

Five Mandibular Incisors-Rarity of Cases

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Abstract: *Supernumerary teeth popularly termed as hyperdontia refers to an excess number of teeth in the dental arch compared to normal dental series. Prevalence of supernumerary teeth in the permanent and primary dentition is 0.5-5.3% and 0.2-0.8% respectively. Supernumerary teeth can be broadly classified based on their position and form. They may occur as a single tooth or multiple teeth, unilateral or bilateral and in one or both jaws. Based on the morphology, they can be divided into eumorphic and dysmorphic elements. Eumorphic supernumerary teeth have the same morphology as that of the normal teeth, while the dysmorphic ones are small, conical or tuberculate in shape. Prevalence of supernumerary teeth in mandibular incisor region is only 2% and it is the lowest in the oral cavity. Very few cases of 5 mandibular incisors have been reported in the literature. This article illustrates case series of four patients with five mandibular incisors*

Keywords: eumorphic, supernumerary, mandibular incisors

1. Introduction

Supernumerary teeth, or hyperdontia is defined as an excess number of teeth compared to the normal dental series^[1]. The prevalence of supernumerary teeth in the permanent and primary dentition of 0.5-5.3% and 0.2-0.8% respectively. In addition, the disorder is more common in males than in females with a proportion of 2:1^[2].

Hyperdontia is often associated with complex syndromes such as Gardner syndrome, Fabry-Anderson syndrome, Ehler- Danlos syndrome, facial fissures or cleidocranial dysplasia. In contrast, hyperdontia in the absence of such complex syndromes is rare and often seen only in the permanent dentition^[2].

Supernumerary teeth can be broadly classified based on their position and form and may occur as a single tooth or multiple teeth, unilateral or bilateral and in one or both jaws. Based on the morphology, they can be divided into eumorphic and dysmorphic elements. Eumorphic supernumerary teeth have the same morphology as that of the normal teeth, while the dysmorphic ones are small, conical or tuberculate in shape^{[2][3]}.

A number of theories have been proposed attributing to the occurrence of this phenomenon such as atavism, tooth germ dichotomy, hyperactivity of the dental lamina and heredity. However, the exact etiology is unknown^[4].

Supernumerary teeth can erupt normally, remain impacted or show abnormal eruptive patterns. Likewise, the development of supernumerary teeth can give rise to a broad range of complications, such as delayed eruption of permanent teeth, diastemas, rotations of adjacent teeth, cystic lesions and resorption of contiguous teeth. Therefore, early diagnosis and a comprehensive treatment plan is important to prevent or minimize the complications^[5-7].

In a survey of 2000 school-going children, Brook found that supernumerary teeth were present in 2.1% of permanent dentitions. Prevalence of supernumerary teeth in mandibular incisor region is only 2% and it is the lowest in the oral cavity. Very few cases of 5 mandibular incisors have been reported in the literature^[8].

This article illustrates case series of four patients with five mandibular incisors

2. Case Series

Case 1

A 22 year old female came with the complaint of irregularly placed lower front teeth. A detailed anamnesis revealed no significant medical/dental history. No history of consanguineous marriage was evident.

Clinical examination (Figure 1A) revealed irregularly placed lower incisors, a shallow overjet and overbite, a Class I molar occlusion and presence of five mandibular crowded incisors. Orthopantomogram (OPG) showed the presence of five mandibular incisors confirmed with the intra oral periapical radiograph that also showed five separate incisors without any fusion (Figure 1B).

Study models measured (Table I) with calliper demonstrated that the lower incisor along the midline was reduced in size compared to the other incisors.

Case 2

A 11 year old boy reported with the complaint of forwardly placed upper front teeth associated with lower lip trap. No significant medical/dental/consanguineal history was given by the patient. Clinical Examination (Figure 2A) revealed a convex profile with increased overjet and overbite. There were five mandibular incisors with no significant crowding also confirmed with OPG and intra oral periapical

radiograph (Figure 2B). Tooth measurements on plaster casts (Table I) showed a significant tooth size reduction of one lower incisor along the midline.

Case 3

A 19 year old male patient came to our department with the complaint of forwardly placed upper front teeth. There was no significant medical/ dental/consanguineal history. Clinical Examination demonstrated a convex profile with incompetent lips. Intra oral examination showed multiple missing teeth extracted due to caries. Lower arch showed the presence of five mandibular incisors with one incisor in the midline blocked out labially associated with a mild gingival recession (Figure 3A).

OPG and IOPA radiograph (Figure 3 B) revealed overlapping of all the incisors due to crowding. Study models measured (Table I) showed a mild reduction in tooth size of the blocked out incisor.

Case 4

A 22 year old male patient reported to our department with the chief complaint of protrusion of the lower jaw with no significant medical/dental/consanguineal history.

Clinical examination revealed a Class III skeletal pattern with mild lower anterior crowding and presence of five mandibular incisors (Figure 4A).

OPG showed the presence of five separate incisors also confirmed with the intra oral periapical radiograph (Figure 4 B).

Study models measured (Table I) with calliper demonstrated that the lower incisor along the midline was reduced in size compared to the other incisors.

Table 1: Tooth Measurements of Mandibular Incisors of all the patients

Patients	1	2	3	4
Mesiodistal Width				
31	5.5 mm	5.5 mm	5 mm	5.5 mm
32	6 mm	6 mm	5.5 mm	5 mm
Supernumerary Incisor & its Shape	4.5 mm Eumorphic	4.5 mm Eumorphic	3 mm Eumorphic	5 mm Eumorphic
41	5.5 mm	5.5 mm	5 mm	5.5 mm
42	6 mm	6 mm	5.5 mm	5 mm

3. Discussion

The frequency of supernumerary teeth in the mandibular incisor region is the lowest in the oral cavity and it represents 2% of all supernumerary teeth found in the oral cavity^[3]. Very few cases of five mandibular incisors have been described in the literature^[9]. Moreover, previous case reports also displayed multi-generational patterns of inbred consanguineous marriages in patients with five mandibular incisors.

However, our patients demonstrated five mandibular incisors with no familial background. No history of consanguineous marriage was evident. All the patients demonstrated eumorphic mandibular incisors with same morphology, thereby creating a challenge to the clinician in

differentiating the supernumerary tooth from the other mandibular incisors.

In determining the supernumerary teeth from the mandibular anterior teeth, teeth with morphological abnormalities (dysmorphic incisors) are regarded as supernumerary teeth whereas in cases of eumorphic incisors where no abnormalities are elicited, a 30% reduction in tooth size from its antimere is considered as the supernumerary teeth^[4].

Study models measured showed a significant reduction in tooth size of one lower incisor compared to all the other incisors, thereby regarded as the supernumerary tooth for our patients. Moreover, it is interesting to note that the supernumerary tooth was situated in the midline.

Reported cases of five mandibular incisors in literature^[3] demonstrated fusion between two mandibular incisors in some of them. However, all of our patients had five separate mandibular incisors without any fusion checked clinically using a dental floss and confirmed radiographically. Fusion between two teeth requires specific management that can include a root canal treatment and a hemisection.

A number of theories have been proposed attributing to the etiology of of supernumerary teeth, including atavism theory, mechanical tooth germ separation theory, tissue induction theory and dental laminar morphological disturbance theory. However, non of these theories alone offers a sufficient explanation for this phenomenon. According to Fujita, hyperplasia of the tooth germs may occur in areas with wide intervals between tooth primordiums at the end of the dental lamina. Therefore, it does not easily occur in the mandibular anterior tooth area, where there is a high inter-tooth primordium density, and the occurrence of mandibular supernumerary anterior teeth is considered rare^[4].

Literature^[3] have explained the role of genes in five mandibular incisors to be rare but existent. Nevertheless, a mutated gene may be implicated in the origin of this etiology. The pattern of inheritance of five mandibular incisors in the Lebanese family reported in literature suggests the involvement of a single gene bearing a recessive mutation. However, the localization of the gene responsible for this anomaly and the identification of the mutation producing this anomaly may help us to understand the mechanism of action for this mutation and may be helpful in future for the treatment of tooth agenesis or hypergenesis^[3].

There are few literature reports of five mandibular incisors. However, management of such cases and its clinical implications have not been discussed in the literature. Therefore, in the present case series, the orthodontic considerations are explained that will help the clinicians in formulating an optimal treatment plan.

Orthodontic Considerations

During orthodontic treatment for patients with five mandibular incisors, one incisor is commonly extracted keeping the following salient points in mind^[10].

1) Extraction of the supernumerary teeth:

The supernumerary teeth in eumorphic cases is diagnosed correctly and usually extracted. But in some cases, the lower incisor belonging to the segment of the arch that requires correction can be considered for extraction like in cases where the mandibular canine on one side is blocked out, the lower incisor adjacent to the canine can be extracted for aligning the canine into the arch retaining the supernumerary incisor. However, the Bolton discrepancy of the supernumerary incisor can be restored with esthetic restorations.

2) Midline Discrepancies

In our first patient (Figure 1A), the supernumerary tooth is situated in the midline of lower anterior region. Extraction of this supernumerary tooth for alleviating crowding will solve the midline problem in this case. However, care should be taken during extraction to avoid loss of interdental papilla and appearance of black triangles that can disrupt the smile esthetics.

3) Extraction of the blocked incisor

In cases of five mandibular incisor where one lower incisor is blocked out, it is generally preferred to extract the blocked out tooth. A variation to this rule is sometimes seen as in our third case (Figure 3A), where one lower incisor in the midline is blocked out. However, it is preferable to extract the adjacent incisor and bring the blocked teeth into the arch. This can avoid loss of interdental bone and papilla because moving a tooth orthodontically in the arch brings in bone along with it thereby possibly improving the bone support and periodontal health.

4) Indications for extraction of lower incisor

Mild to moderate Class III malocclusions as in our fourth case (Figure 4A) or patients with an edge to edge occlusion of the incisors or anterior crossbite and minimal overjet or openbite tendency are some of the common malocclusions that benefit from extraction of one lower incisor. The resultant decrease of the mandibular arch in all dimensions with orthodontically controlled extrusion and retrusion of the remaining lower incisors is clearly beneficial in a patient with a mild class III and reduced overbite.

In Class I malocclusions, extraction of one incisor has been suggested to resolve severe mandibular anterior crowding.

Patients with five mandibular incisors generally require extraction of the supernumerary tooth to eliminate the Bolton discrepancy thereby aiding in alignment and occlusion.

Patients with shallow overbite as in our first patient (Figure 1A), extraction of supernumerary tooth helps to normalize the overbite. Likewise, patients with deep overbite as in our second case (Figure 2A), extraction of the fifth incisor aids in levelling and alignment of the lower arch.

Some patients can present with traumatic occlusion, as in the third case (Figure 3A) where one lower incisor in the midline is blocked out with gingival recession. Such cases influence the decision as to which mandibular incisor should be extracted.

4. Conclusion

The present case series demonstrated four patients having five mandibular eumorphic incisors with a non-familial background. The knowledge of the existence of supernumerary teeth and its clinical implications is of great importance especially in rare cases of this event.

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Author Profile



Dr. V.K. Shakeel Ahmed is currently working as a Professor in Department of Orthodontics, Ragas Dental College. He obtained his masters in orthodontics and under graduation from Ragas Dental College. He is a Diplomate in the Indian board of orthodontics. He has done several presentations in National Orthodontic conferences. He has received best clinical research award twice for his oral presentation from the IOS and the best clinical innovation award in the 8th Asia Pacific orthodontics conference. He has been invited as a speaker several times by Indian Orthodontic conference. He has several publications in both National and International orthodontic journals. His research article published in the American Journal of Orthodontics and Dentofacial Orthopedics fetched him the Prestigious "Helen and Dewel

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Dr. Rekha Bharadwaj graduated B.D.S from Sri Ramachandra Dental College and Hospitals, Chennai in 2003 and completed her Masters in Orthodontics at Ragas Dental College and Hospitals, Chennai in 2007. She is currently working as a Professor in Ragas Dental College & Hospitals. She has done several paper presentations at National Orthodontic Conferences and has numerous publications at both National and International level. She has won the Best Paper Award twice and Life Member Award for Research work by the Indian Orthodontic Society. She has completed the 2 years Certificate program on Roth- William Philosophy. She has done intensive research on scientific validation of functional occlusion and diagnosis and management of sleep apnea patients with three-dimensional assessment of airway. She is also a Diplomate of the Indian Board of Orthodontics.



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Figure Legends

FIGURE - 1A: INTRA ORAL PHOTOGRAPHS.
FIGURE - 1B : ORTHOPANTAMOGRAM SHOWING MANDIBULAR INCISORS
FIGURE - 2A: INTRA ORAL PHOTOGRAPHS.
FIGURE - 2B : ORTHOPANTAMOGRAM SHOWING MANDIBULAR INCISORS
FIGURE -3A: INTRA ORAL PHOTOGRAPHS.
FIGURE - 3B : ORTHOPANTAMOGRAM SHOWING MANDIBULAR INCISORS
FIGURE - 4A: INTRA ORAL PHOTOGRAPHS.
FIGURE - 4B : ORTHOPANTAMOGRAM SHOWING MANDIBULAR INCISORS



Figure 1a: Intra Oral Photographs

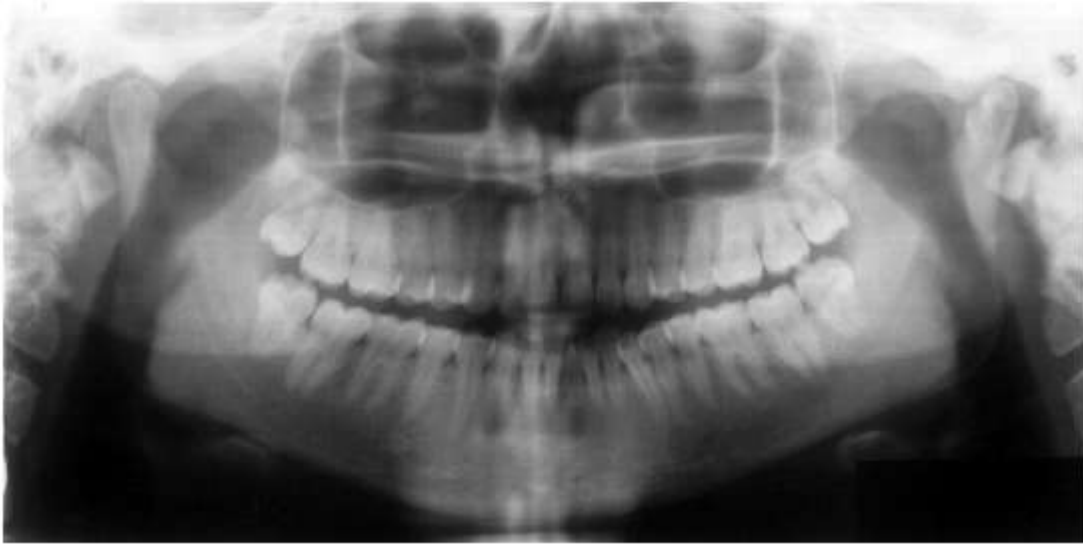


Figure 1b: Orthopantomogram Showing Mandibular Incisors



Figure 2a: Intra Oral Photographs

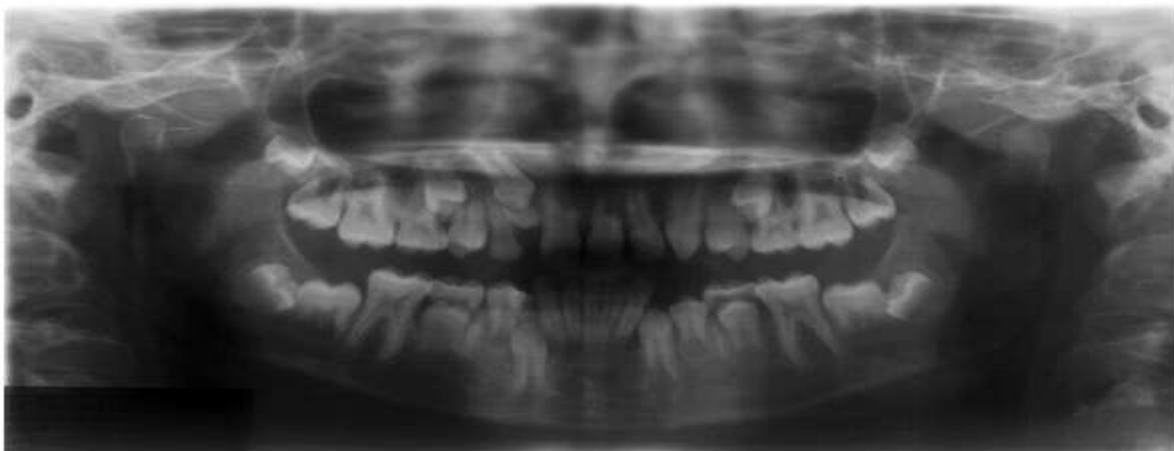


Figure 2b: Orthopantomogram Showing Mandibular Incisors



Figure 3a: Intra Oral Photographs



Figure 3b: Orthopantomogram Showing Mandibular Incisors



Figure 4a: Intra Oral Photographs

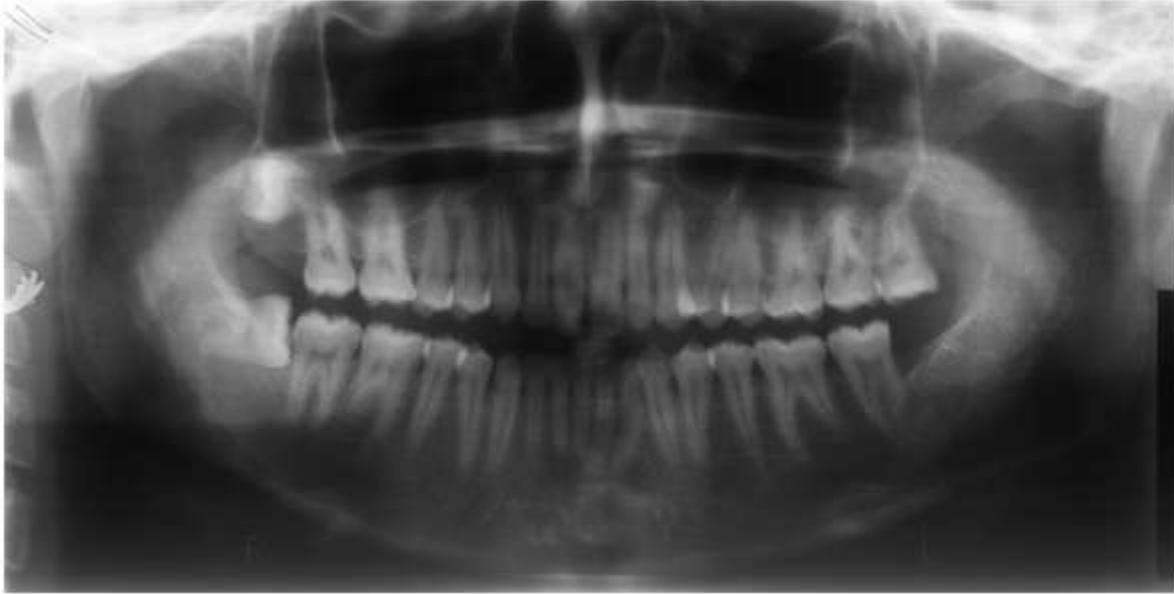


Figure 4b : Orthopantomogram Showing Mandibular Incisors