



RESEARCH ARTICLE

FREQUENCY OF DENTAL DEVELOPMENTAL ANOMALIES IN CHENNAI POPULATION- A RADIOGRAPHIC STUDY

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ARTICLE INFO

Article History:

Received 24th March, 2016

Received in revised form

16th April, 2016

Accepted 15th May, 2016

Published online 30th June, 2016

Key words:

Dental anomaly,
Congenitally missing teeth,
Developmental,
Impacted teeth.

ABSTRACT

Dental anomalies may result in problems in maxillary and mandibular arch length and occlusion. The possible etiological factor for these anomalies may be the mutation of genes in the prenatal and postnatal period which may result in anomalies in tooth size, shape, position, number, and structure (Basdra *et al.*, 2000; Baydas *et al.*, 2005; Garn *et al.*, 1965; Kotsomitis *et al.*, 1996; Sofaer, 1979). These anomalies may involve either one tooth or all the teeth or may be present as a part of any systemic disorder (Basdra *et al.*, 2000). Changes in the number of teeth include supernumerary teeth (hyperdontia), i.e. excess teeth or hypodontia (less number of teeth or missing teeth). Anomalies of shape of teeth include microdontia and macrodontia. Anomalies of shape include gemination, fusion, root dilacerations, taurodontism, and concrescence. Gemination is defined as a single enlarged tooth or joined (double) tooth in which the tooth count is normal when the anomalous tooth is counted as one. Fusion is defined as a single enlarged tooth or joined (double) tooth in which the tooth count reveals a missing tooth when the anomalous tooth is counted as one. Taurodontism is a developmental anomaly of molar teeth in which the body of the affected teeth is very large with short roots and bifurcation near the apex. Dilaceration is any abnormal bend in the root or crown of a tooth. Radiographic and clinical examination will help dentists to diagnose these dental anomalies. The aim of the present study is to determine the presence of various developmental anomalies through examination of panoramic radiographs in a limited population.

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Citation: Sruthi Srinivasan and Abilasha, R. 2016. "Frequency of dental developmental anomalies in Chennai population- A radiographic study", *International Journal of Current Research*, 8, (06), 33603-33605.

INTRODUCTION

Dental anomalies may result in problems in maxillary and mandibular arch length and occlusion. The possible etiological factor for these anomalies may be the mutation of genes in the prenatal and postnatal period which may result in anomalies in tooth size, shape, position, number, and structure (Basdra *et al.*, 2000; Baydas *et al.*, 2005; Garn *et al.*, 1965; Kotsomitis *et al.*, 1996; Sofaer, 1979). These anomalies may involve either one tooth or all the teeth or may be present as a part of any systemic disorder (Basdra *et al.*, 2000). Changes in the number of teeth include supernumerary teeth (hyperdontia), i.e. excess teeth or hypodontia (less number of teeth or missing teeth). Anomalies of shape of teeth include microdontia and macrodontia. Anomalies of shape include gemination, fusion, root dilacerations, taurodontism, and

concrecence. Gemination is defined as a single enlarged tooth or joined (double) tooth in which the tooth count is normal when the anomalous tooth is counted as one. Fusion is defined as a single enlarged tooth or joined (double) tooth in which the tooth count reveals a missing tooth when the anomalous tooth is counted as one. Taurodontism is a developmental anomaly of molar teeth in which the body of the affected teeth is very large with short roots and bifurcation near the apex. Dilaceration is any abnormal bend in the root or crown of a tooth. Radiographic and clinical examination will help dentists to diagnose these dental anomalies. The aim of the present study is to determine the presence of various developmental anomalies through examination of panoramic radiographs in a limited population.

MATERIALS AND METHODS

The study was conducted by examining 72 panoramic radiographs of patients who visited the outpatient department at

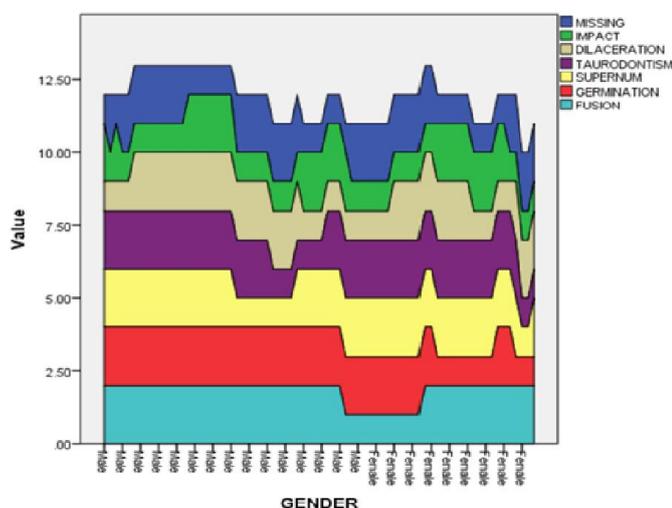
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Saveetha Dental College and Hospitals. The radiographs were screened for the presence of any developmental anomaly such as congenitally missing teeth, impacted teeth, dilacerated teeth, geminated and fused teeth. The data was tabulated and was analysed using SPSS (version20) software.

RESULTS

The study included examination of orthopantomograms of 72 patients of which 43 were male (60%) and 29 were female (40%). 41% out of 72 patients were diagnosed with congenitally missing teeth and 58% of patients had impacted teeth which is evident on radiographic examination. 37.5% of patients were diagnosed to have dilacerated roots. A small fraction of 16% patients were found to have taurodontism and supernumerary teeth. 19% out of 72 radiographs revealed geminated teeth and 18% showed fused teeth.



DISCUSSION

Dental anomalies may be expressed as changes in shape, size and structure (Garn *et al.*, 1965). The aetiology of dental anomalies of number, size, position, as well as time of development may be genetic and/or hereditary (Baccetti, 1998; Mossey, 1999). These anomalies can complicate dental treatment if not identified accurately, therefore their presence should be thoroughly investigated during diagnosis and carefully considered during treatment planning. Studies have shown that variations in the prevalence of dental anomalies could be due to regional and racial differences (Salem, 1989; Sawyer *et al.*, 1984). The prevalence of some abnormalities such as hypodontia and supernumerary teeth have been less in few studies as these studies were conducted without any radiographic assessment. A high prevalence of congenitally missing third molars and impacted third molars is reported in this study similar to the results reported in a few earlier studies. The present findings showed that the incidence of impaction was found to be 58% and that of congenitally missing molars was found to be 41% respectively. Supernumerary teeth or hyperdontia is an excess in tooth number and is a frequent finding in dental practice. The prevalence of hyperdontia is reported to be 16% in this study. Most supernumerary teeth are impacted

and asymptomatic and diagnosed incidentally only during radiographic examination. Panoramic radiographs are thus essential for the early detection of supernumerary teeth. The present study showed that the prevalence of various dental anomalies exhibit variations from other similar studies. The dissimilarities may be due to the sample selection, method of the study and area of patient selection. Early detection of dental developmental anomalies is very important, as they may lead to many unseen complications like tumours arising from impacted molars and malocclusion due to supernumerary teeth and also a poor periodontal status which may result in the mobility of the teeth. Dilacerated teeth may pose a problem during extraction and root canal treatment. Dental anomalies may pose a big problem in cases of planning an orthodontic treatment and the prognosis (Mossey, 1999; Ericson and Kuroi, 2000; Peck *et al.*, 1994; Baccetti, 1998). Diagnosis could be made at the radiological level; the earlier the diagnosis, the less risks related to treatment. While the overall prevalence of each of these anomalies in the dental clinic may be low, their presence may create a management problem or complicate treatment options for patients. Careful diagnosis simplifies the treatment plan and reduces complications. Many of the previous studies have been conducted based on clinical examination and have not employed the use of radiographs. This study includes the examination of 72 panoramic radiographs in addition to clinical examination which helps in quality diagnosis and treatment planning.

Conclusion

The present study aims to evaluate the frequency of occurrence of various developmental dental anomalies in a limited population. Impaction, congenitally missing teeth (hypodontia), root dilaceration, gemination and fusion were more common compared to other anomalies. Developmental anomalies are clinically evident abnormalities and sometimes may require the use of a radiograph for the detection. They may be the cause of various dental problems. Careful observation and appropriate investigations are required to diagnose the condition and provide quality treatment.

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