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## Assessment of Congenitally Missing Teeth in Prosthodontic Patients

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### Abstract

Congenital missing of one or more teeth, excluding the third molars is relatively common, but anodontia or oligodontia is rare and may be associated with ectodermal dysplasia. In this study, it was found that among (379) prosthodontic patients, one patient had anodontia representing (0.26 %) of the cases and need complete denture for esthetic and functional demands, and two patients had oligodontia representing (0.52 %). These percentages were higher than other studies in the world, may be due to environmental and / or congenital causes.

**Key wards: Hypodontia, ectodermal dysplasia, hair anomalies, nail abnormalities.**

### Introduction

The dental lamina and later the enamel organs, represent the epithelial portion of the oral cavity with potential capacity to generate the ectodermal components of the teeth. The adjacent mesenchymal tissue proliferates and condenses to form other portions of the future teeth <sup>(1)</sup>.

The permanent teeth germs are developed later. They originate from the accessory dental lamina, in case of molars, or from growth of the free edge of the dental lamina on its lingual side for the remaining permanent teeth <sup>(2)</sup>. Most dental anomalies more frequent in permanent than in deciduous dentition. The partial absence of dental germs is a congenital defect of hereditary origins <sup>(3,4)</sup>. When all teeth germs are not present, the defect is called " anodontia", the absence of more than half of the teeth germs is referred to as "oligodontia", and " hypodontia " is the lack of one or more teeth germ in a number lower than that corresponding to oligodontia.

Total anodontia is a very rare condition, usually seen in association with hereditary ectodermal dysplasia. This condition is usually inherited as an X – linked recessive trait and although it primarily affects males but an autosomal dominant form can occur which affects females.

Ectodermal dysplasia classified into different subgroups according to the presence or absence of: 1- Hair anomalies or trichodysplasias. 2- Dental abnormalities. 3- Nail abnormalities or onychodysplasias and, 4- Eccrine glands dysfunction or dyshidrosis <sup>(6,7)</sup>.

Mutations in the ectodysplasin A (EDA), ectodysplasin A receptor (EDAR), EDAR-associated death Domain (EDARADD) genes prevent normal interactions between the ectoderm and the mesoderm and impair the normal development of two or more tissues derived from embryonic ectoderm <sup>(7,8,9)</sup>. The present study is an attempt to assess the occurrence and distribution of the congenitally missing permanent teeth in prosthodontic patients.

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## Materials and Methods

Patients screened for this study were the patients visiting Prosthodontic Department, College of Dentistry, Hawler Medical University, within a period from 1 /1/ 2006 – 1 /1 / 2007 with a complaints of esthetic and functional problems for the purpose of partial or complete dentures construction. All the patients were subjected to an oral examination and an orthopantomographic study was performed when needed.

## Results

The total number of patients was (379) patients, 214 males (56.47%), and 165 females (43.53 %) with age range between (5 – 69) years. The percentages of females that need complete denture (11.6 %) or repair of their dentures (7.92 %) were less than that of males (21.2 %), (10.82 %) respectively (table1).

The study showed that three cases visited the clinic suffering from congenitally missing teeth and need complete or partial denture:

Case one: Five years old girl, suffered from anodontia (except one unerupted incompletely formed upper right molar tooth), reduced ability to sweat, sparse scalp and body hair, prominent forehead, thick lower lip, flattened bridge of the nose and dry skin ( figure 1).

Case two: Six and a half years old boy, his clinical and radiographical examinations showed that (except for the third molars) seven permanent teeth were present. The lower permanent missing teeth were: The incisors, canines, premolars, and second molars. While the upper were: The right central incisor, lateral incisors, canines, first premolar and second molars (figure 2).

Case three: Seven years old girl, her clinical and radiographical examinations showed that (again except for the third molars) the permanent teeth that present are erupted upper left first molar, partially erupted upper right and lower left first molars, lower left canine, and incompletely formed unerupted lower left first premolar, and lower right canine..

The lower permanent missing teeth were: The incisors, lower right first premolar, second premolars, right first molar and second molars. While the upper were: The incisors, premolars and second molars. Some deciduous teeth were present (figure 3). Her mother, (25) years old, suffered from hypodontia, the missing teeth were: Lower left second premolar and lower right second molar (figure 4).

The results showed that among (379) patients visiting the Prosthodontic Department, one case of anodontia represented (0.26 %) and two cases of oligodontia represented (0.52 %).

## Discussion

The result showed that the numbers of females that need complete dentures were less than that of males. This may be due to the fact that females always seek conservative treatment before any extraction for esthetic reasons and this reason also explain the less percentage of cases that need repair in females than males because they take more care of their prosthodontic appliances.

Total or complete anodontia is a very rare anomaly, usually linked to a hereditary disease and additionally characterized by a failure of ectodermal development such as the hair, nails and eccrine glands<sup>(13)</sup>.

The results showed one single case of anodontia characterized by anhydrous and hypotrichosis.

Epidemiological studies carried out in different countries have revealed a prevalence of anodontia or hypodontia in permanent dentition range from 0.01 – 0.07 %<sup>(7,8,11)</sup> which was less than our findings. This may be due to gene mutation as a result of destructive weapons that used against the area of study in the past.

Great number of studies found that the teeth most frequently missing due to hypodontia were the maxillary lateral incisors followed by the mandibular lateral incisors and second premolars<sup>(11)</sup>. No patient visiting our prosthodontic clinic suffering from this condition because they may referred to conservative department from oral diagnosis clinic for fixed appliances construction or because of the presence of retained deciduous in place of congenital missing permanent tooth.

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Table 1: The numbers and percentages of patients for each prosthodontic work.

Patients	Complete denture	Against upper or lower	Partial denture	Repair	Total
<b>Males</b>	80 (21.11 % )	25 (6.6 %)	68 (17.94 %)	41 (10.82 %)	214 (56.47 %)
<b>Females</b>	44 ( 11.6 % )	24 ( 6.33 % )	67 ( 17.68 % )	30 ( 7.92 % )	165 ( 43.53 % )

**A****B****C****D**

Figure 1: A ) Photograph of the case one.  
B ) Photograph of the lower alveolar ridge showing complete absence of the mandibular teeth.  
C ) Photograph of the upper alveolar ridge showing complete absence of maxillary teeth.  
D ) Orthopantomographic picture of the case.

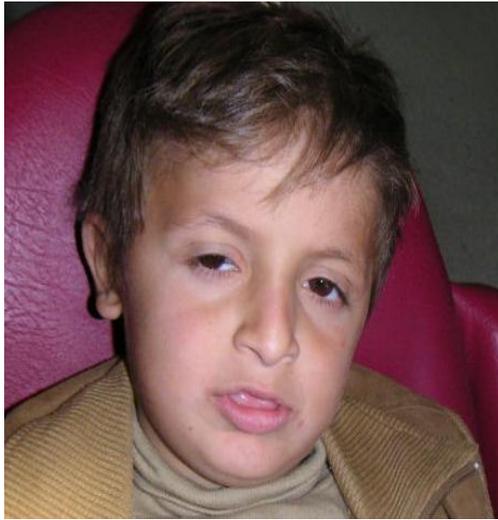
**A****B****C**

Figure 2: A) Photograph of the case two.

B) Photograph of the lower alveolar ridge showing the presence of first molars only.

C) Photograph of the upper alveolar ridge showing the presence of left central incisor, left and right second premolars and first Molars.

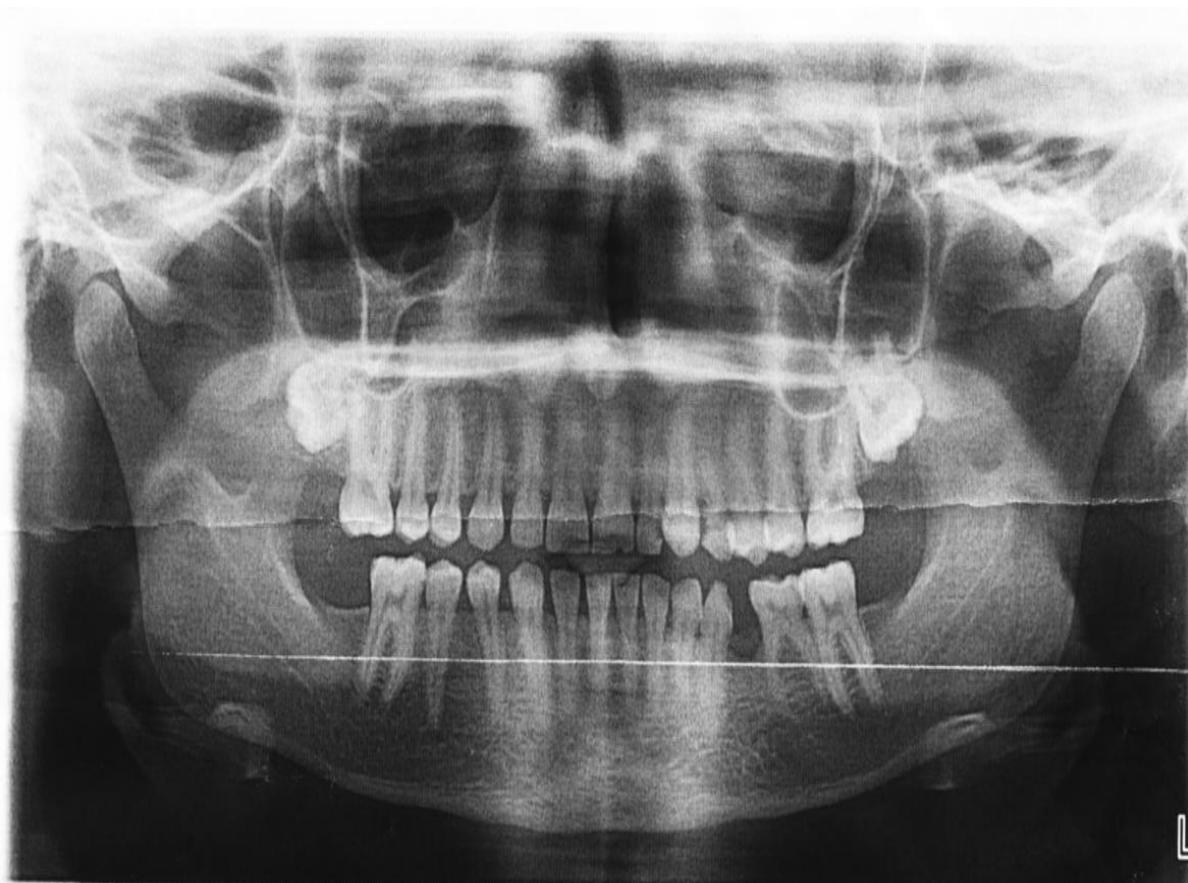
**A****B****C****D**

Figure 3: A) Photograph of the case three.

B) Photograph of the lower alveolar ridge showing the presence of permanent left canine and first molar with deciduous central incisors and right lateral incisor.

C) Photograph of the upper alveolar ridge showing the presence of permanent canines and deciduous right central incisor while the first right permanent molar is not seen in this picture because it is partially covered by oral mucosa.

D) Orthopantomographic picture of the case.



**Figure 4:** Orthopantomographic picture of the mother of case three showing missing lower left second premolar and lower right second molar.