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Original Research Article

The prevalence of impacted and supernumerary teeth among Libyans attending a university hospital

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ABSTRACT

Background: In this study, we examined the prevalence of impacted and supernumerary teeth in Libyans based on their age, gender, and type of teeth.

Materials and Methods: Data sources were 374 patients referred to the University Hospital at Benghazi and Almarj as part of this study, including their clinical records. Age, gender, the number of impacted/supernumerary teeth, the type and frequency of impacted/supernumerary teeth, and other variables were examined and processed.

Results: A total of 374 patients were examined, of which 295 (78.8%) were female, and 79 (21.2%) were male, with a male-to-female ratio of 1:3.7. Among patients with impacted teeth, 194 (35.8%) had one, 134 (31.5%) had two, and 139 (32.7%) had three or more impacted teeth. Of 585 impacted teeth, there were only 23 premolars (3.93%), 10 supernumerary teeth (1.7%), 2 impacted molar (0.34%), 7 impacted incisors (1.19%), 2 impacted odontome (0.34%) and 2 impacted deciduous teeth (0.34%).

Conclusions: The third molars revealed the highest frequency of impaction (P<0.001), while the number of impacted teeth of the mandible was more than that of the maxilla (P<0.001). Among the most commonly impacted teeth, the maxillary canines were the most commonly impacted teeth and the mesiodens were the most frequent supernumeraries. To prevent malocclusion and malalignment of permanent teeth, it is crucial to detect supernumerary and impacted teeth early with panoramic radiographs.

1. Introduction

The phenomenon of tooth impaction is common and has been extensively reported in the literature.[1–6] Due to the complex nature of the eruption process, any tooth can be prevented from erupting within its expected time by physical obstructions or following an abortive eruptive path. The tooth can impact within the dentoalveolar process or remote or heterotopic areas, like the nasal cavity, sinuses, mandibular ramus, or inferior border of the mandible.[7] It is common for impacted teeth to be covered by mucosa and bone for more than two years after their physiological eruption time, based on clinical and radiographic evidence.

Teeth normally erupt when half to three-quarters of their final root lengths have been formed.[5,8] In some cases, impacted teeth are asymptomatic, but in other cases, tooth impaction can cause pain, swelling, and tenderness.[7] In addition to being multifactorial and genetically based, there are also three different etiological factors associated with tooth impaction: systemic, local and genetic factors.[8] A tooth's physical eruption may be obstructed by the adjacent tooth, dense bone, or soft tissues.[9]

Despite the fact that the prevalence and distribution of impacted teeth in different jaw regions varies considerably, tooth impaction is a common dental condition affecting

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between 0.8 and 3.6% of all adults.[9,10] Any tooth in the dental arch can become impacted, but the most commonly impacted teeth are the third molars, maxillary canines, mandibular premolars, and maxillary central incisors.[8] It is more likely that supernumerary teeth will be found in the permanent than in the primary dentition.[11,12] Supernumerary teeth can cause crowding, malocclusion, and other malocclusion, and other dental issues.[13,14]

Dentists may find it challenging to diagnose and treat impacted teeth and may need to refer their patients to specialists. To diagnose tooth impaction, radiographic examinations are usually taken. Panoramic or periapical radiographs (OPG) are the most common methods for diagnosing tooth impaction. However, 2D radiography alone is not always sufficient to make a diagnosis. For assessing tooth impaction, some authors believe computerized tomography (CT) or cone beam computerized tomography (CBCT) is the best diagnostic tool.[11,13]

Periodontal disease, dental caries, odontogenic cysts and tumours, pain of unexplained origin, jaw fracture, and resorption of the root of the adjacent tooth are problems related to teeth impaction.[1,6,15,16] These impacted teeth may result in tooth movement, esthetics, and functional consequences.[14] To prevent adverse dental consequences associated with tooth impaction, dental practitioners should be made aware of this frequently occurring phenomenon. In particular, by emphasizing the importance of early detection and intervention, since impacted teeth are generally asymptomatic, but are often detected incidentally by dentists and orthodontists during routine visits.

Neither the scope nor frequency of impacted and supernumerary teeth have yet been evaluated in African nations such as Libya, which would allow a comprehensive epidemiological profile to be established. To determine the possible variations in frequency, it is necessary to compare these alterations among African countries. The purpose of this study was to determine if impacted and supernumerary teeth are prevalent in Libya based on radiographs and clinical exams.

2. Materials and Methods

The data for the study was collected from 374 Libyan patients presented to the public clinics of the University Hospital in the cities of Benghazi and Almarj in Eastern Libya between 2016 and 2019. Approval for this study was obtained from the University of Benghazi institutional review board.

Patients visiting the department during the study period were examined intraorally by an experienced oral surgeon using a mouth mirror under optimal lighting. In all panoramic radiographs, the magnification factor was 1.23, using a DentsplyGendexOrthoralix 9200 (Dentsply Asia, Milford, US). The radiographs were analyzed on standard light boxes simultaneously by one group of researchers to determine the impacted and supernumerary teeth. The teeth were considered impacted if they were prevented from erupting by a physical barrier, usually other teeth, or they remained in the jaw for more than 2 years after their mean eruption age because their orientation was nonvertical within the periodontal structures. A supernumerary tooth is an extra tooth that erupted or did not erupt, similar or different from the other teeth in the group. Supernumerary teeth may be erupted or unerupted and may appear similar or different from other teeth in their groups.

Patient characteristics were recorded, such as age, sex, number of supernumerary teeth, eruption status, morphology, position, orientation, and complications associated with the concerned tooth. Those patients with trauma to the mouth or fractured teeth that could have affected dentition growth were excluded, as were those with hereditary diseases such as Down's disease or cleidocranialdysostosis.

SPSS Version 16 software (SPSS Inc, Chicago, Illinois, USA) was used to analyze the collected data. Age was summarized as means and standard deviations, while all other variables were expressed as frequencies and percentages. The chi-square test was used to compare the prevalence between males and females (P>0.05).

3. Results

Out of 374 Libyan patients included in this study, 295 were female (78.8%) and 79 were male (21.2%) with male to female ratio (1:3.7). The age ranged from 10 to 37 years. The 20 to 24 years age group had the highest prevalence of tooth impaction (41.71%), followed by the 15-19 age group, then the prevalence decreased with other age groups. (Table 1)

Table 1: The distribution of impacted and supernumerary teeth based on the age of the patient

Age group (years)	Frequency	Percentage
10-14	20	5.34%
15-19	130	34.75%
20-24	156	41.71%
25-29	53	14.17%
30-34	13	3.47%
≥35	2	0.53%
Total	374	

In total, there were 585 impacted teeth among the 374 affected patients, with an average of 1.5 teeth per person. A total of 467 impacted teeth were found in 295 females, while 118 were found in 79 males. The prevalence of impacted teeth was not significantly different between genders ($p > 0.05$). One hundred and ninety-four patients had at least one impacted tooth, 158 patients had two impacted teeth, 13 patients had three impacted teeth, and 13 patients had four impacted teeth. ($p>0.05$)

The sample of 585 impactions was further divided according to the jaw and side involved (Table 2). Statistically, no significant differences were observed between the jaw side and tooth impaction ($p > 0.05$). However, the type of impacted tooth and gender did not show any relationship ($p > 0.05$).

444 (85.79%) impacted wisdom teeth were characterized by 378 (64.61%) impacted mandibles (right side (n=202), left side (n=176)) and 66 impacted maxillas (right side (n=30), left side (n=36). 95 patients had at least one impacted canine out of all patients with impacted canines (16.23%). Eighty percent of canines were found in the maxilla (37 on the right and 42 on the left) and twenty percent in the mandible (10 on the right and 9 on the left). Among impacted maxillary canines, the palatal position was the most common (n=52), followed by the labial position (n=23) and the intermediate position was the least (n=10). Compared with maxillary canines, mandibular canines are four times less likely to be impacted (Table 3).

A distribution of impacted wisdom teeth according to Winter's classification showed 175 wisdom teeth (39.4%) were impacted horizontally, 165wisdom teeth (37.1%) were impacted mesially angulated, 56 wisdom teeth (12.6%) were impacted vertically, 48 wisdom teeth (10.8%) were impacted distally, and only three wisdom teeth were inverted.

Of 585 impacted teeth, there were only 23 premolars (3.93%), 10 supernumerary teeth (1.7%), 2 impacted molar (0.34%), 7 impacted incisors (1.19%), 2 impacted odontome (0.34%) and 2 impacted deciduous teeth (0.34%).

All patients were statistically more likely to have mandibular third molars impacted in a statistically significant manner than every other tooth based on binomial tests ($P < 0.001$). The impaction of canines did not differ statistically significantly between males and females ($P > 0.05$). There was a greater likelihood of impaction in female premolars and molars than in males (P 0.05). Gender did not affect the number of impacted teeth. ($p> 0.05$)

As shown in Table 4, surgical removal of impacted teeth was due to orthodontic reasons (492 teeth, 84.10%), caries of the impacted and/or adjacent teeth (47 teeth, 8.03%), pericoronitis (30 teeth, 5.12%), and prosthodontic reasons (16 teeth, 2.73%). There were 24 impacted teeth exposed for orthodontic traction (including 14 canines and 10 incisors and premolars), while 561 impacted teeth were surgically removed for the reasons mentioned.

4. Discussion

An impacted or supernumerary tooth may be detected through clinical and radiographic examination. Several factors determine whether or not these teeth would erupt, including space in the dental arch, pathological and neoplastic processes associated with them.[10,13] Oral surgeons and dentists need to understand the signs and symptoms of tooth impaction, as well as some of the interceptive treatments available. It is only through a thorough assessment that iatrogenic damage to adjacent structures can be reduced and valid support for suitable treatment can be provided.

Intra-oral dental radiographs, panoramic radiographs, and computed tomography have all been used to diagnose and treat tooth impaction by providing accurate localization.[14,17–19] In most cases, the initial radiograph is a panoramic radiograph, which provides information about the teeth in both arches, as well as the surrounding structures. Since it is both economically and practically advantageous, it is also widely used in epidemic research as a main method and basis for the evaluation of impacted and supernumerary teeth. Radiography provides useful information for diagnosis, follow-up of tooth eruption, and treatment outcomes; but it may not be sufficient in some cases. For accurate and precise information, CBCT was requested in some of our cases. In CBCT, the relationship between an impacted tooth, its neighbouring tooth, the mandibular canal, and the maxillary sinus, can be visualized in three dimensions, which is superior to conventional radiographs.[13]

Due to their proximity to anatomical structures, impacted teeth can result in serious problems such as pathologies and complications.[5] These teeth can result in decay lesions and resorption in the adjacent teeth, periodontal disease, marginal bone loss at the root surface of the adjacent teeth, and cysts or tumors.[7,8,14] Because of the associated complications and pathology, the extraction of impacted teeth has become a common oral surgical procedure. For patients with no symptoms or associated pathologies, many investigators have questioned whether removal is necessary.[20–22] These comments stem from the belief that retaining impacted teeth for an extended period will cause little pathological change to the tooth or its surrounding tissue.

There was also reported to be a greater prevalence of impacted teeth in females than in males, which is consistent with our results.[4,6,8–12] Out of 374 Libyan patients included in this study, 295 were female (78.8%) and 79 were male (21.2%) with male to female ratio of 1:3.7. Although females have more impacted canines, males tend to have more supernumerary and impacted premolars and molars.[10,12,14] Moreover, males have a higher prevalence of supernumerary teeth, while females have an impacted canine. Considering that most of our patients came to us as a result of orthodontist referrals as part of their treatment plan, we are speculating that more females are seeking orthodontic treatment than males, and as a result, we see a higher percentage of females needing treatment for supernumerary and impacted teeth at our center. We are trying to determine if this trend is due to cultural factors, or if it is due to biological causes, and this needs further

Table 2: The distribution of impacted and supernumerary teeth according to the arch and gender

	Gender				
	Female	Male	Total	%	p-value
Maxilla	137	32	169	28.9	0.000*
Mandible	330	86	416	71.1	
Total	467	118	585		

*Statistical significance (p ≤0.05)

Table 3: The distribution of impacted and supernumerary teeth based on gender

	Female		Male			
	Right	Left	Right	Left	Total	%
Maxilla (n= 169)						
Third molar	25	31	5	5	66	11.3
Canine	28	40	6	2	76	12.9
Premolar	4	3	3	2	12	2.1
Second molar	0	0	0	0	0	0
Incisor	1	1	2	1	5	0.8
Supernumerary	0	3	2	1	6	1.0
Odontome	1	0	1	0	2	0.3
Deciduous	0	0	1	1	2	0.3
Mandible (n= 416)						
Third molar	164	147	38	29	378	64.6
Canine	2	5	8	4	19	3.2
Premolar	1	6	1	3	11	1.9
Second molar	1	1	0	0	2	0.3
Incisor	0	2	0	0	2	0.3
Supernumerary	0	0	3	0	4	0.7
Total	227	240	69	49	585	

Table 4: The distribution of impacted and supernumerary teeth according to reasons for surgical treatment

	Caries		Orthodontic		Pericoronitis		Prosthodontic		Total
	R*	L**	R	L	R	L	R	L	
Third molars	26	20	181	176	19	11	6	5	444
Canines	0	0	42	51	0	0	2	0	95
Premolars	0	0	9	12	0	0	0	2	23
Molars	0	1	0	0	0	0	1	0	2
Incisors	0	0	3	4	0	0	0	0	7
Supernumerary	0	0	4	6	0	0	0	0	10
Odontome	0	0	2	0	0	0	0	0	2
Deciduous	0	0	1	1	0	0	0	0	2
Total	26	21	242	250	19	11	9	7	585

*R (right), **L (left)

research to understand the phenomenon better.

We found the 20 to 24 years age group had the highest prevalence of tooth impaction (41.71%), followed by the 15-19 age group, then the prevalence decreased with other age groups. This is in agreement with the literature which demonstrates a similar pattern in the prevalence.[1–4,6,8,9,15,16,23] It is to be noted that this study includes participants between the ages of 10 and 37. Our sample has a low age limit because patients of all ages were referred to our center for a variety of reasons such as impacted deciduous teeth, supernumerary teeth that require surgical removal, and other pathologies. The age range of our participants allowed us to gain insight into the impact of these various variables on tooth impaction across the whole population in this part of Libya.

Variations in impacted teeth prevalence and distribution in the maxilla and mandible exist throughout the world.[1–8] A variety of factors can influence tooth impaction, such as age, eruption timing, ethnicity, and region, as well as how radiographic evaluation is conducted. A prevalence of 16.7% to 68.6% of third molar impaction has been reported.[1–5,8–11,15,16,23] The study involved 374 patients

with impacted teeth, of whom 194 had at least one impacted tooth, 158 had two impacted teeth, 13 had three impacted teeth, and 9 had four impacted teeth. The number of impacted teeth per person in this study was 1.5, which was similar to other studies in which the number ranged from 1.3 to 2.2.[1–3,8,9,15,16,23]

It was evident that impacted third molars were the most prevalent dental anomaly (75.89%), followed by impacted canines (16.23%), impacted premolars (3.93%), supernumerary teeth (1.70%), and impacted incisors (1.19%), whereas impacted molars (0.34%), impacted deciduous teeth (0.34%) and impacted odontomes (0.34%) were the least common anomalies. Previously published literature has also shown a similar pattern.[1–5,10,11,15,16,23] This study found a high incidence of impaction of third molars, with the mandibular wisdom teeth impacted most frequently (P 0.001), followed by the maxillary wisdom teeth.

A majority of impacted third molars had to be removed due to orthodontic reasons, however, 7.9% of patients and 5.1% of patients had to have their impacted teeth removed because of caries and pericoronitis. An institutional study conducted in 2008 in the same city in Libya examined the indications for removing impacted third molars, finding that recurrent pericoronitis was the major cause for removal of the third molars, followed by carious involvement of the lower second molar and third molar.[21] In addition, only 2% of the patients got their impacted third molars removed due to orthodontic reasons, which contrasts with the findings of the current study. Investigating the changes in referral patterns from orthodontists and general dentists to oral surgeons in the future is necessary.

The pattern of angulation and depth of impaction of mandibular third molars in this study corresponds to that reported earlier, where the majority are horizontal or mesioangular.[1–6,17–19,24] The horizontal impaction was the most prevalent in our sample population, whereas the inverted position was the least common. There is potential clinical significance to the angulation of an impacted tooth against a second molar. As impacted lower third molars become mesioangular and horizontal and partially exposed in the mouth, their occlusal surfaces accumulate plaque against the second molars' distal surfaces, resulting in periodontal breakdown and an increased risk of caries on the second molars.[20,21,25]Therefore, it is important to diagnose and treat impacted lower third molars promptly.

It has been reported that the prevalence of impacted maxillary canines ranges from 0.2% to 3.58%, significantly higher than that of the mandibular canines (0.35% to 0.80%).[1,4,8,11] There was a higher prevalence of maxillary canines (12.9%), compared to mandibular canines and mandibular canines (3.25%) in our study. Canine teeth are formed deep in the maxilla, unlike molars, so their eruption may be impacted by lateral incisors and long eruption paths.[15] As the upper canine runs along the root of the lateral incisor, the crown is prone to be inclined mesially at the distolabial side of the root, which often results in lateral incisor root resorption.[15]

There were 52 cases of impacted maxillary canines that were in the palatal position (68.4%), 23 cases in the labial position (30.2%), and one instance in the intermediate position (1.3%). The ratio of palatal to buccal impaction varies from 2:1 to 9:1 by previous researchers. The canine tooth is of great importance to occlusal stability and esthetics, so the impaction of the canines deserves special attention. As the canine tooth is the last tooth erupting in the dental arch, its eruption pattern is complicated. Canine impaction can lead to a wide range of malocclusion, such as overjet, open bite, crossbite, and crowding.[25] There are four treatment options for impacted canines: observation, minimal intervention, transplantation, and extraction, so it's essential to diagnose the problem early.

Premolar impaction is relatively rare, with a prevalence between 2.1-2.7% based on the few studies available.[10,11,23] This study's prevalence, however, is higher, with 3.93% equivalent to 4.3% found in Santosh et al. Premolar impaction can lead to diastema, malocclusion, and malalignment of teeth. Treatment options include observation, orthodontics, and extraction. Early diagnosis and treatment are essential for successful outcomes. It is also reported that mandibular premolar teeth are reported to have a higher rate of prevalence than maxillary premolar teeth.[1–3]

Both mandibular and maxillary first and second permanent molars are rarely impacted, as opposed to the third molars. The prevalence of these molars has been reported to range from 0.03% to 0.3% in many studies.[1,2,16,18,23] In most cases, asymptomatic patients with impaction of permanent molars are diagnosed during a routine radiographic examination, which delays diagnosis and timely treatment.[21] Both of our cases were accidentally discovered and originally referred to be treated for third molars.

A mesioden is a supernumerary tooth which occurs most often between the maxillary central incisors at either side of the dental arch, which accounts for up to 80% of the supernumerary teeth in the oral cavity.[12–14,23] While in primary dentition, supernumerary teeth are much more common, in permanent dentition, they are reported to be between 0.3 and 3.8%.[11–13] There were ten supernumerary teeth in our study, and six of these teeth were mesiodens. We confirm the sexual dimorphism of this pathology, demonstrating a higher incidence in males than females, as seen in previous studies. In our study, the ratio of males to women was 1.5:1, which was higher than previous studies that had a ratio of as low as 1.18:1.[11–13] In addition to geographical differences, racial differences might also play an important role in explaining these differences. Regarding

the location of diagnosed supernumerary teeth in our study, we found a larger proportion of supernumerary teeth (60%) in the superior maxilla than in the mandible, agreeing with other studies which are between 55 to 97%.[11–14,17] This may be explained by the morphological differences between the maxilla and mandible, such as the presence of larger spaces in the maxilla which are more likely to accommodate additional teeth. Additionally, the maxilla is also more prone to growth during childhood, which might also contribute to the higher prevalence of supernumerary teeth in the maxilla.

5. Clinical Significance

As tooth impaction is generally asymptomatic, only a small percentage of people seek treatment. People who have tooth impaction and supernumerary teeth are usually discovered by chance by a general dentist or orthodontist during a routine checkup. Dental practitioners should therefore be made aware of this frequently occurring condition and stress the need for detection and intervention as early as possible to prevent further complications. Early intervention is important to prevent damage to the adjacent teeth, as well as the orthodontic and periodontal structures.

6. Conclusion

Racial differences as well as differences in research methodology could explain the difference in results between studies. The present study found that females were more likely to have impacted teeth: the third molars revealed the highest frequency of impaction, and the number of impacted mandible teeth was significantly greater than the number of impacted maxilla teeth. Among the most common causes of surgery were orthodontics and caries of impacted teeth and adjacent teeth.

7. Limitations of the Study

A study involving patients who were treated for impacted teeth or supernumerary teeth was conducted at the oral surgery department, so the results may not be representative of the general public. Performing an audit of the records of all dental offices in the area would help assess the prevalence.

8. Source of Funding

No funding was obtained.

9. Conflict of Interest

The authors declare that they have no conflict of interest.

10. Ethical Approval

The study was approved by the Institutional Review Board of Benghazi University.

11. Informed Consent

Does not apply.

References

1. Fardi A, Kondylidou-Sidira A, Bachour Z, Parisis N, Tsirlis A. Incidence of impacted and supernumerary teeth-a radiographic study in a North Greek population. *Med Oral Patol Oral Cir Bucal*. 2011;16(1):56–61.
2. Alamri A, Alshahrani N, Al-Madani A, Shahin S, Nazir M. Prevalence of impacted teeth in Saudi patients attending dental clinics in the Eastern Province of Saudi Arabia: A Radiographic Retrospective Study. *ScientificWorldJournal*. 2020;2020:8104904.
3. Al-Zoubi H, Alharbi AA, Ferguson DJ. Frequency of impacted teeth and categorization of impacted canines: A retrospective radiographic study using orthopantomograms. *Eur J Dent*. 2017;11(1):117–21.
4. Byahatti S, Ingafou MS. Prevalence of eruption status of third molars in Libyan students. *Dent Res J (Isfahan)*. 2012;9(2):152–7.
5. Subhashraj K, Alshammari F, Alshammari F. Radiological pathologies associated with impacted mandibular third molars in a group of Saudi population. *EC Dent Sci*. 2018;17(6):907–12.
6. Idris AM, Al-Mashraqi AA, Abidi NH. Third molar impaction in the Jazan Region: Evaluation of the prevalence and clinical presentation. *Saudi Dent J*. 2021;33(4):194–200.
7. Bouloux GF, Steed MB, Perciaccante VJ. Complications of third molar surgery. *Oral Maxillofac Surg Clin North Am*. 2007;19:117–28.
8. El-Khateeb SM, Arnout EA, Hifnawy T. Radiographic assessment of impacted teeth and associated pathosis prevalence. Pattern of occurrence at different ages in Saudi male in Western Saudi Arabia. *Saudi Med J*. 2015;36(8):973–9.
9. Yıldırım H, Büyükgöze-Dindar M. Investigation of the prevalence of impacted third molars and the effects of eruption level and angulation on caries development by panoramic radiographs. *Med Oral Patol Oral Cir Bucal*. 2022;27(2):106–112.
10. Mustafa AB. Prevalence of impacted pre‑molar teeth in College of Dentistry. *J Int Oral Health*. 2015;7(6):1–3.
11. Tetay-Salgado S, Arriola-Guillén LE, Ruíz-Mora GA. Prevalence of impacted teeth and supernumerary teeth by radiographic evaluation in three Latin American countries: A cross-sectional study. *J Clin Exp Dent*. 2021;13(4):363–8.
12. Hadziabdic N, Haskic A, Mujkic A, Hasic-Brankovic L, Dzankovic A, Korac S. Epidemiological, clinical and radiographic features of supernumerary teeth in nonsyndromic Bosnian and Herzegovinian population: a monocentric Study. *Med Arch*. 2022;76(5):348–53.
13. He L, Que G, Yang X, Yan S, Luo S. Prevalence, clinical characteristics, and 3-dimensional radiographic analysis of supernumerary teeth in Guangzhou, China: a retrospective study. *BMC Oral Health*. 2023;23(1):351.
14. Syriac G, Joseph E, Rupesh S, Philip J, Cherian SA, Mathew J. Prevalence, characteristics, and complications of supernumerary teeth in non-syndromic pediatric population of South India: A Clinical and Radiographic Study. *J Pharm Bioallied Sci*. 2017;9(Suppl 1):231–6.
15. Hartman B, Adlesic EC. Evaluation and management of impacted teeth in the adolescent patients. *Dent Clin North Am*. 2021;65(4):805–14.
16. Patil S, Maheshwari S. Prevalence of impacted and supernumerary teeth in the North Indian population. *J Clin Exp Dent*. 2014;6(2):116–20.
17. Isola G, Cicciù M, Fiorillo L, Matarese G. Association between odontoma and impacted teeth. *J Craniofac Surg*. 2017;28(3):755–8.
18. Gisakis IG, Palamidakis FD, Farmakis ETR, Kamberos G, Kamberos S. Prevalence of impacted teeth in a Greek population. *J Investig Clin Dent*. 2011;2(2):102–9.
19. Kumar VR, Yadav P, Kahsu E, Girkar F, Chakraborty R. Prevalence and pattern of mandibular third molar impaction in Eritrean

population: A retrospective study. *J Contemp Dent Pract*. 2017;18(2):100–6.
20. Saravana GH, Subhashraj K. Cystic changes in dental follicle associated with radiographically normal impacted mandibular third molar. *Br J Oral Maxillofac Surg*. 2008;46(7):552–3.
21. Sarica I, Derindag G, Kurtuldu E, Naralan ME, Caglayan F. A retrospective study: Do all impacted teeth cause pathology? *Niger J Clin Pract*. 2019;22(4):527–33.
22. Krishnan B, El-Sheikh MH, Rafa EG, Orafi H. Indications for removal of impacted mandibular third molars: a single institutional experience in Libya. *J Maxillofac Oral Surg*. 2009;8(3):246–8.
23. Kumar MPS, Aysha S. Angulations of impacted mandibular third molar: a radiographic study in Saveetha dental college. *J Pharm Sci Res*. 2015;7(11):981–3.
24. Sandhu S, Kaur T. Radiographic study of the positional changes and eruption of impacted third molars in young adults of an Asian Indian population. *J Oral Maxillofac Surg*. 2008;66(8):1617–24.
25. Kaczor-Urbanowicz K, Zadurska M, Czochrowska E. Impacted teeth: An interdisciplinary perspective. *Adv Clin Exp Med*. 2016;25(3):575–85.

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