

## CASE REPORT

# A Rare Case of Bilaterally Transposed Maxillary Supernumerary Premolars and its Management

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## ABSTRACT

Supernumerary teeth also known as hyperdontia is a developmental abnormality characterized by the presence of extra teeth in addition to teeth of the normal eruption series. Non-syndromic supernumerary teeth have a site predilection for the mandibular premolar region. Herein, we report a rare case of non-syndromic, bilaterally transposed maxillary supernumerary premolar in a 29-year-old male patient. Clinical considerations and various treatment options are also discussed.

**Keywords:** Non-syndromic, Occlusion, Supernumerary premolars, Transposition.

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## INTRODUCTION

Supernumerary teeth or hyperdontia is a condition characterized by any teeth or tooth substance in excess of the usual configuration of 20 deciduous and 32 permanent teeth.<sup>1</sup> These teeth may be single or multiple, unilateral or bilateral, erupted or impacted, and in one or both jaws.<sup>2</sup>

Supernumerary teeth are more commonly located in the maxillary midline, where they are referred to as mesiodens, representing 80% of the supernumerary teeth.<sup>3</sup> The most common supernumerary teeth are the mesiodens followed by maxillary fourth molars or distomolars, maxillary paramolars, mandibular premolars,

maxillary lateral incisors and mandibular fourth molars in the order of frequency of occurrence. Upper premolars, upper and lower canines and lower incisors rarely occur as supernumeraries.<sup>4</sup> Supernumerary teeth occur between 0.3 to 1.9% in primary dentition and 0.1 to 3.6% in permanent dentition.<sup>5</sup> Single supernumeraries are observed in 76 to 86% of cases, double supernumeraries occur in 12 to 23% of the cases and multiple supernumerary teeth are seen in less than 1% of cases.<sup>6</sup>

Supernumerary teeth can be classified in terms of chronology, topography, morphology, orientation and time of abnormal proliferation of dental lamina. Supernumerary tooth can be predeciduous (develop before deciduous teeth) or permanent (develop simultaneous to permanent teeth or after them). On the basis of morphology, supernumerary teeth can be defined as supplemental (eumorphic, with similar morphology to normal tooth), rudimentary (including conic shape, tuberculate, molariform, and odontome). Topographically, based on the site of occurrence in the dental arch they are categorized as mesiodens (between the incisors), paramolar (buccal or lingual to the molars), distomolar (behind the molars), and parapremolar (buccal or lingual to the premolar). Supernumerary teeth can also be classified as vertical, inverted and transverse according to orientation. Three types of supernumerary teeth are described in the literature depending on the time of abnormal proliferation of the dental lamina: predeciduous type, pre-permanent type (when it occurs before development of permanent tooth – more frequent type), and post-permanent type (when it develops after the deciduous and permanent follicles have been formed).<sup>7</sup>

We report a rare case of transposed, bilateral maxillary supernumerary premolars with deep caries erupted in occlusion. Various treatment options and management are discussed.

## CASE DESCRIPTION

A 29 years male patient reported to the clinic with chief complaint of pain in the maxillary right and left posterior tooth region (Fig. 1). Clinical examination revealed two supernumerary premolars transposed between the first and the second maxillary molars. The patient complained of pain on mastication and extreme sensitivity to thermal changes in both the supernumerary premolar. The right supernumerary

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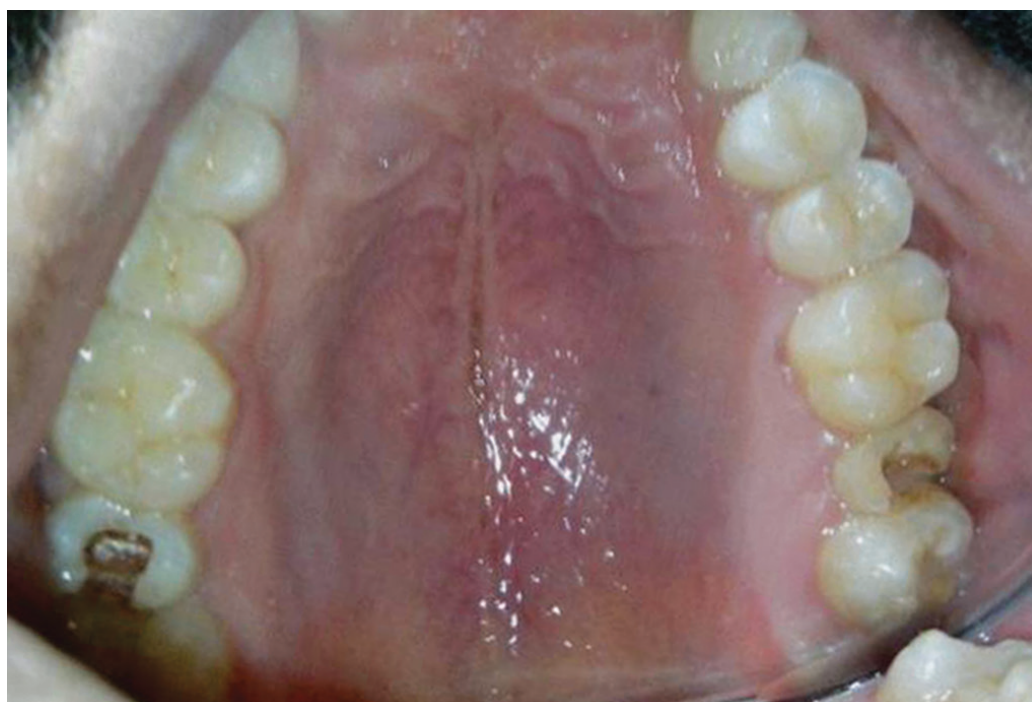
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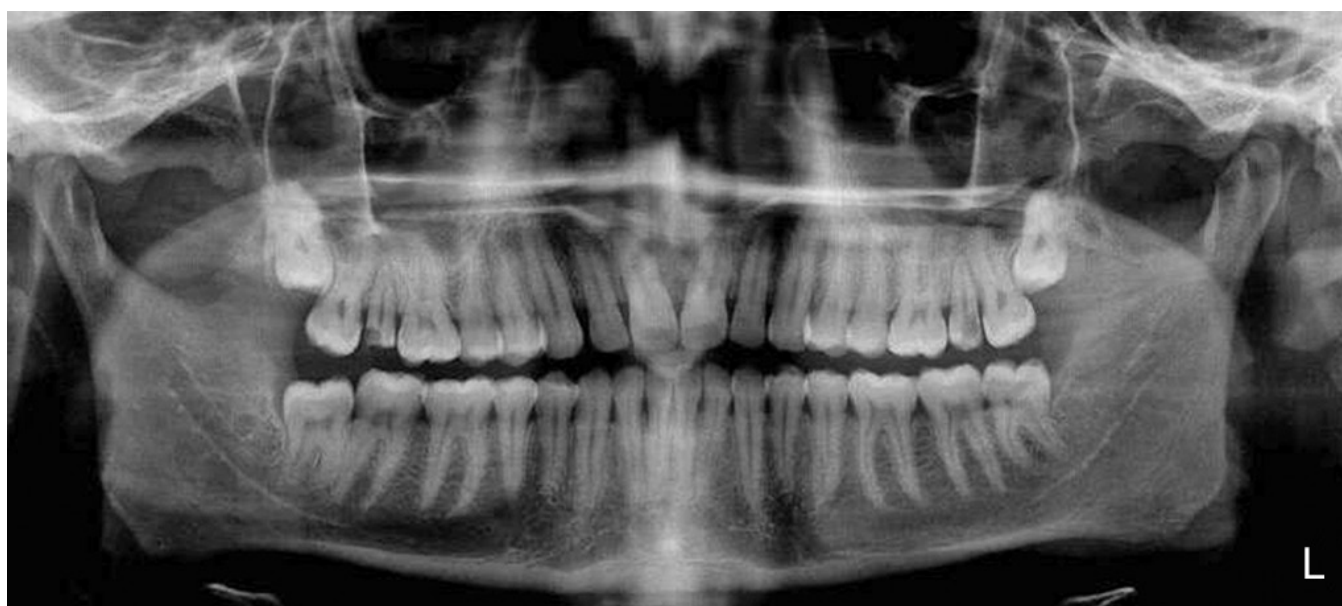
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premolar between 16 and 17 had a broken amalgam restoration and the left supernumerary premolar between 26 and 27 had a deep carious lesion. Both the supernumerary premolars were tender on percussion. Periodontal probing depths were within the normal limits. To relieve the pain, old restoration was removed on the right premolar. Orthopantomogram was advised to evaluate the extent of the decay, morphology of the supernumerary teeth and to evaluate the presence of any other impacted supernumerary teeth (Fig. 2). Presence of single root in the supernumeraries was evident from the orthopantomogram. The right supernumerary premolar revealed a coronal radiolucency which was in

close proximity to the pulp and the left one had a coronal radiolucency involving the pulp. The apical third of the root showed widening of periodontal ligament space in both the teeth suggestive of secondary caries with apical periodontitis in the right supernumerary tooth and dental caries with apical periodontitis in the left supernumerary tooth respectively. The orthopantomogram revealed impacted 18 and 28 with no other supernumeraries in the dentition. Presence of bilateral supernumerary premolars caused the distal inclination of second molars and thereby preventing the eruption of third molars which was evident from the orthopantomogram.



**Fig. 1:** Intraoral picture of maxillary arch showing the presence of transposed bilateral maxillary premolars in between the first and the second molar



**Fig. 2:** Orthopantomogram revealing the presence of supernumerary premolars and impacted 18 and 28 in the maxillary arch

### Management

The following treatment options were considered and explained to the patient:

- *Option 1:* Management of bilateral maxillary supernumerary premolars endodontically and restoration, accepting the position of partially impacted maxillary third molars.
- *Option 2:* Extraction of bilateral maxillary transposed supernumerary premolars. Later extraction spaces can be utilized to mesialize maxillary second molars orthodontically, which might facilitate space for the partially impacted maxillary third molar to erupt bilaterally.
- *Option 3:* Extraction of bilateral maxillary transposed supernumerary premolars. Later extraction spaces can be restored either with osseointegrated mini-implant with ceramic crown or three unit ceramic prosthesis, accepting the position of partially impacted maxillary third molar.

Patient was neither willing for extraction of the supernumeraries nor accepted for orthodontic treatment due to treatment duration involved or major prosthetic restoration due to economic reasons. Since patient had pain bilaterally, he preferred conservative management and restoration of both the transposed supernumerary teeth (Fig. 3).

Following dentition was observed clinically and radiographically,

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 18 | 17 | SP | 16 | 15 | 14 | 13 | 12 | 11 |    | 21 | 22 | 23 | 24 | 25 | 26 | SP | 27 | 28 |
| 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 |    | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |    |    |

18/28 – Impacted third molar  
 SP – Supernumerary Premolar

### DISCUSSION

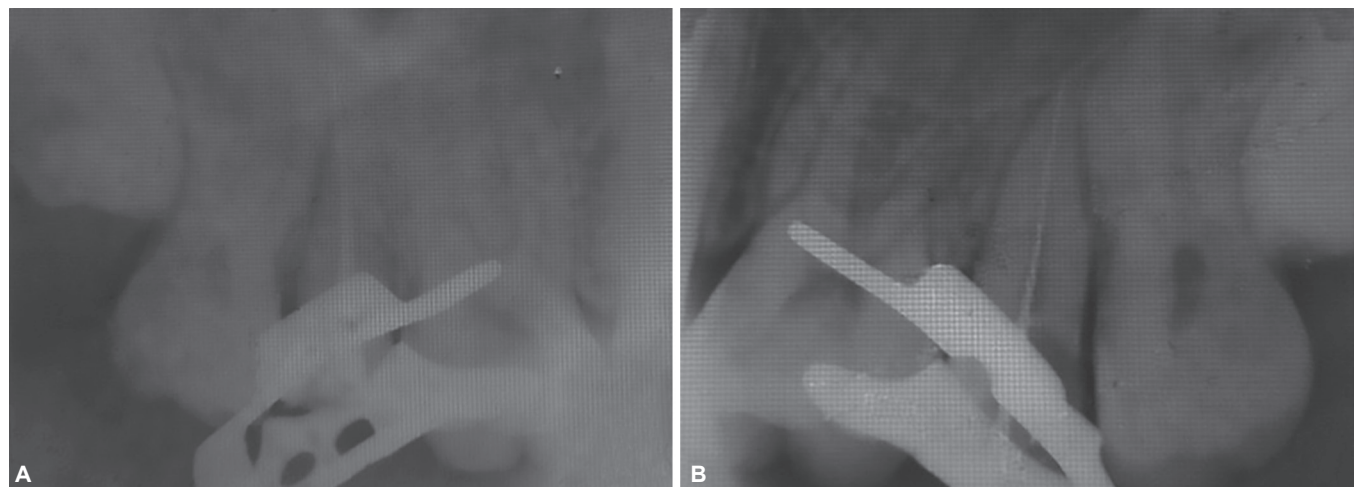
Supernumerary premolars have been reported to represent 3 to 9% of all supernumerary teeth in the maxilla or

mandible, and 75% occur in the mandible. The prevalence of supernumerary premolars ranges between 0.29 to 0.64%.<sup>8</sup> Unlike our case, they frequently develop in the mandible than in the maxilla.<sup>9</sup>

Tooth transposition is a condition where there is a positional interchange of two teeth in the same quadrant, altering their normal position in the dental arch.<sup>10</sup> Transposed supernumerary premolars erupted into occlusion are rarely reported in the literature.<sup>11-15</sup> The present case report is unique in that the bilateral non-syndromic maxillary supernumerary premolars transposed between 1st and the 2nd molars were in function and occlusion. Besides being transposed, both the supernumerary premolars also had deep carious lesion.

Supernumerary teeth are usually associated with Gardener’s syndrome, cleidocranial dysplasia, trichorhinophalangeal syndrome, cleft lip and cleft palate. Non-syndromic supernumerary premolars are rare. Unlike the present case, majority of the non-syndromic supernumerary premolars occur in mandible, especially mandibular anterior region.<sup>2,16</sup>

Etiologically the occurrence of supernumerary teeth has not been yet elucidated. Several hypotheses have been proposed to explain the etiology of supernumerary teeth. These include phylogenetic theory of atavism (evolutionary throwback–reversion to the ancestry/human dentition), dichotomy theory (single tooth bud is cleaved into two homologous or heterologous parts), morphogenetic field theory, and hereditary (an autosomal dominant trait, sex-linked inheritance).<sup>2,5</sup> Review of literature strengthens the fact that supernumerary teeth have a strong hereditary component, without following a simple Mendelian pattern. It is also reported that Asian population is more affected with supernumeraries than others.<sup>15</sup> According to Gardiner, post-permanent supernumerary teeth develop from the proliferation of the dental lamina after the permanent dentition is completed.<sup>17</sup>



**Figs 3A and B:** Endodontically treated right (A) and left; (B) maxillary supernumerary premolars



It is widely accepted that localized, independent, and conditional hyperactivity of dental lamina results in the development of supernumerary teeth. The symmetrical bilateral development in our case as well as in reviewed literature indicates that other factors also contribute to the development of supernumerary teeth in addition to localized hyperactivity of dental lamina. Thus, the supernumerary teeth presents with multiple etiological involving a combination of environmental and genetic factors.<sup>18</sup>

The etiology of transposition is unclear. Transposition of dental anlage during development, migration of a tooth during eruption, heredity and trauma are some of the theories proposed to explain the phenomenon of transposition.<sup>19</sup> Barnett reported a case with supernumerary premolars erupted buccally and lingually between the first and second molars in the maxilla and mandible respectively.<sup>20</sup> Lin reported cases with supplemental teeth distal to the maxillary first permanent molars which were displaced buccally and not in occlusion.<sup>21</sup> Vijayaver-gia et al. reported a case of two bilaterally functioning supernumerary transposed premolars present distal to the permanent maxillary first molars in normal occlusion.<sup>11</sup> Ngeow, Means and Tabeling reported another case of a unilateral transposed supernumerary premolar aligned in occlusion.<sup>14,15</sup>

Supernumerary premolars are usually asymptomatic. Occasionally supernumerary teeth may lead to problems like crowding, impaction or delayed eruption or rotation of adjacent permanent teeth, retained deciduous teeth, abnormal eruption sequence, root resorption of adjacent teeth, cystic changes and compromised space closure.<sup>16</sup>

When supernumerary and transposed teeth are not in alignment (either buccally or palatally placed), they can result in displacement of the adjacent tooth leading to crowding, trauma to the surrounding structure, difficulty in speech and mastication. The teeth adjacent to the supernumerary teeth may be tipped, rotated or in infra occlusion. Endodontic management was considered appropriate in this case as the bilateral maxillary supernumerary premolars transposed between 1st and 2nd molars were aligned in occlusion without affecting the supporting structures and the adjacent teeth. Vora et al. has also reported a case of transposed bilateral maxillary supernumerary premolar that was endodontically managed using cone-beam computerized tomography to evaluate the root canal morphology of supernumerary premolars.<sup>22</sup> The cause for the occurrence of dental caries in both the supernumerary premolars remains speculative.

Treatment planning should be considered on weighing the pathological sequelae of supernumerary teeth.

Extraction of asymptomatic supernumerary teeth should be indicated if any complications are evident. Periodic radiographic evaluation following extraction is advised to exclude any recurrence of supernumerary premolar.

## CONCLUSION

Non-syndromic, bilaterally transposed supernumerary premolar occurring in the maxilla aligned in occlusion and in function as seen in the present case is rare. This case report highlights the importance of various management protocols that can be considered while treating transposed supernumerary teeth with dental caries and apical periodontitis. Endodontic management of these supernumeraries with deep carious lesion was considered appropriate as both the supernumerary premolars were aligned in occlusion and were functional. It will be prudent to appropriately follow-up the supernumerary teeth with panoramic radiograph to exclude any further complications.

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