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Case Report

Association of hypodontia to skeletal, dental and soft tissue anomalies- a rare case report

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ABSTRACT

Hypodontia is commonly found dental anomaly but its corelation with skeletal and soft tissue anomaly is rare. The aim of the present paper is to highlight the rare finding of mild case of hypodontia associated with skeletal, dental and soft anomalies.

Keywords: Hypodontia, Skeletal anomaly, Dental anomaly, Soft tissue anomaly

INTRODUCTION

Congenitally missing teeth may develop due to disturbance caused during early stages of tooth development which proceeds towards failure of eruption of tooth clinically and is confirmed through radiographs only. Hypodontia, one of the most common human dental developmental anomalies is defined by developmental absence of one or more teeth, excluding third molars, either in primary or permanent dentition. One or two missing teeth are classified as mild hypodontia; three to five missing teeth as moderate hypodontia and more than six missing teeth as severe hypodontia.[1] The prevalence of hypodontia in permanent dentition in India is found to be 4.19% with higher incidence in females, the most common missing teeth being third molars followed by mandibular second premolar (41%), maxillary lateral incisors (23%), maxillary second premolars (21%), and mandibular incisors (6%).[2,3]

Hypodontia (mild or moderate) is mostly associated with dental anomalies such as microdontia, canine impaction, taurodontism, transposition, rotation of teeth and hypoplastic alveolar bone whereas, severe hypodontia may be associated with skeletal changes also. According to Hirukawa et al missing teeth in maxillary arch is associated with class III malocclusion whereas missing teeth in mandibular arch is associated with class II malocclusion. Hypodontia affects skeletal growth of face in both horizontal and vertical plane which ultimately affects dentition, facial skeleton and soft tissues.[4]

The essence of this case report is to highlight the rare finding of mild case of hypodontia associated with skeletal, dental and soft anomalies.

CASE REPORT

A 14-year-old female patient reported to the department of pediatric and preventive dentistry Mahatma Gandhi Dental College and Hospital Jaipur, with the chief complaint of decayed teeth in upper and lower jaw. The history revealed that the patient had good general health and had no history of facial trauma, systemic disease or parafunctional habits. Extraoral examination revealed, her face to be symmetrical with convex profile. Extra-oral views also revealed that the patient's mandible was retrognathic showing posterior divergence and recessive chin button and maxilla was seen orthognathic with normal upper lip and everted lower lip with deep mentolabial sulcus (Figure 1).

Intraoral examination revealed presence of permanent teeth corresponding to the age of patient with missing

mandibular left and right lateral incisors. Multiple caries was seen on intraoral examination (Figure 2 A and B). On intraoral examination of maxillo-mandibular relation crowding was observed in maxillary arch with retroclined maxillary right central and lateral incisor, maxillary left central incisor, proclined maxillary left lateral incisor, buccally erupting maxillary right canine, and anterior deep bite with reduced overjet depicting feature of class II div 2 malocclusions. The occlusion was class I molar relation on right side and end-on molar relation on left side (Figure 2 C-E). Soft tissue examination revealed shallow labial vestibule and higher attachment of lingual frenum depiction of tongue tie (Figure 2 F). The patient also reported difficulty in speaking presumably due to higher lingual attachment.

Radiographic evaluation using orthopantomogram confirmed congenitally missing mandibular right and left lateral incisor and missing tooth bud of maxillary right third molar (Figure 3). Radiograph shows missing of three teeth, third one being third molar which is excluded from hypodontia so, the provisional diagnosis is mild hypodontia. To check the severity of hypodontia and to find out its association with dental, skeletal, and soft tissue changes further investigations was done using cephalogram (Figure 4).

Cephalometric tracing followed by Steiner's cephalometric analysis was done (Figure 5) and values and findings of analysis (Table 1) confirmed presence of skeletal class II malocclusion. Which provides confirmatory diagnosis of association of skeletal and dental (Class II malocclusion), and soft tissue anomalies (tongue tie) with mild hypodontia.

Figure 1: Extra-oral examination.

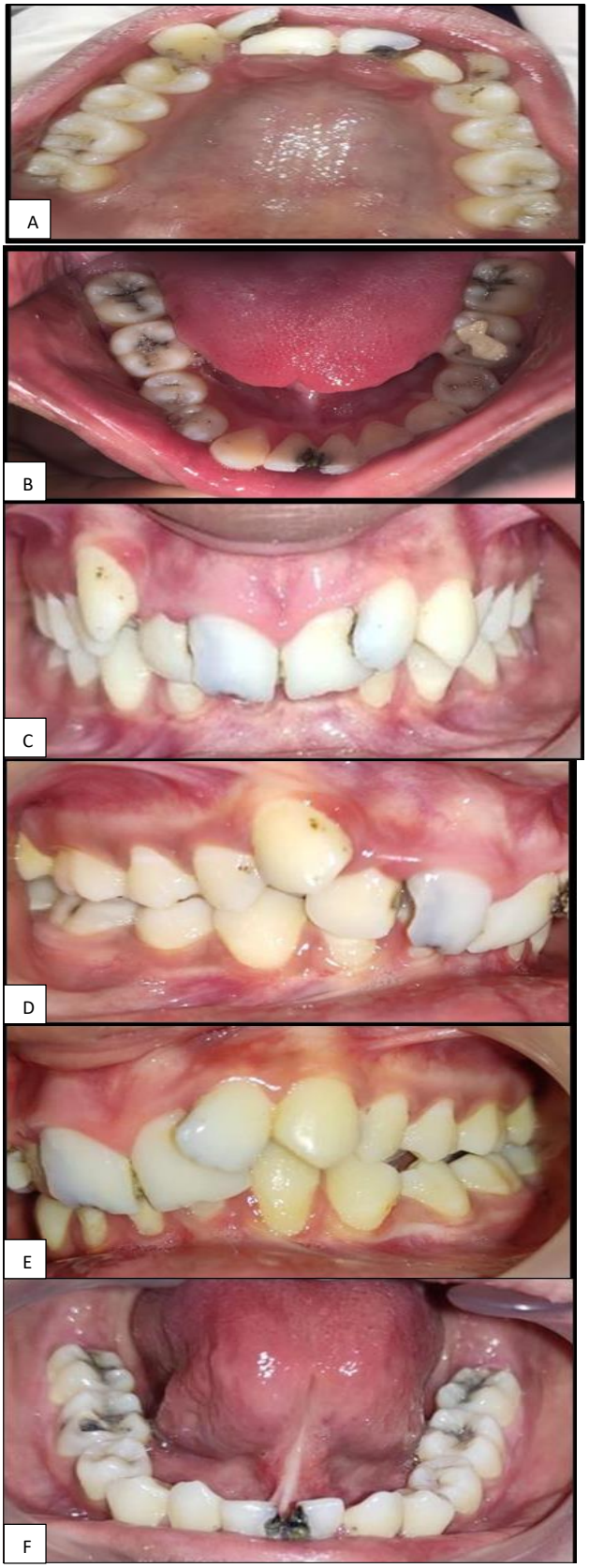

Figure 2 (A-F): Intra-oral examination, occlusal view of maxilla, occlusal view of mandible, front view of maxillary and mandibular teeth, occlusion on right side of jaw, occlusion on left side of jaw and floor of the mouth showing tongue tie.

Figure 3: Orthopantomogram.

Figure 4: Lateral cephalogram.

Figure 5: Cephalometric tracing.

Table 1: Steiner's cephalometric analysis.

Angles	Mean	Actual	Inference
SNA	82	78	Retrognathic maxilla
SNB	80	70	Retrognathic mandible
ANB	2	8	Class II skeletal pattern
Go-Gn to SN	32	25	Horizontal growth pattern
Occlusal plane to SN	14	16	Horizontal growth pattern
Upper incisor to N-A (mm)	4	-5	Retroclined upper incisors
Upper incisor to N-A (angle)	22	13	Retroclined upper incisors
Lower incisor to N-B (mm)	4	0	Retroclined lower incisors
Lower incisor to N-B (angle)	25	9	Retroclined lower incisors
Interincisal angle	131	178	Retroclined upper and lower incisor
S line			Upper and lower lip ahead of line

DISCUSSION

Congenitally missing teeth is more than absence of teeth, as it has impact on arrangement of teeth, its corelation with opposing teeth and growth and development of facial structures. Etiology of hypodontia can be classified as general or local were in general cause being genetics and local cause are mostly acquired such as, hormonal and metabolic imbalance, trauma, irradiation, osteomyelitis, unintentional removal of tooth germ during extraction of primary teeth. Abnormality in dental epithelium, physical obstruction of dental lamina, limited available space and mesenchymal failure leads to absence of one or more teeth depending on the parts affected.[5] Such condition is termed as hypodontia that range from mild to severe form. In mild form skeletal change is not seen, in moderate form skeletal change is minimally seen and in severe form this change is quite noticeable.[1]

In our case cephalometric analysis confirmed a rare occurrence of skeletal changes associated with mild hypodontia. Mandibular right and left incisors were missing, depicting symmetrical nature of mild hypodontia, that is directly affecting development of mandible and its labial and lingual soft tissues. The pressure and tension exerted on musculature of lower lip has changed the facial profile of the patient compromising on her looks. These skeletal changes are confirmed through various methods such as Downs, Steiner's or Tweeds. We used Steiner's analysis as it is a helpful tool to find all three dental, skeletal, and soft tissue findings together. Steiner's skeletal analysis has confirmed skeletal changes associated with this mild form of hypodontia and the changes noted are, higher

inter-incisal angle due to anterior teeth hypodontia; a tendency towards class II malocclusion in mandibular hypodontia; a significant reduction of lower facial height; decrease in maxillary and mandibular incisor angles; protrusive lips with convex profile; horizontal growth pattern; and retrusive maxilla and mandible suggesting class II skeletal and dental abnormality. These findings are similar to the study of Strahinja Vucic et al where they found significant corelation of craniofacial characteristic of children with mild hypodontia.[6] Other cephalometric studies showed characteristics associated with hypodontia such as maxillary and mandibular retrognathism (Acharya et al) mandibular prognathism (Nodal et al), increased overbite (Kreczi et al), reduction in vertical jaw relation (Bondarets et al), higher inter-incisal angle by (Endo).[7-11] This age group is concerned with their physical appearance, so it becomes crucial for dentist to provide aesthetic makeover desired for the patient. And this kind of treatment is possible only if the case is diagnosed correctly and intercepted properly in late mixed dentition phase.

Our case also presented with soft tissue abnormality tongue tie in association with mild hypodontia in mandibular anterior segment which is an unexpected finding as literature till date has no such documentation. Improper development of mandibular anterior segment has affected floor of mouth and tongue, hampering speech of the patient. Hence, we could suggest a strong association of mild hypodontia with all dental, skeletal and soft tissue anomalies.

CONCLUSION

Hypodontia and its relation with teeth and other oral structure is complex, as it adversely affects growth and development of oral cavity and facial skeleton. Timely diagnosis with proper investigations using cephalometry by pediatric dentist will prevent such adverse effects. The present case highlights on early diagnosis and interception of such dental anomaly with rarity being mild hypodontia associated with skeletal changes.

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