

## CBCT and supernumerary teeth - to reveal the hidden - a rare case report



### Biological Science

**KEYWORDS :** CBCT, Supernumerary teeth, impaction, delayed eruption

**Dr. Sudipta Kar**

B.D.S. (Cal.), M.D.S. (W.B.U.H.S.), Sr. Lecturer of Department of Pedodontics & Preventive Dentistry, Guru Nanak Institute of Dental Science & Research, Kolkata – 114.

**Dr. Malay Mitra**

B.D.S. (Cal.), M.D.S. (Cal.), Ex-Prof. & HOD of R. Ahamed Dental College & Hospital, Kolkata.

**Dr. Mukta Bihanga Pandey**

P.G. Student of Department of Pedodontics & Preventive Dentistry, Guru Nanak Institute of Dental Science & Research, Kolkata – 114.

### ABSTRACT

*Cone-beam computed tomography (CBCT) is a new imaging technique routinely used in dentistry and other medical fields. It reproduces 3-D images which is very much helpful to locate and diagnose super imposed structure which cannot be revealed by conventional radiographic imaging. Moreover it is cheaper and patient friendly than conventional computed tomography (CT). On the other hand supernumerary teeth are one of the important dental malformations causing different complications; like-, delayed eruption, crowding, midline diastema, impaction, ectopic eruption etc. This literature describes a case of supernumerary teeth at different locations in maxillary anterior as well as palatal region and the need of CBCT in diagnosis and surgical treatment planning.*

### Introduction:

Diagnostic radiology has undergone distinct changes in the last few years. Development of new radiological methods for diagnosis and treatment planning during the dental treatment makes the treatment more specific and accurate. The first prototype scanner of CBCT was developed and described by Robb in 1982. Mozzo et al. reported CBCT for dentomaxillofacial use in 1998. In 2001 the first commercial CBCT unit was available in Europe, was New Tom 9000. The CBCT imaging technique is based on a cone-shaped X-ray beam producing a series of 2-D images. The accumulated 2-D images are then re-constructed in 3-D using a cone-beam algorithm. Supernumerary tooth is considered as one that is additional to the normal series and can be found in almost any region of the dental arch. This extra tooth is nomenclatured as supernumerary teeth. Supernumerary teeth may be single or multiple, unilateral or bilateral, erupted or impacted, and in one or both jaws. Multiple supernumerary teeth are rare with no other associated diseases or syndromes.<sup>[1]</sup> In Cleft lip and palate, cleidocranial dysplasia and Gardner syndrome may be associated with supernumerary tooth. There is no significant sex distribution in supernumerary teeth in primary dentition or in the the permanent dentition. Males are affected approximately twice than females.<sup>[2]</sup> In this case we are describing a case of multiple supernumeraries without having any syndrome. One theory suggests that the supernumerary tooth is created as a result of a dichotomy of the tooth bud.<sup>[3]</sup> Another theory suggests that supernumeraries are formed as a result of local, independent, conditioned hyperactivity of the dental lamina – called hyper activity theory.<sup>[4]</sup> According to one group of researcher supernumerary teeth were present in 0.8% of primary dentitions and in 2.1% of permanent dentitions.<sup>[5]</sup>

### Case Report:

Case: 1. A 9 years old boy reported to the department of

Pedodontics and preventive dentistry GNIDSR with chief complaint of multiple unerupted teeth in his upper front region. On oral examination, both the central and lateral incisors were not erupted at that time. Routine radiographic examination revealed the presence of multiple unerupted teeth. Medical history of the patient revealed no local or general illness and no signs or symptoms of associated syndrome like absence of the clavicles in cleidocranial dysostosis. No family history of supernumerary teeth was also kept into account. To rule out any associated syndrome with the clinical findings a thorough general examination was done. There were no signs of partial or total absence of the clavicles or open sagittal sutures which ruled out any chances of cleidocranial dysostosis or multiple intestinal polyposis in Gardiner syndrome. After thorough investigation the patient was ultimately diagnosed as multiple supernumerary teeth without any syndromic manifestation. Initially an intra oral periapical radiograph was advised (Fig. 1). They revealed the presence of 4 supernumerary teeth of which 2 were super imposed and horizontally placed. For a better visualization and treatment planning CBCT was prescribed (Fig. 2-6). CBCT revealed presence of 2 supernumeraries in central alveolar ridge region. But more problems were with the other 2 which were located palatally having the crown directed towards soft palate.

### Discussion :

Multiple supernumerary teeth without any associated syndrome is truly rare.<sup>[6]</sup> Researchers suggested that it may be rare to find multiple supernumerary teeth without an associated syndrome.<sup>[7]</sup> Cases involving one or two supernumerary teeth most commonly involve the maxillary anterior region, followed by mandibular premolar region bilaterally.

Supernumerary			Type (form)	Sub-Type	Description
	Number				
		Single	Conical		Located anywhere, conical shaped, usually found distal to the last molar.
			Tuberculate		Crown morphology of the tooth is having more than one cusp or tubercle.

			Supplemental		Supplemental supernumerary is nothing but duplication of teeth in the normal series present. It is found at the end of a tooth series. Permanent maxillary lateral incisor is most common supplemental tooth, but supplemental premolars and molars also may found. <sup>[8],[9],[10]</sup>
			Odontoma	Complex Compound	This type is not universally accepted. complex composite odontoma - when totally disorganized diffuse mass of dental tissue found. Compound composite odontoma - when superficial anatomical similarity to a normal tooth is found.
		Multiple	Syndromic		Cleidocranial dysplasia, Gardner syndrome
			Non-syndromic		When no associated syndrome is found
	Location		Peridens		A supernumerary tooth appearing elsewhere other than the midline of the dental arch
			Paramolar		Persists beside a molar
			Disto-molar		Persists distal to the last molar.

Treatment may vary from just extraction of supernumerary teeth or extraction followed by orthodontic correction to establish a good occlusion. In the present case, after proper evaluation of case treatment plan was decided to extract the erupted and unerupted supernumerary teeth followed by orthodontic evaluation. CBCT has helped a lot for proper diagnosis and treatment planning of this case.

**Advantage of CBCT –**

- 1) Higher resolution,
- 2) Presence of flat-panel detectors helps in beam-hardening artifacts.
- 3) Improve patient care.

**Disadvantages of CBCT –**

- Susceptibility to movement artifacts,
- High cost
- Limited capability to visualize internal soft tissues
- Extensive training is needed

**Conclusion :**

CBCT helps in proper diagnosis and treatment planning in difficult oral and maxillofacial condition. So it is a use full adjunct to the normal available diagnostic tools available for complex pediatric dentistry cases.



Figure 2 : The CBCT image clearly demonstrates the number & location of supernumerary teeth.



Figure 1 : Intra oral periapical radiograph.



Figure 3 : Panoramic images providing details.

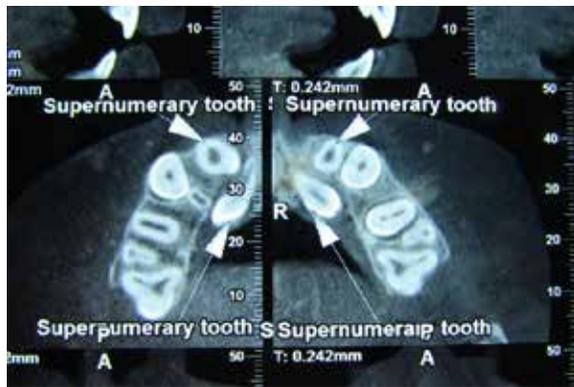


Figure 4 : Detail closer view 1.

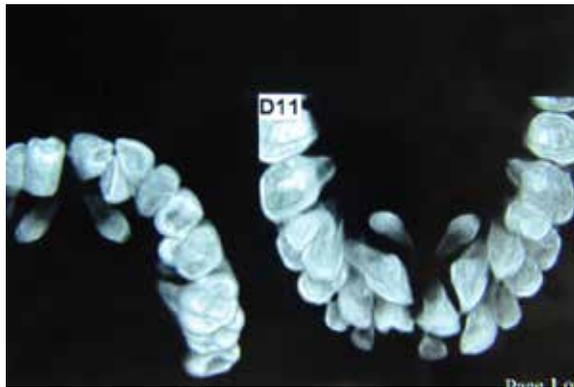


Figure 5 : Detail closer view 2.



Figure 6 : Detail closer view 3.

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