

# Oligopleiodontia with Impacted Permanent Canine: A Rare Entity with Multidisciplinary Management

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## ABSTRACT

The congenitally missing tooth is elucidated as the one not erupted in the oral cavity, and also not eye-catching in a radiograph. The absence of one to six teeth is coined as hypodontia (excluding the third molars). Oligodontia entitlement is used when more than six teeth are absent, and anodontia is the complete absence of teeth. Supernumerary teeth, also designated as hyperdontia, may happen in twain dentitions, unilaterally or bilaterally, and in both arches. The concurrent happening of tooth agenesis (hypodontia) and supernumerary or supplemental teeth (hyperdontia) in the same sole is one of the infrequent anomalies of number in human dentition. Hypohyperdontia may affect the primary and/or permanent dentition and may necessitate in both arches. The presence of this hypohyperdontia in the same piece of an arch is an even rarer occurrence. Various terms were used to designate this environment among them oligo-pleiodontia- 'Oligos' meaning few; 'Pleion' meaning more or extra in Greek. A new implementation of Computed Tomography (CT) that bring about three-dimensional (3D) data at lower cost and engross lower doses than conventional CT found in the practice of medical radiology is termed as Cone Beam Computed Tomography (CBCT). They fit into most dental practices as they do not require more space. The present case report discusses a complete multidisciplinary management case of nonsyndromic oligopleiodontia in a 14-year-old female with missing bilateral permanent central incisors and supernumerary teeth with an impacted permanent canine.

**Keywords:** Hypodontia, Hyperdontia, Missing teeth, Supernumerary teeth

## CASE REPORT

A 14-year-old female reported to a private clinic with a chief complaint of space in the lower anterior and wanted to get it closed. Family history revealed no significant evidence of missing or supernumerary teeth in any of the members. On clinical examination, space was seen between 31 and 41, and retained deciduous teeth were present in relation to 73. Orthopantomogram (OPG) was advised for the same. Preoperative clinical photos are not available as the patient missed the appointment. Clinical pictures were not taken as patient was not concerned. On OPG found missing 31 and 41, retained deciduous teeth in relation to 73 and supernumerary teeth below 73, rotated impacted permanent canine (33) below impacted supernumerary teeth, and missing third molars were also seen [Table/Fig-1]. As there was confusion in the location of the supernumerary and impacted canine Cone Beam Computed Tomography (CBCT) was advised for the lower jaw.



**[Table/Fig-1]:** OPG showing spacing in relation to 31 & 41, retained deciduous teeth in relation to 73 and supernumerary tooth below 73 and rotated impacted canine in relation to 33.

The CBCT was done. Reformatted panoramic view revealed missing teeth in relation to 31 and 41, retained deciduous tooth in relation to 73. There was a developing supernumerary tooth along

the periapical region of 73. Vertically impacted 33 with its crown located along the periapical region of 32 and root towards the lower border of the mandible was seen. The tooth appeared to have two roots [Table/Fig-2].



**[Table/Fig-2]:** Reformatted panoramic view showing retained deciduous teeth in relation to 73, supernumerary teeth below 73, and impacted canine in relation to 33.

The cross-sectional labial view of the lower jaw revealed retained deciduous teeth in relation to 73 and impacted supernumerary teeth and permanent mandibular canine in relation to 33 [Table/Fig-3].

**On cross-sectional lingual view of CBCT image, the following details were found [Table/Fig-4]:**

**A) Supernumerary tooth:** The presence of a developing supernumerary tooth was seen between the crown of impacted 33 and the mesial surface of the root (cervical one-third) of 34. It measured about 4.9×4.9 mm (mesiodistally and labiolingually) and 10.8 mm in length. The tooth had a single root with an incompletely



**[Table/Fig-3]:** The 3D cross-sectional labial view of CBCT image showing retained deciduous teeth in relation to 73 and impacted canine in relation to 33.



**[Table/Fig-4]:** The 3D cross-sectional lingual view of CBCT image showing deciduous teeth in relation to 73, supernumerary teeth below 73, and impacted canine in relation to 33.

formed root apex. The supernumerary tooth was 0.7-1.2 mm away from the mesial root surface of 34. The crown of the supernumerary tooth was 0.8 to 1.2 mm away from the alveolar crest. The presence of a retained deciduous tooth was seen in relation to 73 with its root resorbed at the apical one-third.

**B) In relation to 33:** The tooth was vertically impacted with its crown located between the root (apical one-third) of 32 and developing supernumerary tooth. It measured about 20.3 mm in length, 6.3 mm in mesiodistal width, 5.3 mm in labiolingual width. The tooth had two roots and two canals namely, buccal and lingual. The tooth was rotated in the mesial direction with its crown labial surface facing the distal surface of the root of 32. The follicular space around the impacted 33 was within normal limits. At the level of the crown, the impacted 33 was 0.4 to 0.8 mm away from the distal surface of the root of 32, 0.6 to 1.5 mm away from the supernumerary tooth. There was thinning of the labial cortical plate around the crown of impacted 33.

On all investigations, it was diagnosed as spacing in relation to 31 and 41, retained deciduous tooth in relation to 73, supernumerary tooth below 73, and impacted canine in relation to 33. Once the diagnosis was confirmed multidisciplinary treatment were planned.

An orthodontic evaluation was done and diagnosis of Skeletal class 1 malocclusion with Angle class 1 molar relationship with spacing in lower incisors, retained deciduous tooth irt 73, with impacted supernumerary tooth and permanent canine 33 and treatment was planned accordingly.

**Treatment objectives:** were to remove retained tooth and supernumerary tooth, disimpact the impacted 33, to close the space in lower anterior, to achieve normal occlusion and a pleasing soft tissue profile.

**Treatment plan:** was to extract 73 and supernumerary teeth followed by disimpaction of 33 and closure of space in the lower anterior.

**Treatment progress:** Bolton's model analysis was done and Bolton's overall ratio inference indicated overall upper arch material excess, Bolton's anterior ratio inference indicated upper anterior tooth material excess.

At first stage orthodontic treatment was planned where MBT 0.22 metal appliance was planned and bonding of brackets was done followed by banding of first molars in the mandibular arch. In the maxillary arch, no treatment was required since it was well aligned. Nitinol 0.14 wire was placed to start the treatment followed by 0.16 wire and 0.18 A.J Willcock Australian archwire was placed which was incorporated with an open coil spring in relation to 32 and 35 to regain space for disimpacting 33. The total duration of regaining space for 33 took about four months.

At the second stage of treatment extraction of 73 and supernumerary teeth was done and supervised by disimpaction of 33 wherein surgical flap was raised and the exposure of impacted canine was done followed by bonding the impacted canine with an MBT bracket and was engaged to the main archwire [Table/Fig-5]. Finally, the canine was disimpacted using the Tunnel traction method since it was too deep in the alveolar bone [Table/Fig-6]. The sequence of wires used were 0.12, 0.14, 16×22, 19×25 Nitinol wires followed by 19×25 stainless steel. The total duration of the procedure of disimpacting 33 took about eight months, and the remaining space present in the lower anterior teeth were closed [Table/Fig-7]. Finally, the appliance was debonded and the patient is now on Hawley's



**[Table/Fig-5]:** Intraoral image of orthodontic closure of space between 32 and 42 and bracket placed on surgically exposed 33.



**[Table/Fig-6]:** Intraoral image of erupting 33.

retainers for retention [Table/Fig-8,9]. The total duration of treatment took about 18 months, further, follow-up is to recall every year and assess the stability of the treatment for the next five years with retainers. The outcome of treatment was well appreciated by the patient.



[Table/Fig-7]: Postoperative intraoral image of erupted 33 and aligned lower arch.



[Table/Fig-8]: Postoperative intraoral image of an aligned lower arch with the removable retainer in place.



[Table/Fig-9]: Postoperative OPG showing extraction of retained deciduous teeth and supernumerary teeth with disimpaction of canine and aligned lower arch.

## DISCUSSION

Clinical and radiological assessment in children is very important for a paediatric dentist for the number of teeth present, any missing teeth, retained teeth, and extra teeth [1]. After a thorough clinical examination, the findings should be confirmed with radiological examinations like OPG and CBCT for more accuracy. As the present case had multiple findings it needed accuracy in diagnosis so OPG and CBCT were advised.

Diagnosis and treatment planning in oral conditions is of preponderant importance in paediatric dentistry. In paediatric patients, the advent of X-rays played an important character in dental radiology in the diagnosis of any conditions and planning the treatment in children. Imaging modalities like CBCT and orthopantomography play an important role in diagnosis and treatment planning. The two-dimensional representation of usual radiographic techniques such as periapical and panoramic radiography has upraised many questions owing to

its constraints such as magnification, superimposition, and distortion of images [2]. CBCT with three-dimensional technology superseded prevailing two-dimensional imaging and has extensive employment among child patients in Paediatric dentistry. CBCT evaluation of impacted supernumerary teeth is recommended to reduce the risk of damage to the surrounding anatomical structures as they are in close association with the cortical bone [3].

The present case showed oligopleiodontia with hypodontia (agenesis of bilateral permanent mandibular incisors) and hyperdontia (supernumerary teeth between the retained deciduous primary teeth and impacted permanent canine) with anterior diastema in the lower arch. Oligopleiodontia cases managed and reported are very scarce. The occurrence of such cases ranged from 0.002%-3.1% and are rare in nonsyndromic inhabitants [4]. They are often seen in permanent dentition than in the primary [5].

On evaluation and diagnosis, it was confirmed as spacing in relation to 31 and 41, retained deciduous tooth in relation to 73, supernumerary tooth below 73, and impacted canine in relation to 33. Once the diagnosis was confirmed multidisciplinary treatment was planned.

Multidisciplinary management of the present case was planned involving paediatric dentists, oral surgeon, and orthodontists. The oral surgeon's role in the case was to extract retained primary teeth and remove the impacted supernumerary teeth and surgically expose the crown of the impacted permanent canine. The orthodontist's role is to close space in the lower anterior, gaining of space for impacted permanent canine to disimpact and to erupt to normal occlusion. Orthodontic treatment for patients with oligopleiodontia is quite complex and requires thorough planning based on the patient's existing malocclusion, including delayed exfoliation or retention of deciduous teeth, and space problems for permanent dentition but can produce better results, with stable occlusion and promote periodontal health [6-8]. In literature it is been described that impaction of succeeding teeth may be due to over-retention of primary teeth, the existence of over-retained primary teeth is considered a sequel rather than the failure of eruption of teeth [9]. The cause for delayed eruption of primary teeth may be loss of eruptive mechanism by which most of the roots of primary teeth are not resorbed but retained [9]. The patient was happy with the outcome and the treatment outcome was relatively stable with a retentive appliance in place.

## CONCLUSION(S)

The diagnosis and management of oligopleiodontia are challenging since, very few cases were reported in the literature. Management often involves the extraction of supernumerary teeth when they are seen in ungainly appearance or associated with any complications. In conclusion, a thorough clinical and radiological evaluation with recent advances in diagnosis and multidisciplinary management of such cases plays an avital role.

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