ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2024; 10(2): 393-397

www.oraljournal.com
Received: 13-04-2024
Accepted: 15-05-2024

Alexia Maylid Mendez Vargas
Master's in Sciences Student, Universidad Autonoma de Nuevo Leon, Facultad de Odontologia, Monterrey, Nuevo Leon, 64460 ZIP, Mexico

Adriana Laura Garcia Villanueva
Profesor, Universidad Autonoma de Nuevo Leon, Facultad de Odontologia, Monterrey, Nuevo Leon, 64460 ZIP, Mexico

Laura Deyanira Garcia Paez
Profesor, Universidad Autonoma de Nuevo Leon, Facultad de Odontologia, Monterrey, Nuevo Leon, 64460 ZIP, Mexico

Sheilla Del Carmen Roa Gonzalez
Profesor, Universidad Veracruzana, Facultad de Odontología, Veracruz, Veracruz, Mexico

Yolanda Morales Gonzalez
Professor, Universidad Veracruzana, Facultad de Odontología, Veracruz, Veracruz, Mexico

Mercedes Soledad Briceño Ancona
Profesor, Universidad Veracruzana, Facultad de Odontologia, Xalapa, Veracruz, Mexico

Magda Estela Machin Borges
Professor, Universidad Veracruzana, Facultad de Odontologia, Xalapa, Veracruz, Mexico

Kary Nohemí Ramos Delgado
Dentistry Student, Universidad Autonoma de Nuevo Leon, Facultad de Odontologia, Monterrey, Nuevo Leon, 64460 ZIP, Mexico

Juan Manuel Solis Soto
Professor, Universidad Autonoma de Nuevo Leon, Facultad de Odontologia, Monterrey, Nuevo Leon, 64460 ZIP, Mexico

Corresponding Author:
Alexia Maylid Mendez Vargas
Master's in Sciences Student, Universidad Autonoma de Nuevo Leon, Facultad de Odontologia, Monterrey, Nuevo Leon, 64460 ZIP, Mexico

Supernumerary teeth in pediatric patients: An updated scoping review

Alexia Maylid Mendez Vargas, Adriana Laura Garcia Villanueva, Laura Deyanira Garcia Paez, Sheilla Del Carmen Roa Gonzalez, Yolanda Morales Gonzalez, Mercedes Soledad Briceño Ancona, Magda Estela Machin Borges, Kary Nohemí Ramos Delgado and Juan Manuel Solis Soto

DOI: https://doi.org/10.22271/oral.2024.v10.i2f.1966

Abstract
Introduction: Supernumerary teeth continue to occur more frequently worldwide, with a prevalence of 0.3 to 3.8%, depending on the dentition. Up to 28% in patients with congenital anomalies and 1% in non-syndromic patients.
Objective: To analyze the literature on the etiology, epidemiology, classification and management of supernumerary teeth.
Methodology: A search strategy was carried out in PubMed, Scopus and Google Scholar databases, using a combination of keywords including: "supernumerary teeth", "etiology", "epidemiology", "classification" and "management".
Results: The main cause of supernumerary teeth formation was found to be local hyperactivity of the dental lamina, as well as hereditary and environmental factors. The prevalence of these is 0.3 to 0.8% in the primary dentition and 1.5 to 3.8% in the permanent dentition. The most common supernumerary tooth in pediatric patients is the mesiodens and the upper lateral incisor, of the supplementary type. The correct management will depend on the case of each patient, where the tooth can be kept in the mouth being functional, or extracted if it represents complications.
Conclusion: The main cause of supernumerary teeth is local hyperactivity of the dental lamina, hereditary and environmental factors, these are present in 0.3 to 0.8% and 1.5 to 3.8%, in primary and permanent dentition, respectively. It is more common to find supplementary mesiodens and upper lateral incisor in children and the correct management is to keep it in the mouth or extract it, depending on the patient.

Keywords: Supernumerary teeth, etiology, epidemiology, classification, management

1. Introduction
Supernumerary teeth continue to occur more frequently worldwide, with a prevalence of 0.3 to 3.8%, depending on the dentition. This number can reach 28% in patients with congenital anomalies [1], and 1% in non-syndromic patients [2]. Odontogenesis begins between the 6th and 8th week of intrauterine life. This represents the life cycle of a tooth from growth to appearance in the mouth, and consists of the following stages: initiation, proliferation, histodifferentiation, morpho-differentiation, apposition and calcification [3]. It is completed between the ages of 18 and 25 years [4]. Dental anomalies are caused by an interruption in the process of odontogenesis, and are classified according to shape, structure, size and number [5]. Some of these are: macrodontia, fusion, invagination, supernumerary teeth, etc [6]. Supernumerary teeth can appear in various ways, including singly or multiply, impacted or erupted, and in either the maxilla or mandible, or even both [7]. Panoramic radiographs or CBCT are required for diagnosis [8]. It is important to carry out a timely diagnosis of supernumerary teeth because this contributes to improving the dental health status of patients, to avoid future complications and to achieve the desired esthetic appearance of the smile and face; in addition, we cannot leave aside the emotional and social aspects that a patient with

supernumerary teeth may be facing. To analyze the literature on supernumerary teeth in pediatric patients in relation to their etiology, epidemiology, classification and management.

2. Materials and Methods

An electronic search was carried out through PubMed, Google Scholar and Scopus, using the terms: "supernumerary teeth", "etiology", "epidemiology", "classification" and "management", using Boolean operators "AND" and "OR". The quality of the articles was evaluated using guidelines tool. As inclusion criteria, only articles from high impact journals were collected, including systematic reviews, literature reviews or clinical studies that treated in behavior management techniques. Likewise, the search was delimited in terms of publication date, taking only recent articles, published mainly within the last 5 years. The selection of articles was made according to the relevance of the title and/or abstract to the topic to be analyzed. After the selection of relevant studies, their references were searched for possible additional relevant studies that met the inclusion criteria.

3. Results and Discussion

3.1 Etiology

Supernumerary teeth, also called hyperdontia, are considered one of the most frequently observed dental anomalies in children. Today, the etiology of supernumerary teeth is not very clear; however, it is still being studied. There are risk factors to take into account, both genetic and environmental. Studies have shown that the following factors are associated with the risk of developing supernumerary teeth: male sex, a history of severe dental infections or chemotherapy, as well as taking medication during pregnancy, cancers, the use of electronic devices and, finally, living near agricultural fields or industrial areas [9]. In addition, there are theories that approach what could be the cause of supernumerary teeth, among them are: local hyperactivity of the dental lamina, dichotomy of the tooth bud and other molecular mechanisms during early tooth development [10]. Genetically speaking, positive regulation of WNT/β-catenin and Sonic Hedgehog signaling is implicated in the formation of supernumerary teeth. These are associated with malformation syndromes, although they can also be non-syndromic [11].

The process of odontogenesis is achieved through complex molecular signaling interactions, in which the secreted signaling molecule Sonic Hedgehog (Shh) and the specific growth arrest co-receptor Shh 1 (Gas1), which is also involved in many stages of tooth development, act importantly, and both are therefore considered essential for the normal patterning of the human dentition [12]. A loss in the function of the APC gene, which modulates Wnt/β-catenin signaling, to establish the number and regular positions of teeth, can create overactivation and, consequently, the development of supernumeraries; rare variants of this gene may contribute to isolated supernumerary dental phenotypes such as mesiodens [13].

As mentioned above, supernumerary tooth formation may be nonsyndromic or due to the presence of a syndrome. The syndromes that have presented most frequently with supernumerary teeth are cleidocranial dysplasia, Gardner syndrome, cleft lip and palate, Down syndrome, Aarskog syndrome, Zimmerman-Laband syndrome and Noonan syndrome [14]. Among them, the one that stands out the most is the cleft lip and palate, said to be due to hyperactivity of the dental lamina in its walls, which is attributed to mediators and genes related to local epigenetic factors, in which its development was affected by the presence of the fissure [15].

The isolated, sporadic and non-syndromic character of supernumerary teeth was also identified, suggesting a spontaneous de novo mutation or a non-genetic odontogenesis disorder as the cause [16].

The most acceptable theory regarding the formation of supernumerary teeth is the result of localized, independent and conditioned hyperactivity of the dental lamina. This hyperactivity results in excessive proliferation of cells, leading to the formation of additional tooth buds. Hereditary and environmental factors also play an important role in the etiology of supernumerary teeth. All of these factors can contribute to supernumerary teeth, whether or not they are syndromic.

3.2 Epidemiology

Today, many children around the world are affected with the presence of supernumerary teeth, either discovered by an incidental screening radiograph or by presenting symptoms. Epidemiological studies conducted recently in some countries will be presented below. Firstly, on the African continent, specifically in Lagos, Nigeria, the prevalence of supernumerary teeth is 0.32%, a supernumerary tooth was found in 20 children, of which 9 were males and 11 were females, in the following ages: 1-5 years, 6-10 years and 11-16 years, 1, 8 and 11 teeth were found respectively; 14 of them were found in the maxilla, 4 in the mandible and 2 in both arches [17]. Towards the continent of Asia, in Korea, the incidence of supernumerary teeth is 1.21%, in average ages ranging from 7 to 98 years, depending on the location in which they are found, the most frequent tends to be the anterior region [18]. In China, in a pediatric population aged 3-12 years, 1,180 supernumerary teeth were found, of which 679 were in males and 211 in females, these were most frequently observed in the upper jaw with 98.1%, and most were conical, palatal, unerupted and symptomatic, at average ages 7-10 years [19].

In India, specifically in the city of Jamshedpur, a study was carried out where the prevalence was 1.87%, with 56 supernumerary teeth, of which 53 were found in the maxilla and 3 in the mandible, according to the region, 51 were in the midline, 4 at the level of the central incisor and 1 in the molar area. As for their morphology, 38 were conical, 11 were tuberculated and 7 were supplementary. Of these, 22 had complications and 34 were asymptomatic [20]. In the country of Kuwait, in a study that looked for dental anomalies in children aged 8-12 years, it was found that supernumerary teeth were not so frequent in this country; however, the few that were found were more evident in females [21]. Finally, with regard to the Asian continent, we find Saudi Arabia, where an epidemiological study was carried out in children aged 6-18 years, with a non-syndromic diagnosis, where it was found that the prevalence of children with supernumerary teeth was 0.5%, these children had at least one supernumerary tooth, which represented 88.9%, and the majority of these, according to their location, were in the anterior region with 77.8% [22].

Further to the continent of Europe, a study was conducted at the Carl Gustav Carus University Hospital in Dresden, Germany. Where only patients aged 6-18 years with cleft lip and alveolus as well as cleft lip and palate were studied. Therefore, the prevalence of supernumerary teeth was 33.3%, which represented 47 of these; in females it was 25.6% (with 10 supernumerary teeth), and in males it was 37.7% (with 26 supernumerary teeth). According to their location, 17.6%

affected the lateral incisor, 1.9% the central incisor and 0.9% were mesiodens. None of these were found in the mandible. Regarding the type of cleft, in patients with cleft lip and alveolus it was present in 51.7%, and in patients with unilateral cleft lip and palate with 29.0%, while bilateral with 17.6% [23]. And finally, in South America, at the Federal University of Rio Grande in Brazil, in pediatric patients aged 6-12 years, 6.4% of supernumerary teeth were found, both in the primary and permanent dentition; 63.15% were mesiodens and they were not found in the premolar or molar area [24].

The worldwide prevalence of supernumerary teeth is estimated to be 0.3% to 0.8% in the primary dentition and 1.5% to 3.8% in the permanent dentition. Because of this, the pediatric dentist plays an important role in the early diagnosis and correct treatment plan, depending on the case of each patient.

3.3 Classification

Supernumerary teeth can present in the mouth in different ways, generally their morphology is usually normal or conical in the primary dentition, and is variable in the permanent dentition. However, according to their morphology they are called supplementary or eumorphic, which is a duplication of the normal dental series, and rudimentary or dysmorphic, when they have an abnormal shape and size. Each of them will be mentioned below, also according to their location.

The first and best known is the mesiodens, a tooth located in the midline of the premaxillary region, they are generally single with vertical orientation, but they can also be double or multiple and with different orientations. It is considered permanent, since it does not exfoliate [25].

Then we have the paramolar, which is a small molar and is considered rudimentary or dysmorphic, almost always found in the interproximal spaces between the upper second and third molars palatally; more common in adults, but can also be found in young adolescents with permanent dentition that has not yet finished erupting [26]. And finally, we find the distomolar, which is also called fourth molar or retromolar, because it is distal or distolingual to the third molar, is not usually eumorphic or supplementary, and is very rare in the pediatric population [27].

In the primary dentition, most of the supernumerary teeth encountered are eumorphic or supplementary. The most common supplementary supernumerary tooth in the permanent dentition is the upper lateral incisor, although this type can also occur in cases where children have mixed dentition [28].

We can also find supernumerary premolars, which after the mesiodens, are considered the most common. They are usually supplementary, and when present, they are usually located at the level of premolars in the mandible, without the presence of any syndrome [29].

And finally, there are also cases, but very rare, of supplementary permanent canines, which are difficult to observe in patients who are healthy and without any syndrome, and in most cases are impacted [30].

Speaking of unusual cases, we can also find supernumerary teeth with ectopic eruption outside the oral cavity, such as in the maxillary sinus, chin and nasal cavity. Such is the case of an intranasal supernumerary tooth. Clinically, they are similar to a tooth, but with debris around them, as well as radiographically, we can observe radiopaque structures in the nasal fossa [31]. Another atypical case of supernumerary teeth is the one found in the palate of a pediatric patient of only 14 months, which was round, symmetrical, pink and visible behind the upper central incisors; it is very rare to find supernumerary teeth in the palate, and it is usually confused with congenital lesions of the palate, although in reality it is a minority of cases present in the world [32].

It is very important to clarify that in the infant population, regardless of whether their dentition is deciduous, mixed, or permanent, the most common type of supernumerary tooth is the mesiodens, which has a conical morphology. In addition to mesiodens, children can also have eumorphic or supplementary supernumerary teeth. The most common type of eumorphic supernumerary tooth is the upper lateral incisor.

3.4 Management

There are different ways to carry out the correct treatment, according to each patient, for supernumerary teeth. There are some cases in the recent literature that show us which is the best option, depending on the patient. Among them we can find the case of a 12 year old patient, who presented macrodontia in 2.1 and a supernumerary between 1.2 and 1.1, the treatment that was decided to carry out in this patient, was to remove the macrodontia and with orthodontic appliances, 1.1 was moved mesially, which moved 1. 1 was moved mesially, which turned it into 2.1, likewise the supernumerary was kept in the mouth and rotated with the help of orthodontics to its normal position, due to its anatomy similar to a central, was kept in the mouth as an upper right central incisor [33].

Other cases, concerning pediatric patients with impacted central incisors, very rarely occur and when they do, they are associated with supernumerary teeth. The treatment carried out in these patients was extraction of the supernumerary teeth, followed by traction with orthodontic force [34]. There are 3 different ways of performing supernumerary tooth extraction for impacted central incisors. The first, already mentioned above, by extraction and orthodontic traction. The second is that the extraction is carried out while they are still in the primary dentition, thus allowing them to erupt normally. And thirdly, the extraction of the supernumerary teeth should be delayed, at least until the expected eruption time of the incisors, and after some time the extraction of the supernumerary teeth should be carried out, and thus wait another 6 months for the incisors to finish erupting spontaneously, although this option is generally not very successful [35].

Now regarding one of the main problems in pediatric patients, we have the mesiodens, there are different ways to remove them based on their inclination, the palatal gingival margin approach is usually preferred in patients whose mesiodens are acute, obtuse and inverted; while for the combined labial-palatal approach, when they are vertical or mixed [36]. Also in other cases of mesiodens, the extraction of these can be performed under general anesthesia using mixed reality technology called Microsoft HoloLens, which has a sensor camera mounted on the head, thus allowing holographic images and the use of magnetic resonance imaging with voice and gesture control [37].

There is also the case of another patient, who presented sensitivity at the level of the upper centrals and displacement of 1.1, so it was decided to request a panoramic x-ray and supernumerary teeth were observed, and it was decided to extract by means of a Bein lever, when removed it seemed to have a canine morphology; however, once removed it was observed the presence of another supernumerary tooth that presented fusion with 2.1, for a possible bone destruction and recession of the papilla, it was decided to extract this tooth in

a next appointment. Once the corresponding recovery and revision had taken place, it was decided to apply the Nowak Peter incision to observe the crown and root of 2.1, it was decided to separate the supernumerary tooth by means of drills and thus be able to remove it, subsequently a submucosal periosteal graft was placed [38]. When the supernumerary is located in the nasal cavity, it is decided to extract the tooth under general anesthesia and endoscopy-assisted approach, and it is removed with bayonet forceps [39]. There is also the possibility of preservation, as stem cells from supernumerary teeth offer a new possibility to cure some diseases [40].

All correct management of supernumerary teeth will depend on a good radiological study. Symptomatology and what will be useful in the future for the patient, whether it can be kept in the mouth and be functional, or decide to extract, either because it is causing discomfort or apparently in the long run may complicate the patient's occlusion and esthetics.

4. Conclusions

It was found through this review of the literature that the main cause of the formation of supernumerary teeth is local hyperactivity of the dental lamina, as well as hereditary and environmental factors. The prevalence of supernumerary teeth is 0.3 to 0.8% in the primary dentition and 1.5 to 3.8% in the permanent dentition, although it can vary according to the country. Among pediatric patients, the most common types of supernumerary teeth are the mesiodens and the upper lateral incisor, which are classified as supplementary teeth. The correct management of supernumerary teeth depends on the individual case. The tooth may be left in the mouth if it is functional, or it may be extracted to avoid future complications.

5. Conflict of Interest

Not available

6. Financial Support

Not available

7. Conflict of interest statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

8. References

1 Hadziabdic N, Haskic A, Mujkic A, Hasic-Brankovic L, Dzankovic A, Korac S, *et al*. Epidemiological, Clinical and Radiographic Features of Supernumerary Teeth in Nonsyndromic Bosnian and Herzegovinian Population: a Monocentric Study. Med Arch. 2022 Oct;76(5):348-353.
2 Moradinejad M, Hashemi Ashtiani A, Rakhshan V. Multiple Nonsyndromic Unerupted Supernumerary Teeth: A Report of a Rare Case. Case Rep Dent. 2022 Mar 29;2022:4063856.
3 Sharma V, Mohapatra A, Bagchi A. Ternion Cusp: An Unusual Variant of Talon's Cusp: A Case Report. Int J Clin Pediatr Dent. 2022 Nov-Dec;15(6):784-788.
4 Grgic O, Prijatelj V, Dudakovic A, Vucic S, Dhamo B, Trajanoska K, *et al*. Novel Genetic Determinants of Dental Maturation in Children. J Dent Res. 2023 Mar;102(3):349-356.
5 Palacios León C, Cárdenas Flores C. Prevalencia de anomalías dentarias de tamaño y forma, en pacientes pediátricos de 6 a 17 años de la ciudad de huánuco, 2019-2022 [Prevalence of dental anomalies of size and shape, in pediatric patients aged 6 to 17 years of the city of huánuco 2019-2022]. Rev Cient Odontol (Lima). 2023 Dec 28;11(4):e171. Spanish.
6 Yordanova-Kostova GR, Grancharov MV, Gurgurova GD. Abnormality in the Morphogenesis of Tooth Development and Relationship with Orthodontic Deformities and Treatment Approaches. Case Rep Dent. 2021 Nov 5;2021:1183504.
7 Shinde M, Daigavane P, Kamble R, Agarwal N, Suchak D, Chaudhari US. An Oral Odyssey: Navigating the Complexity of Impacted Parapremolars and Paramolars in the Oral Landscape! Cureus. 2024 Jan 27;16(1):e53056.
8 Timothy CN, Ganapathy D, Pandurangan KK, Ahmed N, Maiti S. Presence of impacted supernumerary teeth in the Indian population. J Adv Pharm Technol Res. 2022 Dec;13(Suppl 2):S427-S431.
9 Talaat DM, Hachim IY, Afifi MM, Talaat IM, ElKateb MA. Assessment of risk factors and molecular biomarkers in children with supernumerary teeth: a single-center study. BMC Oral Health. 2022 Apr 9;22(1):117.
10 Scully A, Zhang H, Kim-Berman H, Benavides E, Hardy NC, Hu JC. Management of Two Cases of Supernumerary Teeth. Pediatr Dent. 2020 Jan 15;42(1):58-61.
11 Kantaputra PN, Tripuwabhrut K, Anthonappa RP, Chintakanon K, Ngamphiw C, Adisornkanj P, *et al*. Heterozygous Variants in FREM2 Are Associated with Mesiodens, Supernumerary Teeth, Oral Exostoses, and Odontomas. Diagnostics (Basel). 2023 Mar 23;13(7):1214.
12 Seppala M, Thivichon-Prince B, Xavier GM, Shaffie N, Sangani I, Birjandi AA, *et al*. Gas1 Regulates Patterning of the Murine and Human Dentitions through Sonic Hedgehog. J Dent Res. 2022 Apr;101(4):473-482.
13 Panyarat C, Nakornchai S, Chintakanon K, Leelaadisorn N, Intachai W, Olsen B, *et al*. Rare Genetic Variants in Human *APC* Are Implicated in Mesiodens and Isolated Supernumerary Teeth. Int J Mol Sci. 2023 Feb 21;24(5):4255.
14 Rai A, Jain A, Agrawal GD, Agrawal S. Non-syndromal multiple supernumerary and permanent impacted teeth in mother and her one child. BMJ Case Rep. 2020 Aug 26;13(8):e236395.
15 Consolaro A, Medeiros MCM, Miranda DAO, Oliveira IA. Supernumerary teeth in patients with cleft lip and palate: the tooth germs do not separate. Dental Press J Orthod. 2021 Sep 10;26(4):e21ins4.
16 Albu ŞD, Pavlovici RC, Imre M, Ion G, Ţâncu AMC, Albu CC. Phenotypic heterogeneity of non-syndromic supernumerary teeth: genetic study. Rom J Morphol Embryol. 2020 Jul-Sep;61(3):853-861.
17 Olatosi OO, Oyapero A, Akinwande KO, Ayedun OS, Aladenika ET, Obe OI. Pattern and prevalence of dental anomalies among a paediatric population in Lagos, Nigeria. Niger Postgrad Med J. 2022 Apr-Jun;29(2):167-172.
18 Jang DH, Chae YK, Lee KE, Nam OH, Lee HS, Choi SC, *et al*. Determination of the range of intervention timing for supernumerary teeth using the Korean health insurance review and assessment service database. J Clin Pediatr Dent. 2023 Jan;47(1):67-73.
19 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 Jun 2;23(1):351.
20 Singh AK, Soni S, Jaiswal D, Pani P, Sidhartha R, Nishant. Prevalence of Supernumerary Teeth and Its Associated Complications among School-going Children between the Ages of 6 and 15 Years of Jamshedpur, Jharkhand, India. Int J Clin Pediatr Dent. 2022 Sep-Oct;15(5):504-508.
21 Alanzi A, Bufersen N, Haider S, Abdulrahim M. Prevalence and Distribution of Dental Anomalies in Schoolchildren in Kuwait. Int Dent J. 2024 Jan 29:S0020-6539(23)00965-6.
22 Bakhurji EA, Aldossary F, Aljarbo J, AlMuhammadi F, Alghamdi M, Nazir MA. Prevalence and Distribution of Nonsyndromic Dental Anomalies in Children in Eastern Saudi Arabia: A Radiographic Study. ScientificWorldJournal. 2021 Oct 6;2021:9914670.
23 Möller LH, Pradel W, Gedrange T, Botzenhart UU. Prevalence of hypodontia and supernumerary teeth in a German cleft lip with/without palate population. BMC Oral Health. 2021 Feb 11;21(1):60.
24 Wagner VP, Arrué T, Hilgert E, Arús NA, da Silveira HLD, Martins MD, *et al*. Prevalence and distribution of dental anomalies in a paediatric population based on panoramic radiographs analysis. Eur J Paediatr Dent. 2020 Dec;21(4):292-298.
25 Adisornkanj P, Chanprasit R, Eliason S, Fons JM, Intachai W, Tongsima S, *et al*. Genetic Variants in Protein Tyrosine Phosphatase Non-Receptor Type 23 Are Responsible for Mesiodens Formation. Biology (Basel). 2023 Mar 1;12(3):393.
26 Yordanova-Kostova GR, Emiliyanov E, Yanev N. Digital Laser-Sintered Expander in Adolescent Patient with Hyperdontia and Molar Impaction. Case Rep Dent. 2023 Nov 13;2023:8824900.
27 Venkatesh SP. Pediatric Molar Hyperdontia: A Descriptive Case Report. Int J Clin Pediatr Dent. 2023 Sep-Oct;16(5):763-768.
28 Sojan M, Thakur S. An Unusual Case of Mesial Supplementary Lateral Incisor: A Case Report. Int J Clin Pediatr Dent. 2023 May-Jun;16(3):518-521.
29 Suljkanovic N, Balic D, Begic N. Supernumerary and Supplementary Teeth in a Non-syndromic Patients. Med Arch. 2021 Feb;75(1):78-81.
30 Andrei OC, Dinescu MI, Farcaşiu C, Bisoc A, Tărlungeanu DI, Tănăsescu LA, *et al*. Supernumerary permanent maxillary canine - a rare finding: case report and literature review. Rom J Morphol Embryol. 2021 Apr-Jun;62(2):593-598.
31 Elgamri AI, Siddig OEH, Jobran AWM. Supernumerary intranasal tooth: case report and review of the literature. J Surg Case Rep. 2023 Sep 30;2023(9):rjad537.
32 Nanu DP, Favre NM, Walsh J, Farsar C, Le TA, Carr MM. Palatal Supernumerary Tooth in a Pediatric Patient. Cureus. 2023 Nov 30;15(11):e49751.
33 Low C, Ong DV, Freer E. Opportune management of a patient with a macrodont and supernumerary tooth. Aust Dent J. 2022 Sep;67(3):286-295.
34 Jha K, Adhikari M. Surgical orthodontic intervention for impacted maxillary permanent central incisors: A case series. Clin Case Rep. 2023 Nov 16;11(11):e8199.
35 Seehra J, Mortaja K, Wazwaz F, Papageorgiou SN, Newton JT, Cobourne MT. Interventions to facilitate the successful eruption of impacted maxillary incisor teeth due to the presence of a supernumerary: A systematic review and meta-analysis. Am J Orthod Dentofacial Orthop. 2023 May;163(5):594-608.
36 Kong J, Peng Z, Zhong T, Shu H, Wang J, Kuang Y, Ding G. Clinical Analysis of Approach Selection of Extraction of Maxillary Embedded Mesiodens in Children. Dis Markers. 2022 May 3;2022:6517024.
37 Koyama Y, Sugahara K, Koyachi M, Tachizawa K, Iwasaki A, Wakita I, *et al*. Mixed reality for extraction of maxillary mesiodens. Maxillofac Plast Reconstr Surg. 2023 Jan 5;45(1):1.
38 Šarac Z, Zovko R, Cvitanović S, Goršeta K, Glavina D. Fusion of Unerupted Mesiodens with a Regular Maxillary Central Incisor: a Diagnostic and Therapeutic Challenge. Acta Stomatol Croat. 2021 Sep;55(3):325-331.
39 Kumar V, Bhaskar A, Kapoor R, Malik P. Conservative surgical management of a supernumerary tooth in the nasal cavity. BMJ Case Rep. 2020 Jul 28;13(7):e235718.
40 Zhang H, Gong X, Xu X, Wang X, Sun Y. Tooth number abnormality: from bench to bedside. Int J Oral Sci. 2023 Jan 6;15(1):5.

How to Cite This Article
Gurria Mena A, Nakagoshi Cepeda MA, Muñoz Quintana G, Velasco Leon EC, Cortes Camacho A, Cholico Rodriguez HP. Supernumerary teeth in pediatric patients: An updated scoping review. International Journal of Applied Dental Sciences. 2024; 10(2): 393-397.