Case Report: Congenitally Missing Teeth

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ABSTRACT

Congenitally missing of maxillary lateral incisors is one of the most common patterns of hypodontia. This paper presents a nine year old boy with congenital missing of lateral incisors. Familial history showed that, his mother, aunts, uncle and grandmother have also congenital absence of lateral incisors.

1. Introduction

Dental agenesis is one of the most common dental anomalies Therefore, dentists started analysis of congenital absence of teeth in early 1990s [1].Dental agenesis has a significant impact on a treatment planning and space management during mixed dentition. It's a challengeable issue for orthodontists and pedodontists. So, evaluation of the number of teeth in both jaws is mandatory in the mixed dentition. True dental agenesis can be categorized in two groups; total and partial agenesis: Total agenesis or anadontia refers to the absence of all teeth and it is a very rare condition. It usually affects permanent dentition and its heritance pattern is autosomal recessive [2-4]. Partial agenesis is classified into two types: hypodontia and oligodotia. Prevalence rate of this anomaly excluding third molar is 3.5% to 6.5% in the permanent dentition [5-7]. Prevalence rate of agenesis of third molar is 9% to 37% [8-9]. In the primary dentition dental agenesis occurs in 0.1% to 0.9% of population. Partial agenesis often occurs with familial history but it can also occur without familial history. It can be resulted from perturbation during initial stages of tooth development, such as ectodermal dysplasia, trauma, localized inflammation or infectious disease and systemic problem such as rickets or syphilis. However, it is usually an isolated condition and attributed with mutation of gene MSX1 and PAX9. Nowadays scientists believe that small jaw of modern human is unable to embed all of teeth so the number of teeth is declining. Hypodontia means missing one up to five teeth and any of 32 teeth can be missed but the most frequent ones are mandibular second premolar (3.4%), maxillary lateral incisors (2.12%) and maxillary second premolar. It can be unilateral or bilateral. There are different etiologies for hypodontia [2, 4, 6].

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Figure 1. Frontal view of the patient.

Physical disruption of dental lamina may causes obliteration of tooth buds and agenesis of tooth. This condition is seen in orofaciodigital syndrome, Ellisvan syndrome and cleft lip & palate. It can also be the result of metabolic misbalance that causes dental agenesis. Finally, hereditary defect of the underlying mesenchyme may lead to hypodontia.

Hypodontia is more frequent in women so it is important to manage these teeth aesthetically. Prevalence rate of hypodontia is variable in different sexes and races. Some of the studies have investigated its prevalence in some races and sexes [1, 8, 10].

2. Literature review

Amini et al evaluated the prevalence of hypodontia in the permanent dentition in Iranian dentition (3374 patients) in 2011.They concluded that the prevalence rate of hypodontia in Iranian population was 5% and it is more frequent in maxilla [11].

Sheikhi et al reported prevalence of congenitally missing permanent teeth in Iran (Tehran) in 2013.They noted a 10.9% rate of congenital absence teeth. In this study the most common missing teeth were mandibular second premolar and maxillary second premolar [12].

Following a study performed by Afshar et.al in Tehran, it was found that the prevalence rate of missing and supernumerary was 3% in 3-5 year old children. A majority of these anomalies were seen in boys. Missing and supernumerary were more frequent in maxilla [13].

A research done by Partovi and others in Babol evaluated missing teeth in 12-17 year old individuals. They stated the prevalence rate of missing teeth as 8.59% (8.4% in males and 8.8% in females). The most common missing teeth were mandibular second premolar (45.5%), maxillary lateral incisor (34%) and maxillary second premolar (10.6%) [14].

Akhlaghi and et al studied the prevalence of missing teeth except third molar in girl students of high schools in Rasht. The prevalence of missing teeth was 8%. In this study the most incidence of missing teeth was seen in age 16. The most common missing teeth were second premolars and the least ones were second molars [15].

Hedayati and colleagues have done a research in Shiraz. They evaluated the prevalence of missing teeth in orthodontic patients .The prevalence rate of missing was 7.66%. Patients with malocclusion Class III have the least prevalence rate of missing (1%) and patients with malocclusion Class II have the most prevalence rate of missing (4.68%). Majority of them had bilateral missing teeth. The most common missing teeth were lateral incisors [16].

Many studies specify that women show more partial anadontia than men. Egermark and Erikson found the 3:2 ratios of women to men in their studies but there was no difference in prevalence rate of hypodontia in women and men [17].

Sofaer et al concluded that the missing of teeth on one side of the dental segment induces a compensatory increase in the size of the teeth on the other side [18].

Figure 2. Intraoral view of the patient.

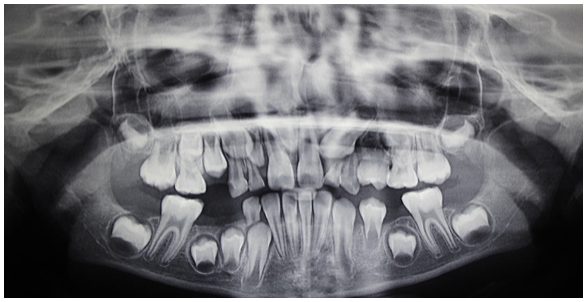

Figure 3. Panoramic radiograph of the patient.

3. Case report

A 9-year-old boy was referred to the Department of Pediatric Dentistry, Faculty of Dentistry, University of Medical Sciences, Kerman, Iran complaining of an abscess and pain in right and left mandibular first and second molars (Figure 1). The patient's medical history was non-contributory for pertinent findings. Intra oral examination showed that his lateral incisors hadn't erupted yet (Figure 2). Due to his age it was a little suspicious. Therefore, panoramic radiograph was ordered (Figure 3).

Panoramic radiograph showed that lateral incisors were missing. Familial history revealed that his mother, aunts, grandmother, cousin and his uncle had congenital absence of lateral incisors (Figure 4, 5, 6, 7).

On intra oral examination there was class III relationship on the left side and class I on the right side. There was 1 mm of over jet and 1 mm of overbite .The maxillary and mandibular arch were symmetrical with spacing in the anterior region. The oral hygiene was fair with mild gingivitis. There was no history of extraction of permanent teeth. The primary maxillary right and left lateral incisors were still retained. In treatment planning, the first and second primary molars were extracted and lingual arch was placed as a space maintainer.

Figure 4. Intraoral view of the patient's mother.

Figure 5. Panoramic radiograph of the patient's mother.

4. Discussion

Hypodontia is the most common dental anomalies occurring in human dentition [19]. Hypodontia may occur in association with some other conditions, such as ectodermal dysplasia, down syndrome and cleft of lip & palate, although it usually occurs alone [20].

Familial hypodontia is an isolated trait. This condition may occur in autosomal dominant, autosomal recessive or sex-linked patterns of inheritance [21]. After third molar, the most commonly missing permanent teeth are mandibular second premolars and maxillary lateral incisors or maxillary second premolars [22].

Congenitally missing of maxillary lateral incisors is one of the patterns of hypodontia. This trait can have an autosomal dominant pattern of inheritance, showing reduced penetrance and variable expressivity. Also this can be a recessive or polygenic trait [21].

The treatment plan for congenitally missing of maxillary incisors is challenging and requiring multidisciplinary approach to achieve a successful outcome. Often pediatric dentist initiates interdisciplinary treatment by the diagnosis of hypodontia and maintenance of the primary teeth. Definitive treatment plan is often determined

Figure 6. Intraoral view of the patient's aunt.

Figure 7. Panoramic radiograph of the patient's aunt.

after the eruption of all permanent teeth [23]. The treatment options include space closure with canine substitution and space opening with prosthetic replacement. Determination of correct treatment depends on several factors including occlusion, degree of crowding, skeletal and dental development, facial profile, color and shape of the canines [22].

The treatment plan for this case is encouraging the permanent canines to erupt into the lateral incisors position. Therefore, alveolar bone is formed in the area of the missing teeth and then moving the canines distally to open space for the implants. The implants should not be placed until vertical growth is complete. The treatment of this condition is complex and needs coordinated interdisciplinary approach.

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Conflict of Interest

The authors of this manuscript declare no conflict of interest in this paper.

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