Co-Existant Supplemental Tooth and Isolated Macrodontia in Non Syndromic Primary Dentition: A Rarity
Kanika Singh Dhull, Praveen Kumar PS, Srilatha KT, Indira MD, Nandial B

Abstract
Supernumerary tooth is a developmental anomaly and has been argued to arise from multiple aetiologies. These teeth may remain embedded in the alveolar bone or can erupt into the oral cavity. They can cause a variety of complications in the developing dentition. Macrodontia is an uncommon dental anomaly that can present in both primary and permanent dentition. It has often been reported to occur concomitantly with other dental anomalies and has also been an established clinical characteristic of numerous systemic conditions and syndromes. Here is an unusual presentation of a non syndromic case, with a supplemental tooth and an isolated macrodontic tooth, coexistent in deciduous dentition in maxilla, in a six and half years old female patient.

Keywords: Deciduous Dentition; Hyperdontia Macrodontia, Supernumerary Tooth Supplemental Tooth.

Introduction
Supernumerary teeth or hyperdontia is defined as excess number of teeth as compared to normal dental formula which can be found in any region of the dental arch. They can occur singly or in multiples, unilaterally or bilaterally and within the maxilla or mandible.1 Supplemental tooth is a supernumerary tooth which bears resemblance to the tooth to which it is associated. All supplementary teeth can be supernumerary teeth, but not all supernumerary teeth can be supplemental teeth. Majority of primary supernumerary teeth are of supplemental type and seldom remain impacted.1 Macrodontia is the term given to teeth which are larger in size than the normal respective tooth type and have equally enlarged pulp morphology, crown and root. This dental anomaly may also be referred to as megalodontia or megadontia, and may be associated with numerous syndromes and medical conditions.2 It can be present in both primary and secondary dentition. Here is an unusual presentation of a non syndromic case, with a supplemental tooth and an isolated macrodontic tooth, coexistent in deciduous dentition in maxilla, in a six and half years old female patient.

Case Report
A six and half year old girl reported to Pedodontics and Preventive Dentistry for a regular dental check up. Medical and dental history was non-contributory with no relevant family history of any dental anomalies. General examination and extra oral examination showed no abnormality. Intra oral examination revealed a deciduous dentition with mesial step molar relation bilaterally. A Supplemental tooth was noted between upper left central and lateral incisor, resembling primary lateral incisor morphology. Supplemental tooth was rotated mesio-palatally and was in cross bite in relation to lower left lateral incisor (Fig 1a). Left central incisor had initial mesial caries. Left lateral incisor was rotated mesiolabially. Right central incisor was larger in size mesiodistally both at the incisal edge and at the cervix, than the normal respective tooth type. (Table 1) All other teeth present were of normal morphology. Midline shift of maxillary arch towards the right side was noted.

Intraoral periapical radiograph revealed a larger right deciduous central incisor when compared to left deciduous central incisor with an enlarged pulp chamber. It also showed an extra tooth between upper left central and lateral incisor (Fig 1b).

Table 1: Clinical dimensions of teeth.
Orthopantamograph was made, to rule out presence of other supernumerary tooth. The orthopantamograph confirmed the above findings and all the other teeth were of normal morphology. (Fig 1c)

**Discussion**

Supernumerary teeth are less common in the deciduous dentition with a reported incidence of 0.3–0.6% of the population. The prevalence of supernumerary teeth in permanent dentition varies from 0.5–3.8%. The possible reason for the less frequent reporting of deciduous supernumerary teeth may be less detection by parents, as the spacing frequently encountered in the deciduous dentition may be utilized to allow the supernumerary tooth or teeth to erupt with reasonable alignment. Most of the times, children have an initial dental examination following the eruption of the permanent anterior teeth. So, anterior deciduous supernumerary teeth which have erupted and exfoliated normally would not be detected. Supernumerary teeth appear with a higher frequency in men than in women, with a 2:1 ratio. Supernumerary teeth are estimated to occur in the maxilla 8.2 to 10 times more frequently than the mandible, and most commonly affect the premaxilla. Supernumerary teeth are a common clinical and radiographic finding which may produce occlusal and dental problems. An unerupted supernumerary tooth may be found by chance during radiographic examination, with no effect on adjacent teeth. It is essential not only to enumerate but also to identify the supernumerary teeth present clinically and radiographically before a definitive diagnosis and treatment plan can be formulated.

![Image](image_url)

**Figure 1:** The clinical picture showing supplemental tooth between upper left central and lateral incisor and macrodontic right central incisor (a). The intraoral periapical radiograph (b) and orthopantamograph (c) showing macrodont and supplemental tooth in deciduous dentition.

Although there is abundant information available on normal tooth development, but the genetic aetiology and molecular mechanisms that lead to congenital deviations in tooth number is not clearly understood. The theories that have been proposed to support the pattern of presentation and incidences of supernumerary teeth are: Dental lamina that fails to degenerate, become reactivated to form accessory tooth organs. The dental lamina continues to proliferate due to failure, which may be brought on by defects in signalling between epithelium and mesenchyme. Supernumerary teeth may arise from division of single tooth bud. It may be partly genetic, since the supernumerary teeth are commonly found in the relatives of affected individuals; however, inheritance pattern does not follow Mendelian principles. In addition to the above theories the other proposed
etiological factors about the aetiology include phylogenetic process of atavism, syndromes and medical conditions.9

Supernumerary teeth may occur in isolation or as part of a syndrome. The most common syndromes that show a significant incidence of multiple supernumerary teeth are clef lip and palate, cleidocranial dysostosis and Gardner’s syndrome. Less common developmental disorders are; Fabry Anderson’s syndrome, Chondro-ectodermal dysplasia (Ellis–Van Creveld syndrome), Ehlers–Danlos syndrome, incontinentia pigmenti and Trico–Rhino–Phalangeal syndrome.6 Macrodontia is an uncommon dental anomaly that can be present in both primary and permanent dentition. It has often been reported to occur concomitantly with other dental anomalies and has also been an established clinical characteristic of numerous systemic conditions and syndromes. The following distinctions have been made between the various types of macrodontia:

1. True macrodontia: This is quite rare and occurs when most of the dentition is affected, as in cases of hemi-hyperplasia or oto-dental syndrome.11
2. Relative generalized macrodontia: This refers to the entire dentition and may occur as a result of hormonal imbalance, for example in pituitary gigantism.2,11
3. Isolated/false macrodontia: This usually affects single teeth. It must be remembered that small jaws in relation to the teeth might give the impression of generalized macrodontia.

The prevalence of macrodontia in the deciduous dentition is unknown. Isolated macrodontia have been reported to have a prevalence of 1.1% in the permanent dentition of British children in contrast to 2.5% in the Chinese population.12 Males (1.2%) seem to have a higher predisposition than females (0.9%).12-14 Macrodontia have been found more frequently in incisors, mandibular premolars and third molars.11,13 This tendency has been reported to occur bilaterally.

The literature has never been very clear in defining the cause or origin of macrodont teeth; however, the following are the two main theories that are most commonly described. Various authors have emphasized the importance of classifying macrodontia as separate dental anomalies from fusion or gemination.13,14 Fusion occurs when two adjacent teeth join, from the dentine and/or enamel, to form one large tooth. Gemination takes place when a tooth germ fails to undergo complete division. The resultant number of teeth within the arch is usually the best indicator to distinguish one anomaly from the other, especially when both may produce the same range of clinical presentations. Incisal notching in large teeth has also been suggested as a clinical sign which will aid differentiation between double teeth and macrodontia.13 Another school of thought is that macrodontia can actually occur as a result of fusion or gemination, and hence explain the production of a large-sized tooth.2,16 It is more generally accepted that macrodontia describes the appearance of anomalies, whilst fusion/gemination are terms which explain the embryological cause of such anomalies.17

The major complaints associated with macrodontia include: eruption problems; caries; crowding; poor aesthetics; malocclusion; alteration in gingival contour; periodontal health. Supplemental teeth are less common than supernumerary teeth and are often overlooked because of their normal shape and size. Supplemental teeth may cause aesthetic problems, delayed eruption, and crowding, and they require early diagnosis and treatment to prevent complications. Usually it is difficult to distinguish the normal tooth from its supplemental twin. Supplemental supernumerary teeth should be observed till the child is old enough, if it is not interfering with the development and eruption of adjacent teeth. Removal of supernumerary teeth is recommended in cases, where they are causing any pathological changes or crowding along with esthetical problem and difficulty in oral hygiene maintenance. If the macrodont tooth is situated in an unobtrusive position in the jaw, it is sometimes appropriate to accept this tooth in the arch and just address other complaints the patient might have. The major treatment dilemmas are whether to retain, retain with restorative adjustments; enamel reduction/stripping; extraction and closure of space; extraction and prosthetic replacement. The decision will depend on various other important factors like associated dental anomalies, age of patient and motivation, aesthetics, pulpal morphology, spacing, crowding and underlying malocclusion.

In the present case the patient was unaware of the presence of the supplemental and
macrodontic tooth. Since their presence did not cause aesthetic problem nor was considered responsible for delayed eruption of permanent incisors. As the case was reported at six and half years of age, both supplemental and macrodontic teeth were not extracted but maintained in the arch. Patient is kept under observation and recalled at six months interval till the eruption of permanent incisors.

**Conclusion**

The presence of supernumerary teeth is not uncommon in primary dentition and is observed in both arches. But treatment varies to that of permanent dentition. It depends upon the age of patient, cooperation on dental chair, and position of supernumerary tooth and their effects. It is a great challenge to the clinicians to decide timely management of supernumerary teeth and macrodont, to prevent complications associated with it. The reported data of supernumerary and macrodont in primary dentition is less. We should evaluate thoroughly the dental anomalies in primary dentition. Early referral to a multidisciplinary clinic is in the patient’s best interest.

**Author Affiliations**

1. Dr. Kanika Singh Dhull, Reader, Department of Pedodontics & Preventive Dentistry, Kalinga Institute of Dental Sciences, KIIT University, Bhubaneswar, Orissa,
2. Dr. Praveen Kumar PS, Assistant Professor, Department of Dentistry, Mysore Medical College, Mysore, Karnataka
3. Dr. Srilatha KT, Professor, JSS Dental College, JSS University, Mysore, Karnataka, India
4. Dr. Indira MD, Professor, Department of Pedodontics & Preventive Dentistry, JSS Dental College, JSS University, Mysore, Karnataka, India

**References**


**Corresponding Author**

Dr. Kanika Singh Dhull, Reader, Dept. of Pedodontics, Kalinga Institute of Dental Sciences, KIIT University, Bhubaneswar, Orissa, India.
Email: kanikasingh.dhull@gmail.com
Ph:+91 9439362211, +91 9090051010

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