



BILATERAL SUPERNUMERARY PREMOLARS: REPORT OF TWO CASES

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ABSTRACT

A supernumerary tooth is an additional entity to the normal series of teeth and can be seen in all quadrants of the jaw. They can be classified into two main types namely supplemental and rudimentary types. They are most commonly found as maxillary mesiodens, followed by supernumeraries of maxillary molar region and those in mandibular premolar region. The presence of bilateral supplemental type of supernumerary in premolar region is relatively rare and most of the time they are not diagnosed until symptoms appear, sometimes till severe complications. For this reason a thorough knowledge about early diagnosis and different treatment approaches is essential for clinical purpose. This article describes two case reports with bilateral premolars (first case report showing presence in mandible whereas second one showing presence in maxilla) with their diagnosis, clinical presentations and different treatment approaches.

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INTRODUCTION

A supernumerary tooth is an additional entity to the normal series of teeth and can be seen in all quadrants of the jaw.¹ The reported prevalence varies between 0.1% - 3.8% in permanent dentition and 0.3% - 0.6% in deciduous dentition. Higher frequency is seen in males than in females.² Supernumerary teeth can be present in either of the jaws unilaterally or bilaterally, single or multiple in number. They are most commonly found as maxillary mesiodens, followed by supernumeraries of maxillary molar region and those in mandibular premolar region.³

Supernumerary teeth can be mainly classified according to their morphology (form) and location in the dental arches.⁴ According to their morphology, they may be classified into two forms: rudimentary and supplemental. Rudimentary (or dysmorphic) types are teeth of abnormal shape and smaller size including conical, tuberculate, and molariform types, whereas supplemental teeth (or eumorphic) are of normal shape and size resembling a particular tooth from the normal dentition. Their position within the jaw varies as they may be placed labially/ buccally or palatally/ lingually, with varying orientations (vertical, horizontal, or inverted).⁵

Supernumerary teeth are frequently found in association with many syndromes such as Gardner's syndrome, Cleidocranial dysplasia, Trichorhinophalangeal syndrome, and cleft of the lip and palate. Nonsyndromic supernumeraries can also be present in the absence of any systemic pathology.⁶

The supernumerary premolars are seen in the permanent dentition, the prevalence of which is in between 0.075% to 0.26% and they account for only 10% of all the supernumerary cases.⁸ The presence of multiple supernumerary premolars in the absence of any associated syndromes or systemic conditions is relatively rare. This paper describes two case reports, first showing presence of bilateral supernumerary premolars in the mandible and second showing presence of bilateral supernumerary premolars in the maxilla, with their diagnosis and management.

Case Report 1

A 13 years old male patient reported with the chief complaint of pain in left lower back teeth region since last 1 month. His familial, medical and dental histories were non-contributory. Intraoral examinations (Figure 1 and Figure 2) revealed a hard tender swelling on the lingual aspect of 33 and 34. No caries were found in any quadrant. 33 and 34 were non tender on both vertical and horizontal percussion and no pathological mobility was found. Any history of trauma to the offending teeth region was excluded. Periodontal examination revealed generalized grade 1 stain with mild generalized gingivitis.

Intra Oral Peri Apical Radiograph (IOPAR) of 33, 34 region (Figure 3) was done and it revealed presence of a supernumerary tooth in the region of 33 34 and 35. An OPG was advised to exclude any other pathological findings. Analgesic and antimicrobial mouthwash were prescribed.

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Figure 1 Intra oral photograph showing swelling in lingual aspect of left side of mandibular premolar region



Figure 2 Intra oral photograph showing lingual aspect of right mandibular premolar region



Figure 3 IOPAR showing supernumerary present in relation to 34 35 region

OPG (Figure 4) showed presence of supernumerary teeth bilaterally in respect to 33 34 and 35 on the left side and 44, 45 on the right side. Supernumerary in respect to 44 and 45 region was asymptomatic and no relevant clinical findings were obtained in that region. The exact buccolingual position of the right sided supernumerary could not be obtained from OPG and clinical examination, therefore Cone Beam Computed Tomography (CBCT) of mandible was advised.

CBCT of the mandible (Figure 5 and 6) revealed presence of a supernumerary tooth in approximation to the radicular third of 34 and 35. Table 1 shows the dimensional detail of the relation of the respective tooth surface and adjacent anatomical landmarks.



Figure 4 Panoramic radiograph showing bilateral supernumerary teeth in relation to mandibular premolars of both side

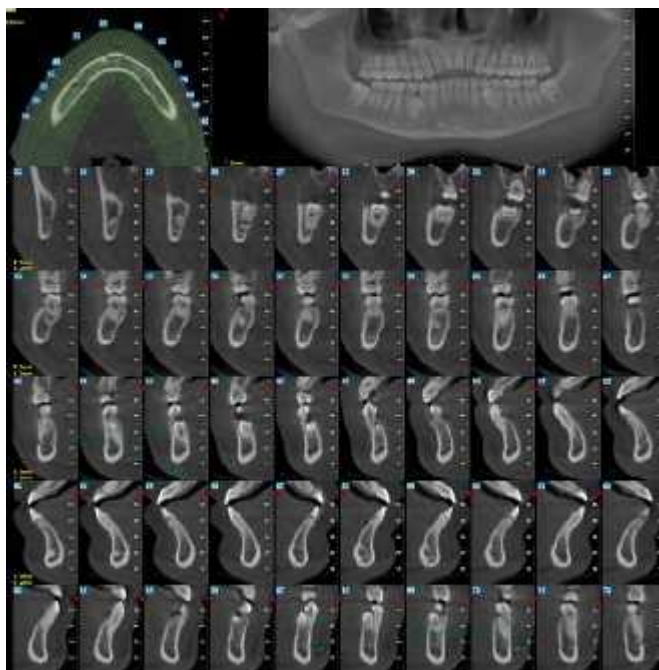


Figure 5 CBCT of mandible showing exact location of bilateral supernumeraries and their relation with adjacent vital structures



Figure 6 CBCT of mandible showing exact location of bilateral supernumeraries and their relation with adjacent vital structures.

- The respective tooth is likely to be dextro- rotated.
- The respective tooth is likely to be partially erupted.
- The coronal third of the respective tooth is inclined mesially and lingually.
- The middle and apical third of the respective tooth are inclined buccally. The apical third additionally also presenting with distal inclination.

CBCT also revealed presence of a supernumerary tooth in approximation to the radicular third of 44 and 45. Table 2 shows the dimensional detail of the relation of the respective tooth surface and adjacent anatomical landmarks.

Table 1 CBCT mandible showing dimensional details and approximation with important anatomical structures of left side

Level of the tooth	Distance between the buccal cortical plate and the tooth surface	Distance between the lingual cortical plate and the tooth surface	Distance from the adjacent crest of the dentoalveolar bone	Distance from the ID canal/lingual canal (if applicable)
Coronal third	5.1 mm	1.7 mm	Nil of note	10.9 mm
Middle third	2.7 mm	3.7 mm	Not applicable	7.2 mm
Apical third	2.4 mm	5.8 mm	Not applicable	2.4 mm

Table 2 CBCT mandible showing dimensional details and approximation with important anatomical structures of right side

Level of the tooth	Distance between the buccal cortical plate and the tooth surface	Distance between the lingual cortical plate and the tooth surface	Distance from the adjacent crest of the dentoalveolar bone	Distance from the ID canal/lingual canal (if applicable)
Coronal third	1.5 mm	0.8 mm	Nil of note	3.8 mm
Middle third	3.3 mm	1.4 mm	Not applicable	6.9 mm
Apical third	4.8 mm	1 mm	Not applicable	0.8 mm

From the aforementioned data and overall radiological appearances, following inferences can be drawn about the respective tooth;

- The respective tooth is likely to be partially erupted.
- The respective tooth is likely to be presenting with an overall lingual inclination.
- The coronal third of the respective tooth is inclined mesially.
- The apical third of the respective tooth is presenting with distal inclination.

The patient was informed about the presence of additional teeth on both sides of the mandible and was educated about the associated difficulties like those of maintaining the oral hygiene status. He was further explained the probable sequels of supernumerary teeth like swelling, cyst, and future malocclusions and was advised extraction of the bilateral supernumerary premolars. As the right sided supernumerary was deep seated in the mandible and closely in approximation with roots of 44, 45 and also with the ID canal, extraction of bilateral supernumeraries was done under General anesthesia. Supernumeraries extracted (Figure 7) resembled their permanent counterpart and was diagnosed as supplemental type of supernumerary teeth. Check-up done after 7 days, a month and further follow-ups were uneventful.



Figure 7 Surgically extracted supernumeraries of both side

Case Report 2

A 12-year-old male patient reported to with the chief complaint of irregularities in upper left back teeth region. His familial, medical and dental histories were non-contributory. Intraoral examinations revealed an extra asymptomatic tooth like structure (Figure 8) present on palatal aspect of partially erupted 25. Clinical examination revealed a non-tender, bony swelling (Figure 9) present on buccal aspect of 15, 16. Patient had full set of permanent dentition. Oral hygiene status was satisfactory.



Figure 8 Intra oral photograph showing palatally erupting tooth like structure in relation to 25



Figure 9 Intra oral photograph showing swelling on buccal aspect of 15 and 16

Table 3 showing different theories of formation of supernumerary teeth

Theory of Atavism (Evolutionary throwback)	Oldest theory	Development of supernumerary teeth is related to phylogenetic reversion to extinct primates with three pairs of incisors	However, this theory has been discarded now.
Dichotomy theory		The splitting of the tooth bud into two equal or different sized parts results in the formation of two teeth of equal size, or one normal and one dysmorphic tooth respectively	Accepted theory
Dental lamina hyperactivity theory Other factors like environmental and genetic factors		They are found as a result of local, independent, and conditioned hyperactivity of dental lamina	Most accepted theory

Table 4 Classification of supernumerary teeth based on chronology, topography, and morphology

Chronological	Predeciduous	They develop before deciduous teeth	More frequent type
	Prepermanent type	Before the development of permanent tooth	
	Postpermanent type	After the deciduous as well as the permanent follicles have been formed	
Morphological	Supplemental (Eumorphic)	Those teeth that resemble the teeth of the group to which it belongs, i.e., molars, premolars, or incisors.	It is the most common type.
	Rudimentary [conical (peg shaped), tuberculate (barrel shaped), molariform and odontoma]	Those teeth that may bear little or no resemblance to the teeth with which it is associated are termed as rudimentary	
	Mesiodens	It is usually small and conical in shape. It is seen between the two maxillary incisors.	
Topographical	Paramolar	It is usually small and rudimentary. It is most commonly situated buccally or palatally to one of the molars.	
	Distomolar	It is a tooth located in the region posterior to the third molar tooth	

IOPAR of 25 region (Figure 10) along with OPG (Figure 11) were advised which revealed presence of supernumerary between 24, 25 and between 15,16. Based on the clinical findings, buccal positioning of right supernumerary was ascertained.



Figure 10 IOPAR showing supernumerary present in relation to 24 25 region
The patient was informed about the presence of supernumerary teeth, its associated difficulties and possible sequels and was further advised extraction of the same on both sides. Surgical extraction on the right side was performed under local anaesthesia. The supernumerary teeth observed were of conical shape with concrescence at root portion on left side (Figure 12) and supplemental to 14 on the right side (Figure 13) with completely formed roots. Check-ups were done after 7 days and a month were uneventful.



Figure 11 Panoramic radiograph showing bilateral supernumerary teeth in relation to 24 and 25 and in relation to 15 and 16



Figure 12 Surgically extracted supernumerary of left side showing concrescence



Figure 13 Surgically extracted supernumerary of right side

DISCUSSION

Supernumerary teeth were first reported between AD 23 and 79.⁹ Numerous theories^{10,11,12} have been proposed for the development of supernumerary teeth (Table 3) namely:

- Phylogenetic theory of Atavism (evolutionary throwback)
- Dichotomy theory (cleavage of a single tooth bud to two homologous or heterologous parts)
- Dental lamina hyperactivity theory.
- Combination of hereditary and environmental factors

Supernumerary teeth can be grouped or classified^{4, 12, 13, 14} based on chronology, topography, and morphology (Table 4).

Both the present case reports show post permanent supplemental type of supernumerary associated with premolars as these resembled normal premolars.

Most of the times multiple supernumerary premolars are seen with an associated syndrome, such as Gardner's syndrome, Cleidocranial dysplasia, Fabry-Anderson syndrome, Ehlers-Danlos syndrome, Down's syndrome, Crouzon's disease, cleft lip and cleft palate, Hallermann-Streif syndrome, and Orodigitofacial dysostosis¹⁰

A normal morphological finding of multiple supernumerary teeth in the absence of associated systemic condition or syndrome is rarely encountered. In our two cases, bilateral non syndromic occurrence of supernumerary premolars in mandibular arch and bilateral non syndromic occurrence of supernumerary premolars in maxilla were seen which are relatively rare findings. Sasaki *et.al*¹⁵ reported bilateral occurrence of supernumerary teeth in maxillary canine and mandibular canine-premolar region. In a study by Hyun *et.al*¹⁶, prevalence of non-syndromic multiple supernumerary premolars was found to be 0.029%. Yusof¹⁷ reviewed cases of non-syndromic multiple supernumerary teeth and found mandibular premolar region as most affected site, followed by mandibular molar and anterior regions, respectively. Solares and Romero² found that among supernumerary premolars 74% of supernumerary teeth are located in the mandibular premolar region. Stafne¹⁸ found that 8.4 percent of all supernumerary teeth were in the premolar region, with 6.6 percent of the total in the mandible. A similar figure (8.0%) has been given by Nazif *et al*¹⁹. whereas Grahnén and Lindahl²⁰ reported that supernumerary premolars represent 9.1 percent of all supernumerary teeth. Seventy-five percent of supernumerary

premolars were determined to be unerupted, and the majority of them appeared asymptomatic.^{21, 22, 23} Most supernumerary teeth in the premolar region are unerupted, with no clinical signs or symptoms and often observed as incidental findings on radiographs.^{21, 24, 25}

Mandibular supernumerary premolars have been observed to have a marked tendency towards the formation of cysts and pathological changes^{26, 27}

The presence of supernumerary teeth may exhibit the following problems^{12, 28}:

- Malocclusion caused due to disturbance in the path of eruption
- Prevent eruption of developing teeth.
- External root resorption on the adjacent teeth due to pressure exerted by the erupting supernumerary teeth or resorption of adjacent structures.
- A deviated path of eruption of supernumerary teeth (nasal cavity, orbit, inferior border of the mandible, and sometimes weakening of bones to form a more prone site for fracture).
- An untreated and un-erupted supernumerary tooth can transform into a dentigerous cyst.
- The supernumerary teeth may get fused with the normal teeth affecting morphology of the involved teeth, and these teeth may be impacted.
- Displacement of teeth (rotation and labial or lingual eruption).
- Impacted (especially primary tooth).

Thus, early diagnosis of supernumerary teeth in the premolar region is important in their management, that should involve taking a thorough medical and dental history and carrying out a radiological assessment following a clinical examination.¹²

The most appropriate radiographic view is a panoramic radiograph supplemented with periapicals as required.²⁹ Whenever supernumerary teeth are impacted and clinically not palpable to know the buccal or lingual position, Occlusal Radiograph or IOPAR in SLOB technique is indicated³⁰. Advanced Radiography techniques like CBCT³¹ are also indicated when exact location and knowledge of correlation with important anatomic structures are needed before any surgical procedure. In the first case report CBCT was advised as right sided supernumerary was deep seated in mandible and exact apical position and correlation with Inferior Dental Nerve canal could not be identified with panoramic radiograph.

Management of supernumeraries depends upon the signs and symptoms as well as problems associated with it.

The management for the supernumerary tooth can be by:

- Surgical extraction
- Monitoring
- Retaining the supernumerary premolar¹²

In general, extraction of supernumerary premolars is the recommended treatment of choice, but the timing and surgical removal appear to be controversial. Surgical removal is recommended to avoid injury to permanent teeth.³² In the current case reports surgical extraction was advocated as in both the cases patient had symptomatic swelling in the mouth and the supernumeraries were causing crowding and malocclusions.

Therefore, it can be concluded that early diagnosis and a prompt management decision based on the clinical and radiological criteria is very important for such cases as they may lead to many future complications if left untreated.

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