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Original Research Article

The Prevalence of Impacted Third Molars and their Associated Pathologies in Adult Patients

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Aim: To analyse the type of impaction in impacted third molars in an adult population aged between 20 and 40 years. Background: Third molars or the wisdom teeth develop in the permanent dentition as an extension of the dental lamina posterior to the second molar. Most of the time, they are completely impacted or partially impacted. The impacted third molars are extracted if they are associated with pain, swelling and/or other pathologies. Early extraction of impacted third molars is recommended to prevent dental caries in adjacent second molars and to prevent formation of other pathologies like cysts and/or tumours. Materials and Methods: Cross-sectional study using the patients' radiographs and looking for impacted teeth. Results: It showed that there are statistically significant differences between classifications of impaction with regards to the type of impaction (p-value less than 0.05), where buccolingual cases were mostly in class III. Most of the cases of distoangular, horizontal, mesioangular, and vertical cases are in class II. Conclusion: The present study concludes that vertical impaction was the most common type of impaction and buccolingual impaction was the least common.

Keywords: Impaction, Third molar, Prevalence.

INTRODUCTION

Impacted teeth are those which fail to erupt during development. The mandibular and maxillary third molars, maxillary canines, maxillary lateral incisors and mandibular premolars are the most commonly impacted permanent teeth. Third molars have been found to erupt between the ages of 20 and 40 years. The impacted teeth are prone to little pathology which may include odontogenic cysts and odontogenic tumors. Most of the time it is affected by pathologies which if not treated in early stages may produce discomfort to the patient.Impacted third molars 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 visually or by using an orthodontic protractor(Winter, 1926). Several methods have been used to classify impaction, in which impaction is described based on the level of impaction the angulations of the third molars and the relationship to the anterior border of the ramus of the mandible (Pell & Gregory, 1933). Depth or level of mandibular third molars can be classified using the Pell and Gregory classification system where the impacted teeth are assessed according to their relationship to the occlusal surface (OS) of the 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 (Class I). If it is between the OS and the cervical line of the second molar then it is classified as (Class II). Class III is when the third molar is below the cervical line of the adjacent second molar. Pell GJ, Gregory BT. Impacted mandibular third molars: classification and modified techniques for removal.

Affected teeth are those which neglect to eject amid advancement. The mandibular and maxillary third molar, maxillary canine, maxillary sidelong incisor and mandibular premolars are the regularly affected changeless teeth. Third molars have been found to emit between the ages of 17 and 21 years. The affected teeth are inclined for a couple of pathologies which incorporates dental caries, odontogenic

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pimple and odontogenic tumor. More often than not it is influenced via caries which if not treated in beginning periods may create uneasiness to the patient (Sandeepa & Ajmal, 2016).

The affected third molar likewise makes the neighbouring second molar defenceless for caries. Writing survey uncovers 75% of the general population has caries in their affected third molar and 85% of the investigation assemble with affected third molar were related with periodontal pathologies. The sign for the evacuation of the third molar incorporates repetitive periodontitis, sore, osteomyelitis, non-restorable caries, peri-apical pathology and internal resorption. Prophylactic affected tooth extractions were recommended by few creators considering their related pathologies (HR Stanley et al, 1987).

Wahid et al detailed that impactions are more typical in females and vertical impaction is regular in maxillary tooth and mesioangular in the mandibular tooth. Affected tooth is much more inclined to dental caries and the second molar related with third molars were additionally inclined to dental caries, the present examination demonstrates that 31% of affected third molar and 15% of related second molars were influenced by dental caries. Introduce ponder likewise demonstrates that second molar related with mesioangular affected mandibular third molar were more inclined to dental caries. Marciani et al proposed that only one out of every odd third molar should be expelled. Full hard affected lower third molars well underneath the cervical edge of the second molar crowns ought to be considered for maintenance. Hazard factors related with third molar expulsion ought to be precisely settled and disclosed to the patient (Aydin, Yilmaz & Yildirim, 2004).

Mandibular third molars may secure a scope of examples and positions and can prompt various pathologies. Clinical and radiographic examinations encourage grouping these teeth as well as helping to analyse and separate diverse pathologies related with them. Pericoronitis is the most widely recognized taken after by dental caries of third molar or nearby second molar. There could likewise be root resorption of second molar, periodontal issues, odontogenic sores and tumours and so on. Pericoronitis is an intense provocative condition related for the most part with incompletely ejected mandibular third molars. Clinical highlights incorporate torment, swelling, constrained jaw opening, and trouble in gulping, fever, discomfort and lymphadenopathy (Pushpinder & Lewis, 1985).

Position of third molars in jaw and their occlusal life systems with profound occlusal crevices supports the amassing of biofilm on tooth and prompts dental caries. Affected mandibular third molars that contact cemento-veneer intersection of second molar place this tooth in danger of distal cervical caries.10 Impacted third molars cause root resorption of the second molar because of weight from eruptive exertion of the third molar and synthetic go-betweens discharged by diminished finish epithelium (Ali H.et al, 2011).

In these circumstances, prophylactic evacuation of affected tooth can profit dental strength of patient. At the point when affected teeth are held inside the alveolar process, related follicular sac is likewise held. Odontogenic tissue encompassing the affected teeth can possibly separate into an assortment of tissue composes and may prompt blister or tumour development. The general proposal is to consider each case exclusively to adjust the advantages and dangers of maintenance versus extraction of an affected third molar. Besides, where non-extraction technique is received, long-haul clinical and radiographic follow up ought to be kept up, with the goal that surgical mediation can be founded if some pathology begins to create (Margareta & Hans-Goran, 1991).

There are a few examinations about affected teeth both in national and universal writing yet moderately a couple of articles about their related pathologies. The present examination will illustrate on pathologies related with various examples of mandibular third molar impaction. This thus will organize treatment in patients with such examples and defend basic leadership in connection to the evacuation of affected third molar (Lanre et al, 2006).

Tooth impaction is a neurotic circumstance in which a tooth is neglected to accomplish its typical utilitarian position. It can't play out its typical capacity in view of malposition and furthermore make aggravations for the patient. In people, the most predominant teeth which are observed to be affected are mandibular third molars which more often than not neglect to eject to their typical useful position because of short mandible or wrong angulation of emission. These affected teeth may remain asymptomatic for quite a while without making unsettling influence for understanding 3 or they may give different pathologies like caries, pericoronitis, blisters, neoplasms and furthermore cause root resorption of contiguous tooth (Adeyemo et al, 2005).

Past investigations detailed more noteworthy predominance of third molar impactions in females when contrasted with males5, 6 yet a few creators did not concur with those discoveries. They revealed no sexual orientation preference in third molar impactions. Administration of affected teeth is constantly in light of their appraisal regarding angulation of affected tooth, level of impaction and connection of affected tooth with front fringe of ramus. As of now the most solid frameworks of the order being used are Pell and Gregory and Winter arrangement frameworks which utilize connection of affected tooth with occlusal surface of nearby tooth (Orhan, Ahmet & Ümit, 2000).

AIMS OF THE STUDY

To analyse of the type of impaction in impacted third molars in an adult population aged between 20 and 40 years.

MATERIALS AND METHODS

The study was carried out in the radiology department of Riyadh Colleges of Dentistry and Pharmacy hospitals (Munesiya campus). 300 patients were included in the study and their panoramic x-rays were examined. This was done to analyse the type of impaction in the mandibular third molars.

EXCLUSION CRITERIA

1. Not within the specified age group
2. OPG with no evidence of impaction.
3. Files without OPG

RESULTS

According to Table 1, the overall mean age for patients included in the study as 25.88 with standard deviation 4.91, where highest mean age was for cases related to Distoangular type (27.06) and lowest mean age was for cases related to Buccolingual type cases (24.75). According to Table 2, most of the patients included in the study were male, 70.3%, while only 29.7% were female. Results illustrated that 36.3% of all cases were related to vertical impaction type.

Table1: Participants' age profile

Parameter		Minimnm	Maximum	Mean	Std. Deviation
Overall Age		20	40	25.88	4.910
Age	Buccolingual	21	35	24.75	4.713
	Distoangular	20	39	27.06	5.472
	Horizontal	20	39	25.96	5.016
	Mesioangular	20	40	25.54	4.626
	Vertical	20	40	25.94	4.982

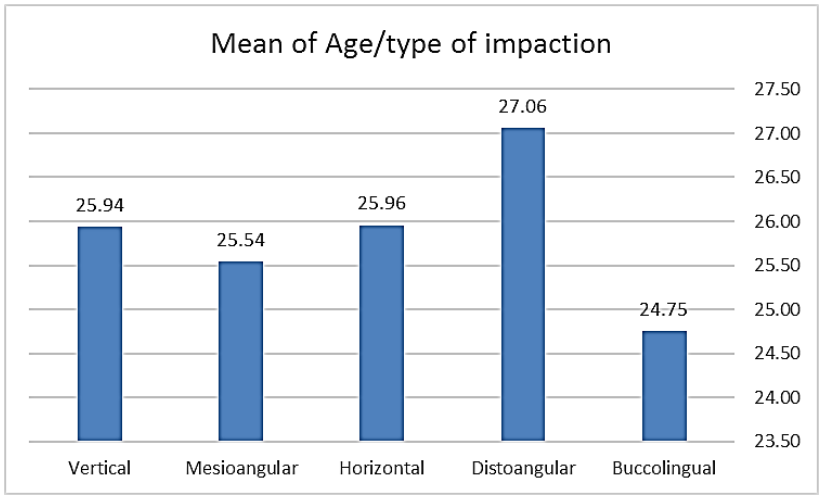

Figure 1: Mean of age per type of impaction

Table 2: Participants' gender profile

Gender	Frequency	Percent	Valid Percent
Female	89	29.7	29.7
Male	211	70.3	70.3

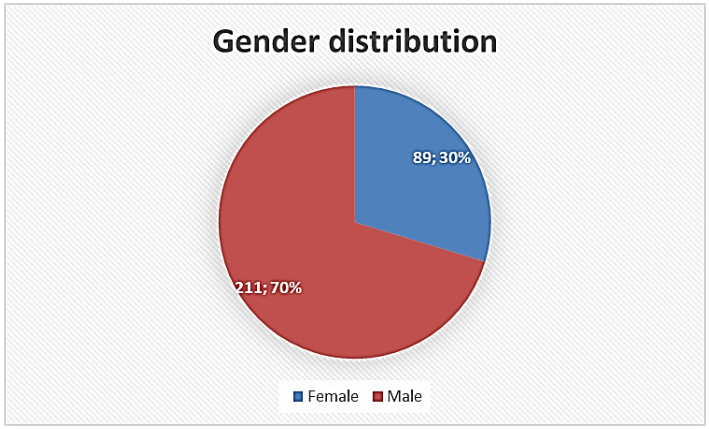

Figure 2: Gender distribution for Participants

However, only 2.7% were related to Buccolingual type cases as shown in Table 3. Related to the classification of impaction classes' results, Table 4 showed that 62.3% of the patients had class II impaction, while only 4.0% had class I impaction.

Table 5 demonstrated that 75% of the Buccolingual cases had class III impaction, while 77.8% from Distoangular cases had class II impaction. About 60% of cases of horizontal and Mesioangular cases had class II impactionand 67% of vertical cases had class II impaction. To find out the correlation between type of impaction, classification of impaction and gender/age profiles, Table 6 showed that there is no relationship between age profile of gender in relation to type of impaction and classification of impaction (p-value more than 0.05).

Table 7 demonstrated the Cross-tabulation test of the type of impaction with gender profile. It shows that there are no differences between males and females in regards to the type of impaction (p-value more than 0.05). Table 8 demonstrated the Cross-tabulation test of the type of impaction with classification of impaction profile. It showed that there are statistically significant differences between classifications ofimpaction regards type of impaction (p-value less than 0.05). wherebuccolingual cases were mostly in class III. While most of the cases of Distoangular, Horizontal, Mesioangular, and Vertical cases are in class II.

DISCUSSION

Management of impacted third molars is the most common and perhaps the most controversial surgical procedure in Oral and Maxillofacial Surgery. A large population of individuals may have one or more impactions. The prevalence and types of impactions vary in different racial and ethnic groups. The prevalence and pattern of impacted third molars have been studied by different authors in different parts of the world like Kramer (1970) in Harlem hospital, N.Y, Haidar et al (1986) in Saudi community and Schersten et al (1989) in Sweden.

This study was carried out in the department of radiology of the RCsDP hospitals. The target sample size was the number of patients seen at the Munesiya campus from January to October 2016 which was 1128 patients. Out of these, 300 patients were included in the study and their panoramic x-rays were examined. This was because 187 patients did not get a panoramic x-ray taken, 250 patients had fully erupted mandibular 3rd molars and 391 patients had already extracted the mandibular 3rd molars.

In regards to the correlation between the type of impaction, classification of impaction and gender/age profiles, our study showed that there is no relationship between age profile of gender in relation to the type of impaction and classification of impaction.With the cross-tabulation test of type of impaction with classification of impaction profile, it showed that there are statistically significant differences between classifications of impaction with regards to type of impaction (p-value less than 0.05) where buccolingual cases were mostly in class III and most cases of Distoangular, Horizontal, Mesioangular and Vertical cases were in class II.

Another study which has quite similar factors assembled within itself stated that affected molar is a much of the time experienced issue around the world. There are different speculations to show the procedure of impaction. Thick bone abatements the development of the teeth forward way. Phylogenic hypothesis: Nature tries to dispose of the neglected organs i.e., utilize improves the organ create, neglect causes a moderate relapse of the organ. Because of changing wholesome propensities for our development, utilization of extensive capable jaws has been essentially wiped out. In this way, finished hundreds of years the mandible and maxilla diminished in measure leaving inadequate space for third molars. The present examination demonstrated 73% of cases had mandibular third molar impaction, 23% percent of cases indicated both mandibular and maxillary impaction and one case showed maxillary impaction. 69% of cases demonstrated incomplete impaction and 31% percent cases indicated finish impaction. In the present examination, the impaction is normal in 30-40 year age gathering. The aftereffect of present investigation finishes up the above finding with 79 rate cases showed mesioangular impaction in mandibular third molar. Vertical and mesioangular impaction were regular in maxillary third molar (Anand & Patil, 2012).

Wahid et al revealed that impactions were more typical in females and vertical impaction is regular in maxillary tooth and mesioangular in the mandibular tooth. Affected tooth was significantly more inclined to dental caries and the second molar related with third molars were likewise inclined to dental caries, the present investigation demonstrates that 31% of affected third molar and 15% of related second molars were influenced by dental caries. Introduce ponder likewise demonstrates that second molar related with mesioangular affected mandibular third molar were more inclined dental caries. Marciani et al proposed that few out of every odd third molar should be evacuated. Full hard affected lower third molars well underneath the cervical edge of the second molar crowns ought to be considered for maintenance. Hazard factors related with third molar evacuation ought to be deliberately settled and disclosed to the patient (Bora et al, 2012).

Similar study which took place detailed that indications related with affected teeth are one of the normal dissensions of patients displaying to oral specialists for treatment. The expulsion of affected molars is an as often as possible performed dentoalveolar surgical methodology worldwide and furthermore at minor oral surgery facility of de'Montmorency College of Dentistry/Punjab Dental Hospital, Lahore Punjab, Pakistan. The present examination was led on patients more than 20 years, on the grounds that by this age, one can separate all the more dependable if the third molar has inadequate space or is despicably situated or its root arrangement has finished, holds an essentially higher recurrence of affected third molars in females, the discoveries of current investigation demonstrated male prevalence 54 perceptions are not for Hellman's hypothesis which expresses that jaws of females quit developing when third molars simply start to emit, while in guys development of jaws proceeds past the season of ejection of third molars bringing about diminished rate of third molar impactions in guys contrasted with females. Individuals in their third decade of life were seen with most noteworthy level of affected third molars (Ali H., 2011).

Strangely, the most astounding extent of asymptomatic third molars supposedly had a level angulation, which may recommend that if there is a sufficient profundity and separation from contiguous second molars, these on a level plane angulated affected teeth, may remain malady free. Caries was most as often as possible present in patients who displayed position A profundity alongside pericoronitis. Pericoronitis was all the more frequently found in patients with positions An and B, in light of the fact that these profundities are for the most part connected with delicate tissue impaction shaping a sleeve of gingiva over incompletely ejected molars.

Table 3: Types of Impaction profile

Type of impaction	Frequency	Percent	Valid Percent
Buccolingual	8	2.7	2.7
Distoangular	18	6.0	6.0
Horizontal	89	29.7	29.7
Mesioangular	76	25.3	25.3
Vertical	109	36.3	36.3

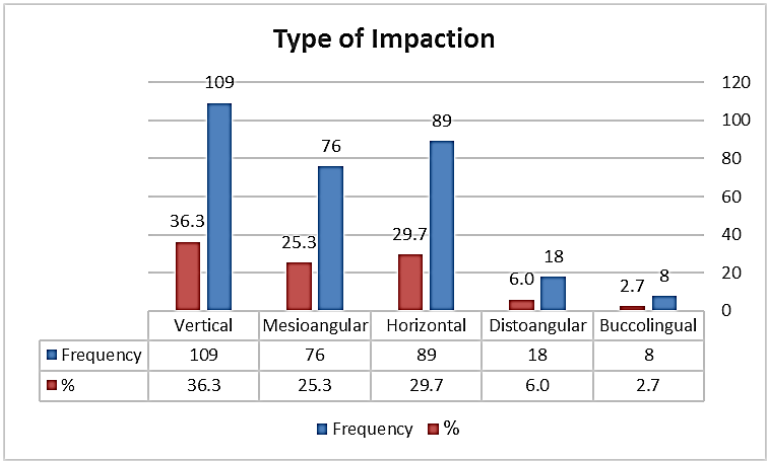

Figure 3: Type of impactions

Table 4: Classification of impaction classes profile

	Frequency	Percent	Valid Percent
Class I	12	4.0	4.0
Class II	187	62.3	62.3
Class III	101	33.7	33.7

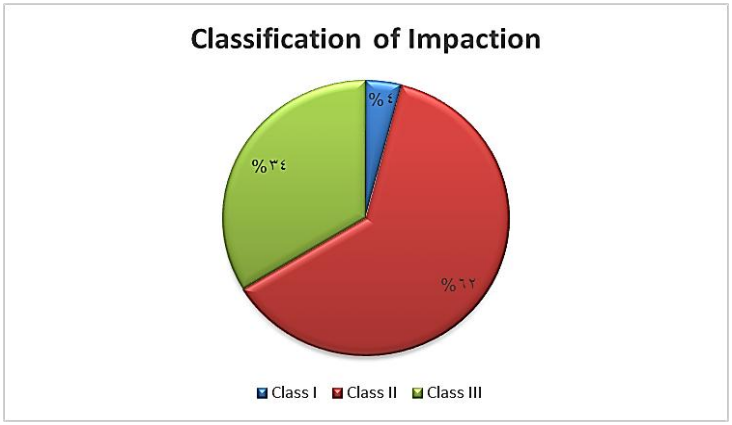

Figure 4: Classification of impaction

Table 5: Cross-tabulation of type of impaction with classes' profile

Type of impaction		Frequency	Percent	Valid Percent
Buccolingual	Class II	2	25.0	25.0
	Class III	6	75.0	75.0
Distoangular	Class I	1	5.6	5.6
	Class II	14	77.8	77.8
	Class III	3	16.7	16.7
Horizontal	Class I	2	2.2	2.2
	Class II	53	59.6	59.6
	Class III	34	38.2	38.2
Mesioangular	Class I	9	11.8	11.8
	Class II	45	59.2	59.2
	Class III	22	28.9	28.9
Vertical	Class II	73	67.0	67.0
	Class III	36	33.0	33.0

Table 6: Correlation between type of impaction, classification of impaction and gender, age profile

		Age	Gender
Type of impaction	r	-0.010	-0.054
	p-value	0.860	0.350
Classification of Impaction	r	-0.080	0.033
	p-value	0.168	0.573

Table 7: Cross-tabulation of type of impaction with gender profile

			Gender		Total			
			Female	Male		Value	df	p-value
Type of impaction	Buccolingual	Freq.	0	8	8	3.972[a]	4	0.410
		%	0.0%	100.0%	100.0%			
	Distoangular	Freq.	6	12	18			
		%	33.3%	66.7%	100.0%			
	Horizontal	Freq.	27	62	89			
		%	30.3%	69.7%	100.0%			
	Mesioangular	Freq.	21	55	76			
		%	27.6%	72.4%	100.0%			
	Vertical	Freq.	35	74	109			
		%	32.1%	67.9%	100.0%			

Table 8: Cross-tabulation of type of impaction with classification of impaction profile

			Classification of Impaction			Total	Value	df	p-value
			Class I	Class II	Class III				
Type of impaction	Buccolingual	Freq.	0	2	6	8	26.905[a]	8	0.001
		%	0.0%	25.0%	75.0%	100.0%			
	Distoangular	Freq.	1	14	3	18			
		%	5.6%	77.8%	16.7%	100.0%			
	Horizontal	Freq.	2	53	34	89			
		%	2.2%	59.6%	38.2%	100.0%			
	Mesioangular	Freq.	9	45	22	76			
		%	11.8%	59.2%	28.9%	100.0%			
	Vertical	Freq.	0	73	36	109			
		%	0.0%	67.0%	33.0%	100.0%			

So also, pericoronitis showed most generally in class II affected molars, which is presumably in light of the fact that they are half unmistakable in the mouth with an operculum and don't have a decent between cuspation with maxillary partners. Ejected maxillary third molars may additionally bother infective process in the operculum by always damaging delicate tissue. Fractional or submucosal impaction is a noteworthy hazard factor for intense pericoronitis in affected mandibular third molars. The majority of the affected third molars which demonstrated a related tumor development or cystic change showed position C profundity. Be that as it may, it may not demonstrate a genuine profundity in light of tumor or growth related uprooting bringing about an expanded profundity (Ahlqwist, 2016).

Study uncovered that females indicated a more prominent predominance of impactions when contrasted with guys. This is in concurrence with the past investigations indicating sexual orientation dissemination. Specialists associated the more noteworthy commonness of impactions in females with development. At the period of third molar ejection, development in females stops though in the male it proceeds and gives space third molar to emit. Mandibular impactions were more pervasive when contrasted with maxillary impactions. With respect to angulation of impactions, this examination demonstrated that in the maxilla, vertical impactions were more noteworthy in number when contrasted with mesioangular or distoangular. Our discoveries are as per an examination directed in Singapore yet these are in conflict with an investigation which detailed that mesioangular impactions were more typical in the maxilla. With respect to, our examination revealed that mesioangular impactions were more predominant when contrasted with vertical or distoangular headings. Concentrates from China, Spain and Malaysia are in concurrence with our investigation (Pankaj, 2013).

In a few investigations, level of affected teeth was surveyed by the level of cemento-finish intersection in the examination with alveolar bone tallness. This technique avoids the regularly ejecting teeth from test of affected teeth. In this examination, we surveyed the level of impaction by correlation of occlusal surface of third molar and second molar. We found that IIB is the most well-known level of mandibular impaction took after by IIA and IA. These discoveries are as per a few investigations while some different examinations announced distinctive outcomes. Monaco et al. announced in a Canadian report that the most well-known level of affected teeth was Class II.

Obiechina et al. found in his examination that IIA was the most widely recognized level of impactions in mandible. There are numerous contributing variables to impaction of teeth and some of them are postponed emission of third molars and absence of room on distal side on second molars. However, a few different elements should be examined. This investigation depended on OPGs from healing center record and just speaks to a modest number of patients (Adeyemo, 2005).

Another study which has similar issues described that patients in their third decade of life were seen with most noteworthy level of affected mandibular third molar impaction which relates with the examinations done in past in Pakistan and different nations. This investigation likewise shows that females were generally influenced with molar impaction when contrasted with guys and this finding is as per different examinations in regards to sexual orientation dispersion. In our examination, there was less number of patients in the last two age bunches when contrasted with different gatherings and this could be because of early evacuation and dismissed oral cleanliness upkeep (Adeyemo, 2005). Knutsson et al, demonstrated that there was high danger of creating pericoronitis in distoangular and vertical position impaction,

This ought to be clarified in wording that sustenance impaction was normal in such kinds of impactions yet the consequences of our examination show that pericoronitis was the most widely recognized finding in mesioangular impactions. Likewise the higher extent of patients having dental caries and periodontal illness in the present investigation than others can be credited to absence of oral medicinal services taken by the populace under examination.

CONCLUSION

The present study concludes that vertical impaction was the most common type of impaction and buccolingual impaction was the least common. However, to get a more accurate analysis, a study with a larger number of patients needs to be carried out.

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