ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2015; 1(5): 05-09
© 2015 IJADS
www.oraljournal.com
Received: 2-10-2015
Accepted: 3-11-2015

Dr. K Srinivasan
Senior Lecturer, Department of Pedodontics and Preventive Dentistry, Adhiparasakthi Dental College and Hospital, Melmuruvathur (T.N. State), India.

Dr. S Chitra
Associate Professor
Department of Anesthesia, Christian Medical College, Vellore (T.N. State), India.

Correspondence
Dr. K Srinivasan
1/24, Kamaraj Street,
Voc Nagar, Sankaranpalayam,
Vellore (T.N State), India.

Mystery behind hyperdontia: Report of two cases

Dr. K Srinivasan, Dr. S Chitra

Abstract
A Supernumerary tooth is the one that is additional to normal series and can be found almost any region of the Dental arch of either the primary or the permanent dentitions, however, they are almost five times more frequently observed in the permanent dentition.
The supernumerary teeth are also reported to be more common in the male, rather than the female population.
Supernumerary teeth may remain asymptomatic or may produce both esthetic and pathologic affects e.g. interference in eruption, rotation and proclination of permanent teeth and cystic involvement etc. Early detection of such teeth is most important if complications are to be avoided.
This case reports highlights the problem of delayed eruption of maxillary incisors due to Supernumerary tooth and presence of two Mesiodens, which are asymptomatic.
This case reports highlights to make the clinician aware for careful clinical as well as radiographic examination, so that steps could be taken at the earliest to prevent any pathological effects on the permanent teeth.

Keywords: Dental disturbances, Impacted maxillary central incisor, Mesiodens, Supernumerary, Surgical intervention, Tooth

1. Introduction
Supernumerary teeth had been found and reported in ancient human skeletons from the Lower Pleistocene era [1] and in the remains of an Australian aboriginal human 13000 years ago [2].
The term mesiodens was coined by Balk in 1917 to denote a supernumerary tooth located between the two central incisors [2].
Supernumerary teeth or hyperdontia is defined as an excess number of teeth when compared to that of the normal human dental formula [3] which was first reported between AD 23 and 79 [4].
Prevalence of supernumerary teeth in various populations is ranging between 0.1-3.8percent with a male to female ratio of 2:1 [5]. They occur more commonly in the permanent dentition (prevalence of 0.10-3.6%) when compared to the primary dentition (prevalence of 0.02-1.9%) [6].
Tooth development is a continuous process in which a number of physiologic growth processes and various morphologic stages interplay to achieve the tooth's final form and structure. The physiological processes involved in tooth development are; Initiation, Proliferation, Histo-differentiation, Morpho differentiation, Apposition and Calcification.
Initiation represents the beginning of formation of the dental lamina and tooth bud from the oral epithelium. Interference with the stage of initiation, a momentary event, may result in single or multiple missing teeth (anodontia, oligodontia or hypodontia) or supernumerary teeth (also called hyperdontia) [7].
Supernumerary teeth may be single, multiple, unilateral or bilateral, erupted or unerupted and in one or both jaws [7].

1.1 Aetiology
The aetiology of supernumerary teeth is not completely understood. Both genetic and environmental factors have been considered. [8] Several theories have been suggested to explain their occurrence:

1. **Atavism:** It was originally suggested that supernumerary teeth were the result of phylogenetic reversion to extinct primates with three pairs of incisors. This theory has-been largely discounted [9].

2. **Dichotomy theory:** This stated that the tooth bud splits into two equal or different-sized parts, resulting in the formation of two teeth of equal size, or one normal and one dysmorphic tooth, respectively [1]. However, this theory has been discounted [9].
3. **Dental lamina hyperactivity theory:** According to this theory, a supplemental form would develop from the lingual extension of an accessory tooth bud, whereas a rudimentary form would develop from the proliferation of epithelial remnants of the dental lamina [9]. Although all theories are hypothetical because of the inability to obtain sufficient embryological material, and most literature supports the dental lamina hyperactivity theory [9].
4. **Genetic factors:** These are considered important in the occurrence of supernumerary teeth. A sex-linked inheritance has been suggested by the observation that males are affected approximately twice as often as females [9].

1.2 Classification of supernumerary teeth

1. Classified according to morphology or location.

a) **Conical:** They usually present with conical which is most common [10] or triangular-shaped crowns and complete root formation. They are found most often as isolated single bilateral (mesiodens) structures in the premaxilla [9].
b) **Tuberculate:** They have barrel-shaped appearance and a crown consisting of multiple tubercles which may be invaginated [10] with either incomplete or absent root formation. [9] They are generally larger and are usually found in a palatal position relative to the maxillary incisors [9, 10]. They are often paired [10] and bilateral [9]. It has been suggested that tuberculate supernumeraries may represent a third dentition [9].
c) **Supplemental:** Supplemental supernumerary teeth resemble their respective normal teeth. They form at the end of a tooth series. They are most common in the permanent maxillary lateral incisor, although supplemental premolars and molars also occur [10]. The majority of supernumerary teeth in the primary dentition are supplemental and rarely remain unerupted [10].
d) **Odontomes:** These are hamartomas (benign, disordered overgrowths of mature tissue) comprising all dental tissues and appearing radiographically as well-demarcated, mostly radio-opaque lesions in tooth-bearing areas. There are two different types of odontome: compound and complex. Compound odontomes comprise many separate, small tooth-like structures. A complex odontome is a single, irregular mass of dental tissue that has no morphological resemblance to a tooth [9].

2. Classification based on location [10]

a) **Mesiodens:** Typically, a mesiodens is a conical supernumerary tooth located between the maxillary central incisors. These supernumerary teeth are usually located palatal to the permanent incisors, with only a few lying in the line of the arch or labially. The mesiodens is usually small and short, with a triangular or conical crown.
b) **Paramolar:** A paramolar is a supernumerary molar, usually rudimentary, situated buccally or lingually/ palatally to one of the molars or in the interproximal space buccal to the second and third molar.
c) **Distomolar:** A distomolar is a supernumerary tooth located distal to a third molar and is usually rudimentary. It rarely delays the eruption of associated teeth.
d) **Parapremolar:** This is a supernumerary that forms in the premolar region and resembles a premolar.

3 Medical conditions associated with supernumerary teeth [10]

Developmental disorders that show an association with multiple supernumerary teeth include:

a. Cleft lip and palate
b. Cleidocranial dysostosis
c. Gardner's syndrome.
d. Less common disorders include Fabry Anderson's syndrome, Ehlers-Danlos syndrome, Incontinentia pigmenti and Trico-Rhino-Phalangeal syndrome.

1.3 Examination

Clinical Examination: An intraoral examination should be conducted at the time of the retained deciduous teeth and buccal or palatal swelling. The examination also includes the assessment of availability of space for the central incisor [11].

Radiographic Investigations: If clinically not identified then, the following radiographs need to be taken: the vertical tube shift technique can be applied for detailed assessment of the position, root and crown morphology of the tooth in combination within upper anterior occlusal radiograph [11].

The most useful radiographic investigation is the rotational tomography (OPG), with additional views of the anterior maxilla and mandible, in the form of occlusal or periapical radiographs.

1.4 Management Suggested options for management are the following [11]

1.4.1 Observation only

If the permanent incisor cannot be brought into an acceptable position and if there is no associated pathology or resorption of adjacent teeth, it may simply be kept under observation.

The advantage of this approach is that it preserves alveolar bone; thus retaining the option for orthodontic space closure when the patient is older.

The disadvantage of this approach is that the patient must be regularly reviewed to ensure the possible detection of pathology and/or resorption of other teeth.

1.4.2 Remove physical obstruction [11]

a) **Retained deciduous tooth:** The retained deciduous tooth should be extracted to allow the permanent incisor to erupt. Approximately 0.2% of retained deciduous roots and 0.3% of retained deciduous teeth had been found to obstruct the eruption of permanent incisors.
b) **Soft tissue:** Thickened or enlarged follicles around the unerupted incisor crown and hyperplasic/scar tissue are likely barriers to eruption. In most cases, removal of the fibrous tissue overlying the crown will result in rapid eruption.
c) **Supernumerary/Odontome:** If there is an obstruction, it should be removed. About 50% to78% of impacted maxillary incisors will erupt spontaneously following the removal of a supernumerary. Full eruption has been found to occur within 1.5-3 years. The optimal time for surgical removal of supernumerary teeth is still controversial.
d) **Cyst/pathological lesion:** About 5% of cysts were found with the inverted type of supernumerary teeth whereas about 15% of the impacted permanent incisors were caused by other factors rather than by supernumerary or deciduous teeth.

1.4.3 Management in case of failure of eruption: If the incisor fails to erupt with no obvious obstruction, the following treatment modalities are the possible options [11]

a) **Exposure with/without Orthodontic traction:** The exposure should aim to provide a functional width of attached gingival on the labial surface in order to prevent the muscles of the face from detaching the marginal periodontal tissue from the tooth, thereby causing marginal bone loss and gingival recession.
b) **Closed eruption technique:** With this method, a labial or palatal flap is raised and a bracket or eyelet with a suitable attachment is bonded to the enamel surface of the tooth using acid-etch technique, preferably with a light cure adhesive before the flap is replaced.

2. Case Report

2.1 A 8-year-old girl along with her mother, presented to my Dental office at Vellore. The parental concern was absence of upper front tooth on both sides. The parents were aware of the loss of milk tooth in that region 7-8 months earlier. Her medical history was unremarkable, and there was no history of Dental trauma.

On clinical examination her upper left and right central incisor was unerupted. Intra oral examination revealed the presence of following teeth Fig 1 (Preoperative). (Table.1)

16	55	54	53	52	X	X	62	63	64	65	26
46	85	84	83	82	41	31	72	73	74	75	36

Carious teeth present were 63, 73, and 83. No Dental restorations were evident and the periodontal status was satisfactory. Prior to this, no Dental consultation was sought.

On Intra-oral examination a clearly visible soft tissue were present in impacted maxillary permanent left and right central incisor and a mesiodens was present on the palatal side. fig.1 (Preoperative)

Fig 1: Preoperative

An intra oral periapical radiograph of upper anterior region demonstrated an unerupted upper left and right central incisor. Fig.2 (IOPA Radiograph) Upper occlusal radiograph was taken which showed the presence of supernumerary tooth on the palatal side. No signs of root resorption were observed for the incisor teeth fig.3 (Occlusal radiograph)

Fig 2: IOPA Radiograph

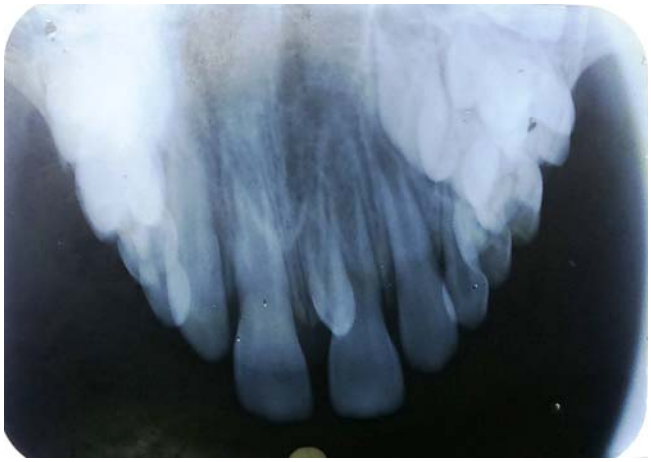

Fig 3: Occlusal Radiograph

The parent was informed about the possible risks of the treatment and her consent was obtained before proceeding with the clinical procedure and subsequently full mouth impressions were taken to develop study casts.

The treatment plans comprised of surgical removal of the supernumerary tooth. Preventive measures for restoration of caries tooth and oral prophylaxis were carried for the patient prior to the surgical procedure. fig.4

Fig 4

Based on the radiographic findings and the age of the patient, surgical removal of the mesiodens was planned. Patient was advised antibiotics and analgesics 3 days prior to surgery. After 3 days, treatment procedure was initiated by administering local anesthesia (Lignocaine Hydrochloride Anhydrous 21.3mg, 2%w/v, Epinephrine 1:200,000, Neon, India) in the upper labial sulcus and palatal area in the region of 11 to 21. Palatal mucoperiosteal flap was raised and adequate amount of bone was removed using slow speed round bur with copious saline irrigation and the impacted supernumerary tooth was exposed .The supernumerary tooth associated with central incisor was removed. The extraction socket was inspected for any pathology. The extracted supernumerary teeth were conical in shape. The margins of the bone were then smoothened. The palatal mucoperiosteal flap was repositioned and sutured with 3-0 Black braided silk (Mersilk, Ethicon, Inc., Johnson & Johnson company, USA). Patient was kept on antibiotic, anti-inflammatory and analgesic regimen for 5 days. The oral hygiene instruction was then given to the patient. After 8 days, the healing was uneventful, the sutures were removed and occlusal radiograph was taken. fig.5

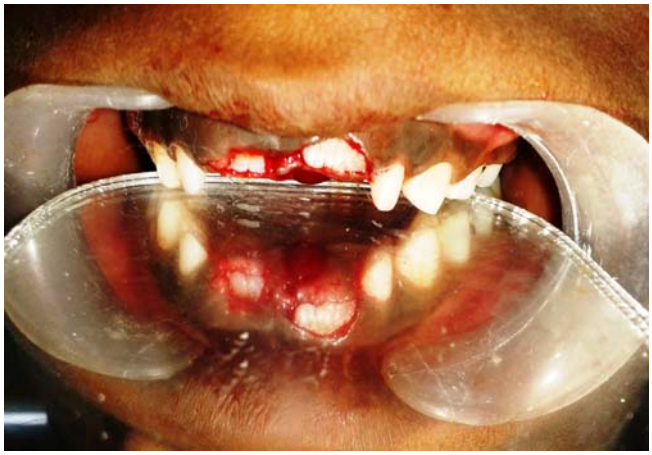

Fig 5: Surgical Extraction

Operculectomy was performed in relation to upper central incisor region under local anaesthesia. fig.6

Fig 6: Operculectomy

The patient recovered uneventfully in a couple of days. Eruption of the maxillary right central incisor and other permanent teeth was found to be normal.
The final appearance of the teeth was esthetically pleasing with gingival margins at the same level. No further mucogingival surgery was recommended

2.2 Case Report
A 8–year-old boy along with her mother, presented to my Dental office at Vellore with the chief complaint of irregularly arranged front teeth. The medical and family history was insignificant. On extraoral examination, no abnormality was detected. On intraoral examination mixed dentition was seen in good oral. (Table.2) Intra oral examination revealed the presence of following teeth. fig.7

16	55	54	53	X	X	X	X	63	64	65	26
46	85	84	83	32	41	31	X	73	74	75	36

Fig 7: pre op

Intraoral periapical radiograph showed the presence of permanent central incisors, an unerupted mesiodens with a conical crown and single short root apical to the permanent central incisors. Both the upper lateral incisors were unerupted the both the upper canines were missing. SLOB technique revealed that the impacted mesiodens was present palatally.
Upper occlusal radiograph was taken which showed the presence of two supernumerary teeth in the palatal region. The palatal mesiodens were inverted. fig.8

Fig 8: Occlusal Radiograph

The treatment plans comprised of surgical removal of the supernumerary tooth and orthodontic traction of the incisor and bring it into proper position in the dental arch.
It was decided and explained to the patient that one option for treatment was to extract the two mesiodens teeth. The Parent was not willing for further treatment for their ward as they had come to their meet their grandparents during their week end holidays but was willing to undergo treatment during their school summer vacation.

3. Discussion

Supernumerary teeth are considered to be one of the most significant dental anomalies affecting the primary and early mixed dentition [12].

According to Fazliah supernumerary teeth may remain embedded in the alveolar bone or can erupt into the oral cavity [13].

Srivatsan *et al*. [14] reported a mesiodens with unusual morphology and multiple impacted supernumerary teeth in absence of any syndrome.

Maxillary anterior supernumeraries are of great concern due to problems caused by them e.g. delayed eruption, aesthetic problems, interference in occlusion and cystic involvement [15].

Tay *et al*. reported that 74 to 93 percent of the maxillary anterior supernumeraries were accompanied with a disruption of some kind of eruption and occlusion of the permanent incisors [16].

Tsi *et al*. observed that premaxillary supernumerary teeth may interfere with normal occlusal development in mixed dentition stage and cause some pathological complications later in the permanent dentition stage [17].

Ersin *et al*. suggested that delayed, ectopic or asymmetric eruption of the central incisors should alert the clinician to the possibility of a mesiodens [17].

Gallas and Garcia suggested surgical removal of bone to facilitate the rapid eruption of the permanent incisors [18].

Dentigerous cyst associated with mesiodens was reported by Dinkar *et al*. and Grover *et al*. [17]

This case report highlights the problem of delayed eruption of maxillary incisors in a due to one Supernumerary tooth. And occlusal radiograph was taken the treatment approach of impacted Mesiodens and impacted maxillary teeth requires the cooperation of Dental Specialties such as Orthodontists, Pediatric Dentists, Oral surgeons and Prosthodontists.

4. Conclusion

Mesiodens is the most prevalent form of supernumerary teeth in permanent dentition that occurs as a result of genetic and environmental factors and hyperactivity of dental lamina. Males are affected two folds than the females. The clinician should obtain accurate radiographs including panoramic, periapical and occlusal views.

In one of the present case report, extraction of mesiodens led to the eruption of the permanent right and left maxillary central incisor.

In the second case presented here, no active treatment was carried and the double tooth had not posed any significant problems out at this stage.

Early detection and management of all supernumerary teeth is a necessary part of Preventive Dentistry. In this way orthodontic problems and/or Dental pathology associated with his Dental anomaly can be avoided.

Thus the role of the Pedodontist in management of a case of mesiodens is important because earlier the detection, the minimal are the future complications and better the prognosis.

5. Acknowledgements and Disclosure Statements

The authors report no conflicts of interest related to this study.

No external funding was available for this study.

We are thankful to the patient and her family members who participated in this study.

6. References

1. Benazzi S, Fantini M, De Crescenzio F, Persiani F, Gruppioni G. Improving the spatial orientation of human teeth using a virtual 3D approach, Journal of human evolution. 2009; 56(3):286-93.
2. Sutton PR. Tooth eruption and migration theories: can they account for the presence of a13, 000-year-old mesiodens in the vault of the palate? Journal of Oral surgery, oral medicine, and oral pathology. 1985; 59(3):252-5.
3. Primosch RE. Anterior supernumerary teeth-Assessment and surgical intervention in children. Pediatric dentistry 1981; 3(2)204-215.
4. Maya C, Ashok Kumar BR. Familial occurrence of mesiodens with unusual findings: Case report. Quintessence Int 1998; 29:49-51.
5. Sharma A. Familial occurrence of mesiodens: A case report, J Indian Soc Pedo Prev Dent. 2003; 21:2.
6. Arathi R, Ashwini R. Supernumerary teeth: A case report, J Indian Soc Pedo Prev Dent. 2005; 23:103-5.
7. Madhu Bala, Management of Pathological Sequelae of Supernumerary Teeth: Report of Two Cases, Asian Journal of Oral Health & Allied Sciences. 2011; 1:2.
8. Hall A, Onn A. The development of supernumerary teeth in the mandible in cases with a history of supernumeraries in the pre-maxillary region, J Orthod. 2006; 33:250-255.
9. Primosh RE. Anterior supernumerary teeth- Assessment and surgical intervention in children. Pediatric Dent 1981; 3:204-215.
10. Rajab LD, Hamdan MAM. Supernumerary teeth: Review of the literature and a survey of 152 cases, Int J Paediatric. Dent. 2002; 12:244-254.
11. Saranya Suksuphew, Apa Juntavee. Impacted Maxillary Central Incisor: Surgical Exposure and Orthodontic Management: A Case Report. KDJ 2010; 13:1.
12. Ersin NK, Candan U, Aipoz AR, Akay C. Mesiodens in primary, mixed and permanent dentitions: A clinical and radiographic study, J Clin Ped Dent. 2004; 28:295-8.
13. Fazliah SN. Supernumerary tooth: report of a case. Arch Orofac Sci 2007; 2:54-8.
14. Scheiner MA, Sampson WJ. Supernumerary teeth: A review of the literature and four case reports. Aust Dent J. 1997; 42:160-5.
15. Verma L, Gauba K, Passi S, Agnihotri A, Singh N. Mesiodens with an unusual morphology-A case report, J Oral Health Comm Dent. 2009; 3:42-4.
16. Tay F, Pang A, Yuen S. Unerupted maxillary anterior supernumerary teeth: report of 204 cases, J Dent Child. 1984; 289-94.
17. Madhu Bala. Management of Pathological Sequelae of Supernumerary Teeth: Report of Two Cases. Asian, Journal of Oral Health & Allied Sciences. 2011; 1:2.
18. Scheiner MA, Sampson WJ. Supernumerary teeth: A review of the literature and four case reports, Aust Dent J. 1997; 42:160-5.