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Prevelance of Patterns of Impactions in the State of Punjab-A Retrospective Research Analysis

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Abstract

Background: The patients affected with COVID-19 present with a variety of oral manifestations. In this context, our systematic review was conducted to summarize the findings regarding oral manifestations of COVID-19. Methods: An extensive literature search of several electronic bibliographic databases (PubMed, Scopus, Science direct, Litcovid) was done to retrieve all articles published in the English language from January 1, 2020, to June 30, 2022, reporting the prevalence of oral manifestations among COVID-19 individuals.

Index terms— COVID-19, COVID tongue, oral ulcers, oral lesions, SARS-CoV-2.

1 Introduction

he mandibular third, molars are the most frequently impacted teeth in the human and surgical extractions have become one of the commonest dentoalveolar surgery (Gbotolorun et al,2007). (2) The most often congenitally missing as well as impacted teeth are the third molars, which are present in 90% of the population with 33% having at least one impacted third molar. They account for 98% of all the impacted teeth. The incidence varies from 9.5% to 68% in different populations. **??**2.3) According to Garn the mandibular third molar is an unusual tooth characterized by considerable variability in formation, timing, variation in crown and root morphology and not infrequentiy, by agenesis. Impaction is defined as completely or partially unerupted and positioned against another tooth, bone or soft tissue, so that its further eruption would be unlikely. **??**3.4) Third molars are the most frequently impacted teeth because of their particular topography, phylogeny and ontogeny. They are directly or indirectly associated with numerous disorders in the mouth, jaw and facial regions. (5) Development of mandibular third molars starts in the ramus of mandible at about the age of seven years. The third molars are the last teeth to erupt in all races despite racial variations in the eruption sequence. Racial variation in facial growth, jaw and teeth size, nature of diet, extent of generalised tooth attrition, degree of use of masticatory apparatus and genetic inheritance are the crucial factors which determines the eruption pattern, impaction status and incidence of agenesis of third molars. Impacted teeth were seldom a problem for Neolithic man. (6) Their highly abrasive diet caused attrition of teeth resulting in reduction of mesiodistal distance of dentition. This allows medial migration of teeth and adequate space was available for the eruption of third molars .But with the arrival of refined food and consequential reduction in the masticatory functional load, today, the rate of impaction of third molar shows a significant increase (John Hunter theory of nature and nurture). (7) Mead believed that delay in eruption causes impaction of teeth.

Radiographs like I.O.P.A.R and orthopantomograms (OPG) are used to evaluate the type of impaction, any anatomical impediments that are preventing its eruption; whether it is completely or partially embedded in bone, marginal bone height, condition of adjacent second molars and relation of third molars to inferior alveolar canal; so that a proper management can be planned. (8) So our study is aimed to evaluate the prevalence of, Impaction of mandibular third molar and angulation of impaction radiographically.

2 II.

3 Methods and Materials

The study was conducted in Department of Oral surgery, BJS Dental College Ludhiana. Study represents retrospective analysis of panoramic radiographs (orthopantomograms) of patients referred to Department T of oral surgery from January 2019 to August 2021 with indication for surgical removal of impacted third molars. Four hundred and fifty radiographs were reviewed and related data were selected from their dental records.

Inclusion criteria of the study group was complete root formation of mandibular third molar. Exclusion criteria were: patients younger than seventeen years, poor quality of OPG, incomplete records, presence of dentoalveolar trauma or other pathological dentoalveolar condition, presence of any systemic or craniofacial anomaly or syndrome (such as Down Syndrome, Cleidocranialdysplasia) and absence of mandibular second molar. To eliminate the interexamination errors, the radiographs were analysed by a single examiner in a dark room using an appropriate Xray viewer and magnifying lenses. The angulation and class and type pattern of impaction were established via visual impression.

Orthopantomograms were taken for all subjects in order to assess the level of eruption, angulation, third molar space, mesiodistal length of impacted 3rd molar and relation of inferior alveolar nerve to impacted third molar. It was also used for evaluating agenesis of third molar and angulations of impaction.

Impacted third molar can also be classified according to their angular relationship to the adjacent second molar. Angulation of the impacted third molar can be determined by evaluating the angle formed between the intersected longitudinal axes of the impacted third molar and the adjacent second molar, as described by Winter, either usually or by using an orthodontic protractor.

Depth or level of maxillary and mandibular third molar can be classified using Pell and Gregory classification system, where the impacted teeth are assessed according to their relationship to the occlusal surface of adjacent second molar. If the third molar is at the same level or above the occlusal surface of the adjacent second molar then it is classified as A. If it is between the Occlusal surface and cervical line of second molar then it is classified as B.C level is when the third molar is below the cervical line of the adjacent second molar.

Third molar can also be classified according to the relationship between Cemento enamel Junction (CEJ) of impacted tooth and the associated bone level. Level A is assigned to any impacted third molar that is not buried in bone. Level B is assigned to any impacted third molar that is partially buried in bone, when any part of the CEJ is lower than the bone level. Level C is assigned to impacted third molars that are completely buried in bone.

4 III.

5 Results

There were 450 patients consisting 288 males and 162 females age between 14 to 25 years with mean age of 19.62 years (SD =2.575). Table **??** illustrates type of impaction. In the mandibular arch (left), Mesioangular impaction was the most frequently seen (38.4%) followed by horizontal (38%), vertical (8.9%) and distoangular impaction (3.3%). In the mandibular arch (right), Mesioangular impaction was most frequently seen (37.1%), followed by horizontal impaction (28.2%), vertical (10%) and distoangular impaction (12%) as shown in Table 2. Table 3 shows type of impaction in the maxillary arch (right), the most frequently impacted third molar was found to be in horizontal angulation (49.1%) which is followed by distoangular impaction (27.1%), mesioangular impaction (5.8%) and (0.2%) vertical impaction. In the maxillary arch (left), the most frequently impacted third molar was found to be in horizontal angulation (46.2%), which is followed by distoangular impaction (26.4%), mesioangular (8.9%) and vertical impaction (0.2%) as shown in table 4.

Table **??**: Angulation of impaction of mandibular third molar on the left side (1) mesioangular, (2) distoangular, (3) horizontal, (4) vertical According to level/depth of impaction (Pell and Gregory), in the maxillary arch (left) level3 was most abundant (33.1%), followed by level 1 (31.6%) and then level 2(17.6) as shown in table **??**. According to level/depth of impaction (Pell and Gregory), in the maxillary arch (right), level 3 was most abundant (33.6%), followed by level 1(32%) and then level 2 (16.4%) (table **??**). According to level/depth of impaction (Pell and Gregory), in the mandibular arch (left), level 2 was most abundant (34.2%), followed by level 1(28.4%) and then level 3 (25.8%) as shown in table **??**. According to level /depth of impaction (Pell and Gregory) for mandibular arch (right), level 2 is most abundant (45.8%), followed by level 3 (21.1%) and then level 1 (20.9%) (table **??**). According to the ramus relationship to the third molar (Pell and Gregory) in the maxillary arch (left), most abundant is Class III (32.9%), followed by Class I(29.1%) and then class II (20.2%) as shown in table **??**. According to the ramus relationship to the third molar (Pell and Gregory) in the maxillary arch (right), most abundant is Class III (33.3%), followed by Class I(32%) and then Class II (16.7%) as shown in table **??**0. According to ramus relationship to the third molar (Pell and Gregory) in the mandibular arch (left), the most abundant is Class II (41.3%) , followed by Class III (24.2%) and then Class I (23.1%) as shown in table 11. According to ramus relationship to the third molar (Pell and Gregory) in the mandibular arch (right), the most abundant is Class II (49.1%), followed by Class III (19.8%) and then Class I (18.9%) as shown in table 12.

6 Discussion

A large population of individuals may have one or more impactions. The prevalence and types of impactions vary in different racial and ethnic groups. These may be due to racial genetic characteristics, inbreeding as well as epigeneric factors such as food habits. It is therefore important to understand the pattern of impactions in various communities and population sub-groups. (9) This study was undertaken to study the prevalence and pattern of impactions in the Punjab population. Orthopantomographs were taken of 450 subjects from Ludhiana district who consented to participate in our study. Only those subjects who confirmed to the inclusion and exclusion criteria outlined previously were selected for the study.

The parameters sought were prevalence of impacted third molars, angulation, level of eruptions, mesiodistal width of impacted third molars and retromandibular space available. The OPGs were also used for evaluating the agenesis of third molars.

In our study, the frequency of missing third molars showed a predilection for maxilla over mandible which was consistent with the study of hattab (18) and sandhu (19) and nanda (20).

Higher prevalence of impacted teeth was found in study of morris and jerman in a study conducted in USA on 5000 subjects (65%) (17,21) ,probably as a result of different age groups included in study. Since our study represents all age groups; and also in study of Quek et al. on 1000 subjects of Chinese population (68%) due to higher jaw teeth size discrepancy, wider teeth and smaller dental arch length of Chinese population [1]

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MAND LEFT ANGULATION			
		Frequency	Percent
Valid	0	50	11.1
	1	173	38.4
	2	15	3.3
	3	171	38.0
	4	40	8.9
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 1: Table 5 : 18 YearTable 6 :Table 7 : 19 Year

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MAND RIGHT ANGULATION			
		Frequency	Percent
Valid	0	56	12.4
	1	167	37.1
	2	54	12.0
	3	127	28.2
	4	45	10.0
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

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Figure 2: Table 9 : 3 Table 10 : 20 YearTable 11 :Table 12 :

MAX LEFT ANGULATION			
		Frequency	Percent
Valid	0	81	18.0
	1	40	8.9
	2	119	26.4
	3	208	46.2
	4	1	.2
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 3:

MAX RIGHT ANGULATION			
		Frequency	Percent
Valid	0	79	17.6
	1	26	5.8
	2	122	27.1
	3	221	49.1
	4	1	.2
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 4:

MAX LEFT P AND G OCC			
		Frequency	Percent
Valid	0	79	17.6
	1	142	31.6
	2	79	17.6
	3	149	33.1
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 5:

MAX RIGHT P AND G OCC			
		Frequency	Percent
Valid	0	80	17.8
	1	144	32.0
	2	74	16.4
	3	151	33.6
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 6:

MAND LEFT P AND G OCC

		Frequency	Percent
Valid	0	50	11.1
	1	128	28.4
	2	154	34.2
	3	116	25.8
	4	1	.2
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 7:

MAND RIGHT P AND G OCC			
		Frequency	Percent
Valid	0	54	12.0
	1	94	20.9
	2	206	45.8
	3	95	21.1
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 8:

MAX LEFT P AND G RAMUS			
		Frequency	Percen
Valid	0	79	1
	1	131	2
	2	91	2
	3	148	3
	Total	449	9
Missing	System	1	

Figure 9:

IMPACTED MAX RIGHT P AND			
		Frequency	Percent
Valid	0	80	17.8
	1	144	32.0
	2	75	16.7
	3	150	33.3
	Total	449	99.8
Missing	System	1	.2
Total		450	100.0

Figure 10:

2

[Note: of impaction of mandibular third molar on the right side (1) mesioangular, (2) distoangular, (3) horizontal, (4) vertical]

Figure 11: Table 2 :

3

[Note: of impaction of maxillary third molar on the left side (1) mesioangular, (2) distoangular, (3) horizontal, (4) vertical]

Figure 12: Table 3 :

4

[Note: of impaction of maxillary third molar on the right side (1) mesioangular, (2) distoangular, (3) horizontal, (4) vertical]

Figure 13: Table 4 :

.1 Conclusion

An impacted tooth is one that neglects to emit into the dental curve inside the normal formative window. Since affected teeth don't eject, they are held all through the person's lifetime except if separated or uncovered precisely. Teeth may become affected in view of adjoining teeth, thick overlying bone, extreme delicate tissue or a hereditary irregularity. (12) Frequently, the reason for impaction is deficient curve length and space in which to emit. That is the all out length of the alveolar curve is littler than the tooth curve (the consolidated mesiodistal width of every tooth). The knowledge teeth (third molars) are oftentimes affected in light of the fact that they are the last teeth to eject in the oral pit. The most common types of lower wisdom tooth impaction are as follows: in Winter's classification, mesial-angular impaction; in Tetsch and Wagner's classification, oblique medial-angular impaction; in Pell and Gregory's classification, distance from the anterior edge of the mandibular ramus, impaction depth A, and impaction grade 2A; and in Asanami and Kasazaki's classification, distance of the mandibular ramus from the distal surface of the second lower molar, impaction depth A, and anterior inclination. In most cases of surgical removal of an impacted tooth, the anticipated difficulty of the procedure was rated as very difficult.

.2 Conflicts of interest

No conflicts of interest present.

.3 Funding

No fundings granted.

.4 Consent for publication

Written Consent was taken from our patient regarding incorporating his panoramic radiograph in this study.

.5 Competing interests

The authors declare that they have no competing interests.

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