

# Multiple Impacted Supernumerary Teeth in a Non Syndromic Individual: Report of a Rare Case

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## ABSTRACT

Supernumerary teeth are the uncommon alteration of development that may appear in either of the dental arches. They may be single, multiple, unilateral, bilateral, unerupted in one or both jaws. Multiple supernumerary teeth are mostly associated with complex syndromes, and the presence of multiple supernumerary teeth in a non-syndromic individual is a rare phenomenon. Here we document a rare case of a multiple impacted supernumerary teeth in a non-syndromic individual.

**KEYWORDS:** Multiple Supernumerary Teeth, Non-Syndromic Individual, Cone Beam Computed Tomograph, Distomolar

## INTRODUCTION

Supernumerary teeth are defined as any teeth or tooth substance in excess of the usual configuration of 20 in deciduous and 32 in permanent teeth. Supernumerary teeth are also more frequently observed in permanent dentition than in deciduous dentition and is mostly seen in the upper arch than lower arch with a predilection rate of 10:1.<sup>1</sup> Supernumerary teeth were first described in 23 and 79 A.D.<sup>2</sup>

In general supernumerary teeth are asymptomatic and are observed in a routine periapical radiograph, panoramic radiographs and computed tomography scans.<sup>3</sup> Etiology of supernumerary teeth is still not clearly understood, various theories have been proposed to explain the anomaly based on developmental interference and heredity.<sup>4</sup> Occurrence of single supernumeraries were found to be in 76-86% of cases, double supernumeraries in 12-23% of cases, and the prevalence of five or more supernumerary teeth are found to be less than 1.0 %.<sup>5</sup> Few case reports of multiple supernumerary teeth not associated with complex syndromes have been published.<sup>6</sup> Generally, multiple supernumerary teeth are a part of various syndromes. It is important to rule out associated syndromes for many supernumerary conditions because the morbidity and sometimes fatal implications may warrant medical care, genetic counselling for the patient and their family.<sup>7</sup> The presence of multiple supernumerary teeth without any syndrome or associated systemic condition is a rare phenomenon. Supernumerary teeth may disrupt normal occlusal development. Therefore, proper clinical and radiographic examination is important during treatment planning.<sup>8</sup>

## CASE REPORT

A 20- year-old boy reported to Department of Oral and maxillofacial surgery of Vokalligraha Sangha Dental College & Hospital, Bangalore with a chief complaint of recurrent pain in the right lower back tooth region. Patient's medical and family history was non-contributory, and there was no familial history of supernumerary teeth. Intra Oral examination revealed partially erupted Supernumerary teeth in the region of 47, and impacted 48, pericoronitis was evident around the supernumerary teeth and Impacted 48. A supernumerary tooth was also seen in between 16 and 17. Considering clinical findings and history, a provisional diagnosis of supernumerary teeth in 47, 16 and 17 region and impacted 48 was made. A panoramic radiograph was made which showed teeth 11 to 18, 21 to 28, 31 to 38, 41 to 48, additional 2 supernumerary teeth in the first and fourth quadrant and 1 supernumerary tooth in the second and third quadrant. So altogether six supernumerary teeth can be seen in the orthopantomograph (Fig - 1). So a cone



Fig 1. Orthopantomograph shows six supernumerary teeth

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beam computed tomography was done to rule out any other supernumerary tooth and jaw osteomas, and the cone beam computed tomography also showed six Supernumerary teeth (Fig - 2). Supernumerary teeth were

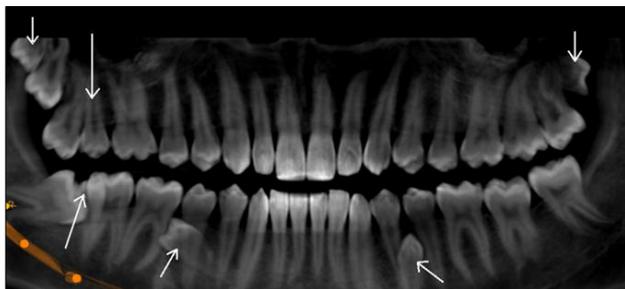


Fig 2 . Cone Beam Computed Tomography shows six supernumerary teeth, all teeth are impacted except between 16 and 17.

present in the first quadrant in the molar region, in the second quadrant in the molar region, in the third quadrant in the premolar region, in the fourth quadrant in the premolar and molar region. Two Distomolars were present in 18, 28 region, 4 other supernumerary teeth resembling premolars were present between 16 and 17, 34 and 35, 45 and 46, 47 and 48. Distomolars were in the stage of formation with the crown formed and root formation under progress. All supernumerary teeth were impacted except for the teeth in between 16 and 17. All third molars were impacted. Thorough general examination was done, Patient's stature was normal with no facial or clavicular features of cleidocranial dysplasias like frontal and parietal bossing, hypoplastic clavicles, hypertelorism. His panoramic radiographs had no radiopacities indicative of the presence of jaw osteomas, a diagnostic feature of Gardner's syndrome. However, as all the signs of any associated syndromes were negative a diagnosis of Non syndromic multiple impacted supernumerary teeth was made. The patient was informed about the presence of multiple supernumerary teeth. The treatment plan was discussed with the patient and informed consent was signed, surgical extraction was done for 48, and supernumerary tooth present in the 47 and 48 region, as the cause of recurrent pain was due to impacted 48 and also due to the supernumerary tooth in that region (fig-3). Patient was reviewed after 3 months and did not have any fresh complaint.



Fig 3 . surgically extracted supernumerary teeth present between 47 and 48 along with impacted 48.

## DISCUSSION

Hyperdontia or supernumerary teeth is an odontostomatologic anomaly characterized by an excess in tooth number, both erupted and unerupted. Hyperdontia can be described as "real" if there is an increase in number of teeth or it can be false if it is caused due to delay in shedding of primary teeth beyond the transition period.<sup>9</sup>

The prevalence of supernumerary teeth in the permanent dentition has been found to be between 0.15% and 3.8%.<sup>10</sup> It has been observed 10 times more in the upper jaw than the lower jaw.<sup>11</sup> A male to female ratio of 9:2 among 11 patients who had nonsyndromic multiple supernumerary teeth was reported by Yusof.<sup>12</sup>

Cortes-Breton Brinkmann and workers, reported the incidence of multiple supernumerary teeth to be 50.9% in mandible and 49.1% in maxilla.<sup>13</sup> It also seems that Asian populations are more affected with supernumeraries than others. Clinical and radiographical examination is must for determining supernumerary teeth. Supernumerary teeth can be identified during routine radiographic examination (intraoral periapical radiograph, panoramic radiograph or in cone beam computed tomography). Cone beam computed tomography is one of the diagnostic measure which has revolutionized maxillofacial imaging, which can help in diagnosing multiple supernumerary teeth.

Many complications may occur with the development of supernumerary teeth such as functional impairment, malalignment of teeth, and an unaesthetic appearance. Failure of teeth to erupt, delayed eruption and ectopic eruption, displacement, diastema, concrescence, dilacerations, pathological fractures, loss of pulp vitality, cyst formation and root resorption may also occur.<sup>14</sup> Bodin et al, have reported that only 2% of the supernumerary premolars are likely to undergo pathological changes.<sup>15</sup>

Wang et al. stated that even adult dental tissues could lead to the formation of new teeth in response to either loss of function of epithelial adenomatous polyposis coli gene protein or Wnt/beta-catenin activation.<sup>16,17</sup> Beta-catenin is the intracellular mediator of Wnt gene signaling, which is likely to be implicated in etiology of supernumerary teeth. The pathway normally concerns itself with cell-to-cell interactions during embryogenesis. Current genetic studies by Thesleff et al. have also recognized the presence of ectodine, described as a third dentition inhibitor protein.<sup>18</sup> Asymptomatic supernumerary premolar teeth should be left in situ until the development of the adjacent anatomic structures and root development of the adjacent teeth.<sup>14</sup> Many hypotheses have been proposed to explain the development of these teeth, including atavism, tooth germ dichotomy, hyperactivity of the dental lamina, and genetic and environmental factors.<sup>19</sup> The hereditary factor is believed to be important for the development of supernumerary tooth. There may be a transmission of a recessive or

autosomal dominant trait with incomplete penetrance, or the condition may be associated with an X chromosome.<sup>20</sup> The familial pattern of multiple supernumerary teeth strongly supports a genetic autosomal dominant inheritance<sup>21</sup>, the development of bilateral supernumerary teeth also suggest that they may be controlled by a mutant gene.<sup>16</sup> Supernumerary teeth can present shape anomalies and have a smaller size or have normal morphology.<sup>22</sup> Supernumerary tooth can be classified on the basis of morphology and region. Morphological variation includes conical, barrel-shaped, tuberculate, supplemental, odontoma, and incisiform, according to the region it can be classified as mesiodens, paramolar, distomolar, parapremolar.<sup>7,23</sup> A supernumerary teeth can be single or multiple in number. They may be similar to a normal tooth (eumorphic) or may not be any such resemblance (dysmorphic).<sup>18</sup> There have been documented cases of ectopic supernumerary teeth in the maxillary sinus and nasal cavity with associated symptoms of nasal discharge, epistaxis, hereditary facial palsy, numbness, and hemoptysis.<sup>7</sup> The most common supernumerary teeth listed in order of frequency are the maxillary midline supernumerary, maxillary fourth molar, maxillary paramolar, mandibular premolars, and maxillary premolars.<sup>24</sup> Whereas multiple supernumerary teeth have occurred mostly in premolar region.<sup>12</sup> According to Grimanis et al. about 79% of the supernumerary molars are found in the maxilla whereas Menardia et al. stated this percentage as 86.8%.<sup>25,26</sup> Supernumerary teeth may have a normal eruption, remain impacted, appear inverted or erupt in an abnormal path.<sup>27</sup> Many syndromes and developmental conditions have been found to be associated with multiple supernumerary teeth developing as a part of systemic condition such as cleidocranial dysplasia, Gardner syndrome, cleft lip and palate, Hallermann-Streiff syndrome, Gardner syndrome, Fabry-Anderson's syndrome, Ehlers-Danlos syndrome, Incontinentia pigmenti and Trico-Rhino-Phalangeal syndrome, condro-ectodermal dysostosis.<sup>16,23,27</sup> Supernumerary teeth occur frequently in human dentition but the presence of multiple impacted supernumerary teeth in a non-syndromic or without any systemic disease is a rare phenomenon. Presence of supernumerary teeth in all cases may not require removal but in cases where supernumerary teeth are associated with several clinical complication requires removal.<sup>5,8,26</sup> Signs that should make a clinician look for the possible presence of supernumerary teeth includes unilateral persistence of a deciduous tooth, failure of eruption or ectopic eruption of a permanent tooth, rotation of erupted permanent tooth or a wide midline diastema or interdental spacing.<sup>28</sup> Their occurrence can create a variety of clinical problems such as crowding, delayed eruption, spacing between teeth, rotations, cystic lesion, resorption of the adjacent teeth and incomplete space closure during orthodontic treatment.<sup>28</sup> Hence, suitable treatment after proper clinical and radiographic evaluation is essential. Literature shows that only (13 – 34 %) of all the permanent supernumerary teeth are erupted.<sup>19</sup> A case report presented by Yan et al. documented 19

supernumerary teeth in a 14-year-old girl with no associated syndromes<sup>28</sup>, many cases in the literature had shown a familial occurrence of supernumerary teeth.<sup>7</sup> There are no established guidelines for treatment of supernumerary tooth. According to Garvey et al. extraction of supernumerary teeth is not always the treatment of choice. Periodic monitoring of supernumerary teeth should be done if eruption of related teeth have occurred, if orthodontic treatment is not required, if it is not associated with any pathology and if removal of the supernumerary teeth results in loss of vitality of the related teeth.<sup>19</sup> If supernumerary teeth are associated with the roots of permanent teeth, then waiting till the completion of roots development should be considered to minimize the chances of root damage. But if the supernumerary teeth are associated with any sort of complication like cyst or tumours, hindrance to orthodontic treatment, obstruction to normal eruption and unaesthetic appearance then extraction is the logical treatment.<sup>29</sup> The presence of an unerupted supernumerary teeth in a potential implant site may also compromise implant placement. In such a case, extraction may be required before implant placement.<sup>29</sup>

## CONCLUSION

Knowledge about the multiple impacted supernumerary teeth and its management is important for dental surgeons, as they are rare but may be detected as a casual finding on a radiograph. Clinical and radiographic evaluation of supernumerary teeth should always be thorough in order to detect their presence. Early diagnosis and intervention should be done to prevent the possible complications like impactions, crowding, periodontal problems, etc. Thorough general examination is must for this patient to rule out the association of any syndromes. Further genetic investigations and karyotyping can also be done to rule out familial occurrence. Management of supernumerary teeth is multidisciplinary approach including oral and maxillofacial surgeons and orthodontist. Surgical removal or retention of the supernumerary teeth depends on the risk benefit ratio and varies according to patients. In our case the patient's chief complaint was addressed as he had recurrent pericoronitis, due to the impacted 48 and partially impacted supernumerary tooth in that region, so both the teeth were surgically removed and other supernumerary teeth were retained.

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