

Invited Review

Management of supernumerary teeth

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Abstract

Supernumerary paramolars are the rare anomalies of the maxillofacial complex. These are more common in the maxilla than in the mandible. This article reviews the etiology, frequency, classification, complications, diagnosis and management of supernumerary teeth (bilateral maxillary paramolars)

Keywords: Paramolar, supernumerary teeth, conical teeth, distomolars

INTRODUCTION

Supernumerary teeth are defined as those in addition to the normal series of deciduous or permanent dentition. They may occur anywhere in the mouth. They may appear as a single tooth or multiple teeth, unilaterally or bilaterally, erupted or impacted and in mandible/maxilla or both the jaws. The prevalence of supernumerary teeth varies between 0.1 and 3.8% and is more common in the permanent dentition.^[1-3] The low prevalence of supernumerary teeth in primary dentition is because it is generally overlooked by the parents, is often of normal shape (supplemental type), erupt normally, and appear to be in proper alignment.^[4] The incidence is considerably higher in the maxillary incisor region followed by maxillary third molar and mandibular molar, premolar, canine and lateral incisors.^[5] Though there is no significant sex distribution in primary supernumerary teeth, males are affected approximately twice than females in the permanent dentition.^[6,7]

CLASSIFICATION OF SUPERNUMERARY TEETH

Supernumerary teeth can be classified according to chronology, location (topography), morphology and their orientation. Chronologically, they can be classified as pre-deciduous, similar to permanent teeth, and post permanent or complementary; morphologically as conical, tuberculate, supplemental (eumorphic) and odontome; topographically as mesiodens, paramolar, distomolar and parapremolar, and according to orientation as vertical, inverted and transverse^[8] [Tables

1–3]. Paramolars are supernumerary molars, usually rudimentary (dysmorphic), situated buccally or lingually/palatally to the molar row. Mostly, they are situated between the second and third molars, while in very rare cases they can be found in between the first and second molars [Figure 1]. Distomolars are situated either directly distal or distolingually to the third molar and are usually rudimentary conical shape [Figures 2 and 3].

ETIOLOGY

The exact etiology of the supernumerary teeth has not yet completely understood. Several theories have been suggested for their occurrence, such as the phylogenetic

Table 1: Supernumerary teeth based on location

Mesiodens	Located between maxillary central incisors (pre-maxillary region)	Conical or peg shaped
Paramolar	Buccally/lingually or palatally in between second and third maxillary molars, rarely in between first and second maxillary molars	Conical or supplemental
Distomolar	Distal or distolingual to third molar (maxillary or mandibular, in mandibular often impacted)	Conical or tuberculate
Parapremolar	Additional tooth in premolar region	Supplemental
Paramolar root	Additional root often in mandibular molar	Rudimentary or fully formed
Paramolar tubercle	Additional cusp present on buccal surface of a permanent molar <i>Parastyle</i> : if additional cusp is present in maxillary molar <i>Protostylid</i> : if additional cusp is present in mandibular molar	Tuberculate

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Table 2: Supernumerary teeth based on morphology

Morphology	Appearance	Occurrence (%)
Conical	Small/peg shaped tooth with normal root	70–80
Tuberculate	Barrel shaped crown with rudimentary root, often paired	10–12
Supplemental	Duplication of tooth in the normal series (mostly in deciduous dentition and in permanent maxillary lateral incisor and mandibular premolar)	6–8
Odontome	No regular shape, disorganized diffuse mass of dental tissue	3–4

Table 3: Supernumerary teeth based on eruption and orientation

Supernumerary teeth according to eruption	Supernumerary teeth according to orientation
<i>Erupted:</i> Complete coronal aspect is seen in oral cavity clinically	<i>Vertical:</i> Oriented as normal series of dentition
<i>Partially erupted:</i> Only occlusal part is visible	<i>Inverted:</i> Upside down
<i>Impacted:</i> Cannot be seen in oral cavity clinically, can only be diagnosed using radiograph	<i>Transverse:</i> Horizontally placed



Figure 1: Presence of bilateral paramolars in between first and second molars



Figure 2: Right side intraoral peri-apical radiograph showing carious maxillary right second molar (17), paramolar and distomolar

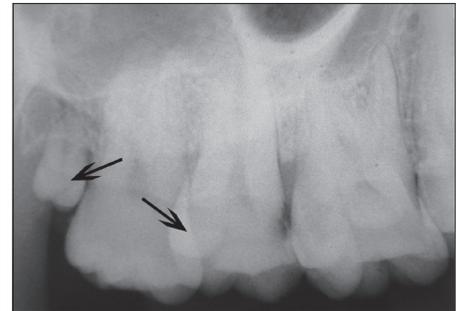


Figure 3: Left side intraoral peri-apical radiograph showing carious maxillary left second molar (27), paramolar and distomolar

theory,^[9] the dichotomy theory,^[10] occurrence due to hyperactive dental lamina^[11] and due to a combination of genetic and environmental factors.^[12] Generally, multiple supernumerary teeth are associated with diseases or syndromes.^[4] Supernumerary teeth show strong association with developmental disorders such as cleft lip and palate, cleidocranial dysostosis, Gardener syndrome and less commonly with Ehlers-Danlos syndrome, Fabry Anderson's syndrome, chondroectodermal dysplasia, incontinentia pigmenti and tricho rhino-phalangeal syndrome.^[2,5] Supernumerary teeth may erupt normally, remain impacted, appear inverted or assume an abnormal path of eruption.

COMPLICATIONS ASSOCIATED WITH SUPERNUMERARY TEETH

As such, supernumerary teeth do not cause any complication. However, these may lead to delay or failure of eruption of permanent teeth, displacement, crowding, root resorption, dilaceration, loss of vitality of adjacent teeth, subacute pericoronitis, gingival inflammation, periodontal abscesses, dental caries due to plaque retention in inaccessible areas, incomplete space closure during orthodontic treatment, and pathological problems such as dentigerous cyst formation, ameloblastomas, odontomas and fistulae. They may also interfere in alveolar bone grafting and implant placement.

DIAGNOSIS AND MANAGEMENT

Occasionally, supernumerary teeth are asymptomatic and may be detected as a chance finding during radiographic examination. Detailed history, clinical examination, thorough investigation, early diagnosis and appropriate treatment of supernumerary teeth are mandatory. Unerupted supernumerary may be found by chance during radiographic examination. Sometimes, clinicians may suspect the presence of supernumerary teeth, if there is failure of eruption or ectopic eruption of permanent tooth, persistence of deciduous tooth, wide diastema and obvious presence of additional teeth.^[13] An anterior occlusal or periapical radiograph [Figures 2 and 3] using paralleling technique and panoramic view (OrthoPantomoGraph) [Figure 4] are the most useful radiographic investigations to visualize supernumerary teeth. Recently, computed tomography has also been used to detect the presence of supernumerary teeth.^[14,15] A complete radiographic survey of the entire oral cavity is essential to identify the presence of all impacted supernumerary teeth because the ratio of impacted to erupted supernumerary teeth ranges from 3 to 1. However, radiographs alone are not adequate for the definitive diagnosis. Their interpretation should always be conducted in conjunction with clinical findings. Treatment depends on the type and location of the supernumerary teeth and on its potential effect on adjacent hard and soft tissue structures. Occasionally, supernumerary teeth may

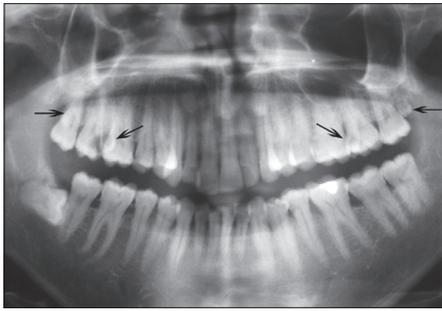


Figure 4: OPG showing maxillary bilateral paramolars and distomolars



Figure 5: Intraoral peri-apical radiograph showing completion of endodontic therapy in maxillary right second molar (17)



Figure 6: Intraoral radiograph showing restoration in maxillary second molar

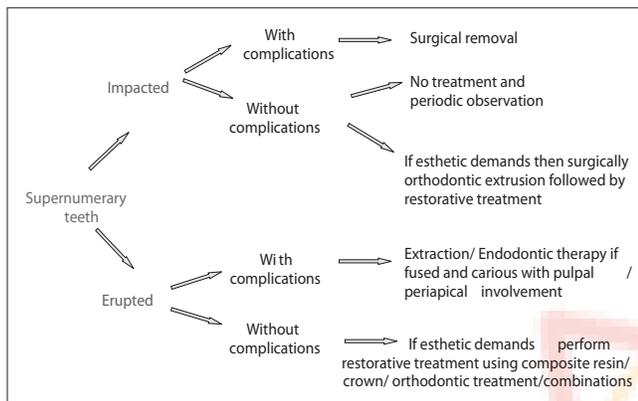


Figure 7: Management of supernumerary teeth

lead to complications such as deep caries in the adjacent teeth, which may require restoration or endodontic therapy of the adjacent teeth as well [Figures 5 and 6]. Supernumerary teeth can be managed either by removal/endodontic therapy or by maintaining them in the arch and frequent observation [Figure 7]. Removal of the supernumerary teeth is recommended where^[7]

- there is associated pathology,
- permanent tooth eruption has been delayed due to the presence of supernumerary tooth,
- increased risk of caries due to the presence of supernumerary teeth which makes the area inaccessible to maintain oral hygiene [Figures 1],
- altered eruption or displacement of adjacent tooth is evident,
- there are severely rotated teeth leading to further complication,
- orthodontic treatment needs to be carried out to align the teeth,
- its presence would compromise alveolar bone grafting and implant placement and
- there is compromised esthetic and functional status.

Extraction should be performed carefully to prevent damage to adjacent permanent teeth, which may cause ankylosis and maleruption of these teeth. The clinician

should be careful to avoid complications such as damaging nerve and blood vessels during manipulation of the tooth, perforation of maxillary sinus, pterygomaxillary space, orbit and fracture of maxillary tuberosity. Clinicians must also be alert as sometimes supernumerary teeth are fused with the adjacent tooth structure at crown or root level, which may make the extraction difficult.^[16-18] Supernumerary teeth can also be kept under observation without extraction when satisfactory eruption of related teeth has occurred with no associated pathology and not causing any functional and esthetic interference.

CONCLUSIONS

Supernumerary teeth can present in any region of oral cavity. These may erupt or remain impacted and may lead to various complications. Though the occurrence of paramolars is rare, clinicians should be aware of their presence and associated problems in order to formulate a sound treatment plan after thorough clinical and radiographic investigations, to meet the challenges.

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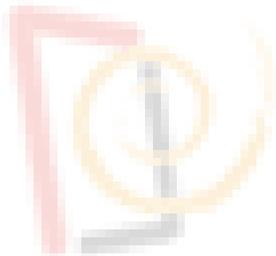
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