

SUPERNUMERARY TEETH: AN OVERVIEW¹ Anil Kumar Patil ¹ Associate Professor¹Department of Pedodontics and Preventive Dentistry, Aditya Dental College and Hospital, Beed, Maharashtra, India.
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Supernumerary teeth (SNT) are extra teeth to the normal complement of teeth in both dentitions. These SNT could be appear in any region of both jaws. Males are commonly affected by SNT than the females. Most commonly seen SNT are mesiodens, very rarely seen SNT are distomolars. Identification and localization of SNT are very important for diagnosis and management. SNT may cause various complications that include delayed or impaired eruption of adjacent teeth to cyst formation, and eruption into nasal cavity. Hence, the early identification and appropriate management is essential to prevent the possible complications.

KEYWORDS: Supernumerary teeth, Hyperdontia, localization, Management, Children**INTRODUCTION**

Supernumerary tooth (SNT) is defined as "any tooth or odontogenic structure that is formed from tooth germ in excess of usual number for any given region of the dental arch".¹ They may occur as unilateral or bilateral and single or multiple, in distribution, seen in any part of the tooth bearing areas in both dental arches, and may occur in primary and permanent dentition.² These SNT could occur at any region of the dental arch and most commonly in pre-maxilla. Several studies have reported that there is a racial difference in the incidence of SNT.³ In permanent dentition, the prevalence ranges from 0.4% to 6%.⁴ In primary dentition, the reported incidence was between 0.1% and 27.8%.⁵ These different prevalence figures are reported on SNT, probably due to the different populations investigated and whether the reported prevalence of SNT is just a reflection of the variation in the diagnostic tools, assessment process, and sampling methods.^{1,3,6} Most recently, Anthonappa and co-workers⁷ reported that the prevalence of SNT ranges from approximately 3 to 6% or even higher which is higher than previously reported prevalence in literature.

Aetiology

Several explanations were given by different authors on the development of SNT to eccentricity during embryologic formation that consists of dichotomy of tooth germs, hyperactivity of the dental lamina, and remnants of epithelial cells.^{8,9} The etiology of SNT may confirm genetic influences as SNT are more frequently reported in relation to affected individuals.^{1-8,10} However, Brook¹¹ hypothesized that both environmental and genetic factors were responsible for the SNT. Some of the researchers studies SNT origin genetically.¹²

Classification

Supernumerary teeth have been classified mainly based on their morphology, location, form, and number.⁹ However, Mallineni³ classified SNT based on morphology (conical, tuberculate, supplemental, and odontomes), location (mesiodens, paramolar, distomolar, and parapremolar), position (buccal, palatal, and transverse),

orientation (vertical or normal, inverted, transverse, or horizontal).

Complications

Various complications may occur as the result of the presence of SNT including crowding, delayed eruption, spacing, impaction of permanent incisors, abnormal root formation, alteration in the path of eruption of permanent incisors, cystic lesions, intraoral infection, median diastema, root resorption of the adjacent teeth, rotation, or even eruption of incisors in the nasal cavity and retained deciduous teeth.^{2,9,13}

Presence of erupted and unerupted mesiodens may cause midline diastema. A retrospective analysis showed 10% of cases with SNT cases exhibited midline diastema.¹⁴ SNT is the common reason for the delayed or failure of eruption in premaxillary region.^{14,15} Prevention or delayed eruption of associated permanent teeth and tuberculate and SNT are the possible reasons for failure of eruption of maxillary permanent incisors.^{3,14} SNT in other locations may also cause failure of eruption of adjacent teeth.¹³ Displacement of the crowns of the adjacent teeth is a common feature in cases that associated with SNT.¹⁶ The amount of displacement varies from a mild rotation to complete displacement.^{3,13} Supernumerary teeth cause severely rotated incisors and sometimes remain unerupted. Self-correction and correct alignment may result in early removal of the causative SNT.¹⁷ Any form of SNT can cause complications. Erupted or unerupted supplemental SNT most often leads to crowding. Root resorption of adjacent teeth sometimes leads to loss of tooth vitality. Secondary alveolar bone grafting may be compromised due to SNT in patients with cleft lip and palate. Unerupted SNT in the cleft site is normally removed at the time of bone grafting. The presence of an unerupted SNT in a potential implant site may compromise implant placement. Ectopic eruption of SNT has been reported, among these frequently reported in the nasal cavity.²⁰ Clinically, a white mass may be seen in the nasal area, radiographically appearing as a tooth-like radiopacity. Patients with a history of anterior conical or tuberculate supernumerary teeth at an early age have a

24% possibility of developing single or multiple supernumerary premolars at late age.^{14,17,18} Dilaceration is a developmental anomaly in the tooth shape and its structure, which may happen as sharp bending of the tooth in either the crown or the root portion. Loss of tooth vitality has been reported in rare conditions. It has been reported that cyst formation due to SNT was observed in 11% of the cases where dentigerous cyst is common type.²¹

Diagnosis

Diagnosis of an SNT may be through clinical or radiographic examination. Impacted SNT may be diagnosed during a routine radiographic examination. Some patients present at the surgery complaining of an impacted anterior tooth or persistent midline diastema.^{21,22} As a rule, radiographic examination should be performed for teeth that have not erupted within 6 months after the contralateral teeth have erupted.²⁴ The identification and localization of SNT plays a vital role in management.²⁵ Combinations of different radiographs are useful in locating SNT.²⁶ Radiographs to be taken include a panoramic view to show the evidence of whole dentition. Anterior occlusal or periapical radiographs should be taken to evaluate the incisor region completely. The tube shift technique can be employed to determine whether the SNT is located labially or palatally.²⁴ A lateral skull radiograph may be taken as a supplement especially if the tooth is dilacerated to allow for a three-dimensional assessment of the impacted tooth.²⁴

Management

Several authors have given different opinions for the management of SNT, particularly timing of the removal of SNT. Most of the authors have recommended the early intervention of SNT. The treatment options for managing SNT depend on their orientation and position, the age of the patient, and any associated complications. There are two common opinions for removal of SNT as soon as they are identified.^{1,3,27} Similarly, few authors reported that early identification and removal of SNT^{27,28}, in contrast to some authors which may suggest abrupt removal of SNT, are not essential if there was no associated pathology. Removal of SNT is not always a treatment of choice; they may be reviewed if the tooth is not creating any problem. Hogstrom and Andersson²⁰ suggested two different opinions where the SNT should be removed as early as upon identification or should wait until complete root formation of adjacent teeth. The optimal time for surgical intervention, however, remains contentious.^{1,3,11} It is very important to remove SNT at a young age if it is damaging adjacent teeth or causing any other complication. Recently, Omer and colleagues reported based on a retrospective analysis the ideal age of removal of SNT 6 to 7 years. The majority of delayed permanent incisors erupt spontaneously if sufficient space is created at the time of removal of the SNT and maintenance of postoperative space is needed. Permanent maxillary incisor teeth still remained unerupted with near complete apical formation; orthodontic bracket and chain may be used to facilitate orthodontic traction.²⁸ However, it is very important to remove SNT if it causes any of the complication.²⁹ SNT are not rarely seen but, through clinical and radiographical

evaluation play an important role to avoid potential damage to the patient.

CONCLUSION

SNT may occur unilaterally or bilaterally, single or multiple, and at any region of the dental arch. Mesiodens are common type of SNT followed by supplemental premolars. A variety of complications are associated with SNT which range from crowding to ectopic eruption. Early diagnosis and proper treatment planning are essential for the management of SNT. Moreover, multidisciplinary approach is necessary for the management of SNT if it is associated with complications.

References

1. Omer RS, Anthonappa RP, King NM. Determination of the optimum time for surgical removal of anterior supernumerary teeth. *Pediatr Dent* 2010; 32:14-20.
2. Mitchell L, Bennett TG. Supernumerary teeth causing delayed eruption--a retrospective study. *Br J Orthod* 1992; 19:41-6.
3. Mallineni SK. Supernumerary teeth: Review of the literature with recent updates. *Conf Pap Sci*. 2014; 2014:6.
4. Tsai SJ, King NM. A catalogue of anomalies and traits of the permanent dentition of southern Chinese. *J Clin Pediatr Dent* 1998; 22:185-94.
5. King NM, Tongkoom S, Itthagarun A, Wong HM, Lee CK. A catalogue of anomalies and traits of the primary dentition of southern Chinese. *J Clin Pediatr Dent* 2008; 32:139-46.
6. vonArx T. Anterior maxillary supernumerary teeth: A clinical and radiographic study. *Aust Dent J* 1992; 37:189-95.
7. Anthonappa RP, King NM, Rabie AB. Prevalence of supernumerary teeth based on panoramic radiographs revisited. *Pediatr Dent* 2013; 35:257-61.
8. Mallineni SK, Jayaraman J, Yiu CK, King NM. Concomitant occurrence of hypohyperdontia in a patient with Marfan syndrome: a review of the literature and report of a case. *J Investig Clin Dent* 2012; 3: 253-7.
9. Mallineni SK, Nuvvula S. Management of supernumerary teeth in children: a narrative overview on published literature. *J Cranio Max Dis* 2015; 4:62-68.
10. Mallineni SK, Nuvvula S, Cheung A, Kunduru RA. Comprehensive review of the literature and data analysis on hypo-hyperdontia. *J Oral Sci*. 2014; 56(4):295-302.
11. Brook AH. Dental anomalies of number, form and size: Their prevalence in British school children. *J Int Assoc Dent Child* 1974; 5:37-53.
12. Subasioglu A, Savas S, Kucukyilmaz E, Kesim S, Yagci A, Dundar M. Genetic background of supernumerary teeth. *Eur J Dent*. 2015; 9:153-8.
13. Shah A, Gill DS, Tredwin C, Naini FB. Diagnosis and management of supernumerary teeth. *Dent Update* 2008; 35:510-20.
14. Proff P, Fanghänel J, Allegrini S, Jr, Bayerlein T, Gedrange T. Problems of supernumerary teeth, hyperdontia or dentessupernumerarii. *Ann Anat*. 2006; 188:163-9.

15. Giancotti A, Grazzini F, De Dominicis F, Romanini G, Arcuri C. Multidisciplinary evaluation and clinical management of mesiodens. *J Clin Ped Dent*. 2002; 26:233-7.
16. Chevitarese AB, Tavares CM, Primo L. Clinical complications associated with supernumerary teeth: Report of two cases. *J ClinPediatr Dent* 2003;28:27-31
17. Foster TD, Taylor GS. Characteristics of supernumerary teeth in the upper central incisor region. *Dent Pract Dent Rec* 1969; 20:8-12.
18. Di Biase DD. Midline supernumeraries and eruption of the maxillary central incisor. *Dent Pract Dent Rec* 1969; 20:35-40.
19. MallineniSK, Ansari T, Chakravarthy C, Patil VK. Rare Association of Dens Invaginatus with PremolariformMesiodens: Radiographic and Histological Aspects. *Smile Dent J* 2014; 9:32-34.
20. Höggström A, Andersson L. Complications related to surgical removal of anterior supernumerary teeth in children. *ASDC J Dent Child* 1987; 54:341-3.
21. Asaumi JI, Shibata Y, Yanagi Y, Hisatomi M, Matsuzaki H, Konouchi H, et al. Radiographic examination of mesiodens and their associated complications. *DentomaxillofacRadiol* 2004; 33:125-7.
22. Munns D. A case of partial anodontia and supernumerary teeth present in the same jaw. *Dent Pract Dent Rec* 1967; 18:34-7.
23. Anthonappa RP, King NM, Rabie AB, Mallineni SK. Reliability of panoramic radiographs for identifying supernumerary teeth in children. *Int J Paediatr Dent* 2012; 22: 37-43
24. Mallineni SK, Anthonappa RP, King NM. Reliability of horizontal and vertical tube shift techniques in the localisation of supernumerary teeth. *Eur Arch Paediatr Dent* 2016; 17 (6): 455-460
25. Mallineni SK, Mohiuddin A, Patil AK, Kodali RP. A Unique Presentation of Concomitant Hypo-Hyperdontia in Seven Year Old Child: A Rare Report. *J Dent Ind* 2015; 3:85-88
26. Y Chen, SK Mallineni. Distribution of hypodontia and hyperdontia in concomitant hypo-hyperdontia patients: Critical appraisal of the published data. *Eur J Gen Dent* 2017; 6 (1): 65-8.
27. Rotberg S, Kopel HM. Early vs late removal of mesiodens: A clinical study of 375 children. *CompendContinEduc Dent* 1984; 5:115-9.
28. Koch H, Schwartz O, Klausen B. Indications for surgical removal of supernumerary teeth in the premaxilla. *Int J Oral MaxillofacSurg* 1986; 15:273-81.
29. G Shilpa, N Gokhale, SK Mallineni, S Nuvvula. Prevalence of dental anomalies in deciduous dentition and its association with succedaneous dentition: A cross-sectional study of 4180 South Indian children. *J IndSocPedodont Prevent Dent* 2017; 35: 56-62.

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