tooth bud, presence of alveolar cleft, ankylosis.

In a previous study by Muhammad *et al.* [38] which shows the finding of the upper canine impaction was more frequent for about 57% cases in women was because they most commonly sought orthodontic treatment for their esthetic concern. This was mainly similar to the findings of this particular study where about 74% females had the canine as the most commonly impacted teeth.

The major limitation of this particular study was a single centered type of study with a limited sample size and geographical limitations. The future scope of this particular study was to evaluate the position and the difficulty of the impacted tooth that was indicated for the surgical exposure and with a higher sample size and various ethnicities. [39-45]

## Conclusion

Canines are the most commonly impacted teeth among the age group of below 20 years with female predilection. Careful diagnosis has to be done in order to prevent the complications of the treatment. Successful completion of the procedure will be beneficial in salvaging the teeth that are more important to provide orthodontic, functional and esthetic stability for the patient.

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