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STUDY OF PATTERN AND PREVALENCE OF LOWER IMPACTED THIRD MOLAR IN GHAZIABAD POPULATION

Dr. Mayank Singhal, Dr. Amit B. Lall, Dr. Jahanvi Mishra, Dr. Priyanka Takhellambam , Dr. Tanya Kusum, Dr.Sonakshi Ranjeet Singh, Dr. Anupam Bhardwaj

Department of Oral and Maxillofacial Surgery, Santosh Deemed to be University, Delhi-NCR.

ABSTRACT

Objective: To evaluate the prevalence and pattern of lower impacted third molar with the help of orthopantomogram (OPG).

Methodology: A total of 230 pre-operative radiographs of the patients who reported with impacted lower third molar to the Santosh Dental College and Hospital was collected from the year 2020 – 2022. Out of 230 OPGs, 200 OPGs with presence of entire tooth structure and grossly decayed tooth were included in the study. Teeth with pre-existing pathology, incomplete root formation or root stumps are excluded from the study. The variables on OPG were analyzed and tabulated on the basis of Winter's classification, and Pell and Gregory classification for all the included 200 OPGs.

Result: Out of the included 200 OPGs, 104 were of male patients (52%) and 96 were of female patients (48%). The most common pattern of angulation of the lower third molar recorded was mesioangular (40.7%) followed by vertical (34.7%), horizontal (12%) and distoangular (1.5%)

Conclusion: Mesioangular impactions are the most prevalent one in the Ghaziabad region based on the results of our study while distoangular impaction being the least prevalent.

Keywords – Lower third molar, impacted tooth , OPG

INTRODUCTION

According to Archer, impacted tooth is the tooth that is partially or completely unerupted and is positioned against another tooth or bone or soft tissue so that its further eruption is unlikely, described according to its anatomic position.[1] According to Farman, the impacted teeth are those teeth that are prevented from eruption due to a physical barrier within the path of eruption.[2] The cause of an impacted tooth can be multifarious, it is generally due to dense overlying bone, lack of space in the arch, abnormal root positioning, early physical maturity, late molar mineralization, or pathological reasons.[3] Various pathological problems such as dental caries, pericoronitis, cysts or tumors may be associated with the impacted third molars. Thus, surgical extraction of an impacted tooth becomes a priority for an oral surgeon. Prior to surgical removal of the impacted tooth, a clinician assesses the preoperative OPG radiographs

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to study the pattern, angulation, root morphology, and difficulty level associated with the impacted tooth delivery. The x-ray not only aids the clinician in planning the minor surgical procedure but it enables the surgeon to evaluate the prevalence of the most commonly impacted pattern of teeth. The incidence of impaction in different population ranges from 9.5% to 68%[4] and eruption of the third molars occurs between 17 to 21 years of age[5]. Furthermore, the eruption time of the third molar has been reported to vary with enthnicity.[6] The contemporaneous objective of this study is to compare and assess the prevalence and pattern of impacted mandibular third molars in the regional center of Ghaziabad.

MATERIAL AND METHOD

A retrospective study was conducted on 230 digital OPG radiographs from the year 2020 – 2022 of the patients who reported with impacted lower third molar to the Department of Oral and Maxillofacial Surgery, Santosh Dental College and Hospital, Ghaziabad. A total of 200 OPGs with presence of entire tooth structure and grossly decayed tooth were included in the study. Teeth with pre-existing pathology, incomplete root formation or root stumps were excluded from the study. The parameters evaluated in the study were pattern, position and class of the lower impacted 3rd molar tooth. The variables on OPG were analyzed and tabulated on the basis of Winter's classification, and Pell and Gregory classification for all the included 200 OPGs.

RESULTS

Out of 200 pre-operative radiographs of the patients having third molar impactions, 104 were of male patients and 96 were of female patients. The pattern and angulation according to the study conducted revealed that mesioangular was most prevalent with an incidence of 40.7%, followed by vertical 34.7%, horizontal 12% and distoangular 1.5% as depicted in Table 1. Position A with class 1 was found to be most prevalent in this study and position C (Table 2) with class III was the least common in the study (Table 3).

DISCUSSION

According to Farman, the impacted teeth are those teeth that are prevented from eruption due to a physical barrier within the path of eruption.[2] The last teeth to erupt in the oral cavity are the third molars, and relatively has the highest chance of being impacted. The prevalence of impaction in different population ranges from 9.5% to 68%[4] and eruption of the third molars occur between 17 to 21 years of age [5]. Furthermore, the eruption time of the third molar has been reported to vary with races.[6]

The reported literature can be collated with the results published in our study, and one such study was conducted by Venta et al[7] on total of 19 patients evaluating 3rd molar of both arches, where male were 13 and female were 6. They found mesioangular impaction to be the most prevalent with 27 cases followed by 7 cases of vertical impaction, distoangular and horizontal with 3 cases in each type of angulation. This study also highlighted the depth of

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occlusion and insufficient mesiodistal space of the third molars, where 27 cases had cervical depth of occlusion (position B) and 37 cases were recorded with insufficient space (class II). Whereas in our study, position A was the most common position and class I was recorded as the most common class of impaction.

Another study was conducted by Sandhu.S et al[8] in the year 2008 on 43 OPG radiographs, which included 11 male and 32 female. The study concluded that vertical (54%) was most prevalent followed by mesioangular (26%) and distoangular (19%); no incidence of horizontal cases was recorded in that study.

Another study conducted by S.G.M Falci et al[9] in 2012, on 246 radiographs, the study concluded with the results showing highest prevelance of vertical impaction (60.2%), followed by mesioangular (17.5 %), horizontal (17.1%) and distoangluar (5.3%) was found to be the least. In the aspect of position of the impacted 3rd molar, position A was the most common which is similar to the prevalence in our study as well. Whereas the most common class of the impacted molars was observed as class II, which is not similar from our study record i.e.,class I.

However, Passi de et al [10] conducted a study on 250 OPG radiographs, where the incidence of mesioangular were 49.2 %, being the most prevelant one followed by vertical (24%), horizontal (20%), distoangular (12%) and transverse angulation (2%) prevalence. The most common incidence of position and class of impacted mandibular third molar were recorded as position B and class II.

Jin X.et al [11] conducted another study in 2021 on 500 patients where incidence of mesioangular were 298 cases, followed by horizontal 100 patients, vertical 59 cases and distoangular 43 cases. This study has recorded the most common position as position B whereas they have not recorded the classs of the impacted 3rd molar.

CONCLUSION:

This recent study conducted at Santosh Dental College and Hospital is perchance one of a few studies conducted to scrutinize and diligently study the pattern of lower third molar impaction in the Ghaziabad population. Mesioangular types of impactions are the most prevalent in the Ghaziabad region based on the results of our study and the Distoangular impaction is the least prevalent. Several studies on the impacted lower third molars have been reported in the literature, however, more studies are necessary to determine the precise radiographic characteristics which indicate the need for prophylactic removal of lower impacted third molar.

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Table 1: Angulation of impacted mandibular 3rd molar

SL NO.	ANGULATION	38 (%)	48 (%)
1.	VERTICAL	73 (36)	72 (36%)
2.	MESIOANGULAR	86 (43)	78 (39)
3.	DISTOANGULAR	3 (1.5)	6 (3)

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4.	HORIZONTAL	25 (12.5)	23 (11.5)

Table 2: Position of mandibular impacted 3rd molar according to Pell and Gregory

SL NO.	POSITION	38(%)	48(%)
1.	A	144(72)	142(71)
2.	B	33 (16.5)	24 (12)
3.	C	10 (5)	13 (6.5)

Table 3: Class of mandibular impacted 3rd molar according to Pell and Gregory

SL NO.	CLASS	38(%)	48(%)
1.	I	115 (57)	107(53.5)
2.	II	55 (27.5)	50 (25)
3.	III	17 (8.5)	22 (11)

Table 4: Review of Literature

S.no	Author	Sex	Inclination	Prevalence
1	Venta et al[7] 2001	M – 13 F – 6	V – 9 D – 3 M - 27 H - 3	
2	Sandhu. S et al[8] 2008	M– 11 F -32	V- 39 D–14 M- 19	V – 54% D – 19% M – 26%
3	S.G.M Falci et al [9] 2012	M- 69 F- 177	V - 148 D - 13 M – 43 H - 42	V –60.2% D- 5.3% M - 17.5% H – 17.1%
4	Passi D. et al[10] 2018	M – 152 F- 98	V – 60 D – 12 M – 123 H – 50	V – 24% D – 12% M - 49.2% H – 20%

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			T – 5	T – 2%
5	Jin X. et al [11] 2021	M- 317 F- 183	V– 59 D– 43 M- 298 H – 100	
6	Le H.S et al [12] 2022	M- 251 F- 195	V- A – 274 B – 162 C- 10 M – <30°- 44 30-70° – 258 >70° – 144 H– I- 113 II- 304 III- 29	

- M- male, F- female, V-vertical, H- horizontal, M-mesioangular, D- distoangular, T- transverse