



A PROSPECTIVE HOSPITAL BASED STUDY OF DENTAL NUTRITIONAL DEFECTS

Anatomy

Dr. Pankaj Pathak Assistant Professor of Dentistry, Oral And Maxillofacial Surgeon, Saraswati Medical College., Unnao

Dr Arun Kumar. S. Bilodi* Professor Of Anatomy, Saraswati Medical College., unnao *Corresponding Author

Dr Shravan Kumar Department Of Anatomy, Saraswati Medical College., unnao

ABSTRACT

A study has been done at Saraswati Medical College & Hospital, Unnao, UP, in the out Patient Department of Dentistry on children aged between 5 years to 19 years for a period of six months. The various conditions that came across were – Enamel hypoplasia in 120 patients, missing teeth were observed in 50 patients & other conditions that included were Dental caries, Gingival bleeding, Dental cyst and Dental abscess in 30 patients. Each case was examined carefully, relevant investigation was done by taking proper clinical history. This study showed a nutritional deficiency in the pediatric age group. Most of the children were from low socioeconomic status and low middle income group. Ignorance and poverty was the contributing factor for the above patients. Then these children were advised to take good nutritious food rich in Vitamin D & Calcium. Oral supplementation was also advised. Then they were advised to come for follow up.

KEYWORDS

Birth Defects, Dental Anomalies, Microdontia, Macrodontia, Odontogenesis, Fusion, Gemination, Dens Evaginatus

INTRODUCTION:

Anomaly is the deviation from the normal [1]. Any disturbance in mesenchymal interaction and epithelium can alter normal odontogenesis giving rise to anomalies of teeth developmentally. Various anomalies can occur depending on the anomalies of number, structure, size and/or shape [2]. Dental anomalies are developmentally marked variations regarding the normal color, contour, size, number, and degree of development of teeth. [3] About 300 genes are known to take part in the development of teeth. [odontogenesis]. Any defect in the genes are one of the etiologic factors to cause morphologic changes in the development of teeth [4]. World Health Organization - the diseases of oral cavity, salivary glands and jaws” in WHO-International Classification of Disease (WHO-ICD-10) (K00-K14) [5] Most of the dental abnormalities take place during the years of childhood. They are classified according to the variations in number, shape, color, structure, texture, eruption, exfoliation and position. [6] Anomalies of teeth in relation to size & form have been classified into congenescence, fusion, gemination, dens evaginatus, dens in dente, dens invaginatus, enamel pearls, macrodontia, microdontia, peg-shaped teeth, taurodontism and tuberculum paramolare under section WHO-ICD-10 (K00.2), [7].

DEVELOPMENT:

The tooth undergoes many complex processes during development such as Mesenchymal interactions, differentiation, morphogenesis, fibrillogenesis and mineralization that occurs during the development. Later a continuous band of thickened epithelium appears around the oral cavity formed by the fusion of epithelial plates which is thickened to form Primary epithelial bands which later develop into vestibular lamina and dental lamina. All these events take place after 37 days of development [8]. The stomadeum, a primitive oral cavity is lined by oral ectoderm which is stratified squamous epithelium. There is formation of buccopharyngeal membrane where oral ectoderm comes in contact with foregut endoderm. Around 27th day of intra uterine life this membrane ruptures establishing a communication between primitive oral cavity with that of foregut [9]. Disturbances of development of teeth may occur either independently or in association generalized diseases in the form of variations in number, position, size, shape, eruption or structure [10]. It is observed that either the only the form or only the structure or both may be altered during the development which may occur before or after birth involving either deciduous or permanent teeth [11].

MATERIALS AND METHODS:

This is a hospital based study done in state of Uttar Pradesh at Saraswati Medical College & Hospital, Unnao in the outpatient department of Dentistry. A thorough oral examination was done and observed the conditions of teeth and diagnosed as follows.

Serial Number	Anomalies/Variations/Nutritional deficiencies	Number of subjects.
1	Enamel hypoplasia.	120 patients
2	Missing teeth	50 patients
3	Bilateral missing teeth-Molar	35 patients
4	Bilateral missing teeth-Molar, maxillary, premolar, canine,	10 cases
5	Bilateral missing teeth-Bilateral Deciduous teeth -Incisors	5 cases.
6	Others.	30 cases.

OBSERVATIONS:

Age group sample was done in subjects in the age group between5 years to 19 years.

Total number patients examined were200 patients.

Out of them male patients were.....150 male patients.

Female patients were50 female patients.

Types of Anomalies/variations examined were.

--Enamel hypoplasia.....120 patients.

--Missing teeth.....50 patients.

--Bilateral missing
-- Mandibular –Second premolar
.....35 patients.

-- Bilateral missing –Maxillary, first premolar and canine,
--Mandibular –Second premolar
.....10 patients.

-- Bilateral missing-- - Deciduous teeth—lateral incisors.....5 patients.

Others that includes Dental caries, Gingival bleeding, Dental cyst and Dental.....30 patients.

DISCUSSIONS:

The various anomalies of teeth are Concrescence, Fusion, Gemination, Dens evaginatus, Dens in dente, Dens invaginatus, Enamel pearls, Macrodonia, Microdonia, Peg-shaped teeth, Taurodontism and Tuberculum paramolare[7]

Gemination is the two teeth formation from same follicle resulting in the formation of teeth or two completely separate teeth,[12]It is also known as double teeth, double formations, joined teeth, fused teeth or dental twinning commonly found in the anterior region of maxilla.[13,14.]**Fusion** is nothing but fusion between enamel & dental of developing teeth as a result a large tooth is formed causing unification of two roots or two crowns [15].It may be complete[total ,true] or incomplete [partial or late fusion][15,16].**Concrescence** is the unification of cement of two adjacent teeth but no unification of underlying dentin giving rise to independent pulp chambers and root canals[17,18].**Dilacerations** It is the deviation or bend of the crown of tooth with that of its root [19] which was first described by Tomes in 1848[20].**Dens invaginatus (DI)**:It is also known as pregnant woman anomaly, extensive compound odontoma, and dens in dente. It is due to invagination of external surface of the tooth crown occurring prior to calcification[21,22].They are commonly seen in maxillary lateral incisors followed by premolars, molars, canines & central incisors[22,23.].**Dens evaginatus (DE)** is the developmental anomaly of tooth where there is formation of accessory cusp resulting in abnormal tubercle, or elevation,or protuberance, or excrescence, or extrusion, or a bulge [24].

Rickets is the affects the children during 6-24 months of age [25].This is a very delicate period for the development of teeth.which may give rise to various manifestation such as enamel hypoplasia,formation of teeth may be delayed, incidence of caries teeth may be increased by forming cavities,[26]. By ultra structural examination of teeth & by light microscope,study showed abnormalities of hard portion of teeth that affected both enamel & dentin [27]

In the studies done by Virat Galhotra et al[2015] , on 120 pediatric cases ,in the age group of 6 -18 years of age on Rickets caused by vitamin D deficiency ,calcium deficiency was done .Enamel index developmental defect was used along with Radiographs .Statistical analysis was done using SPSS VERSION 16,[SPSS ,Chicago ,IL,USA].Their study showed observed Enamel hypoplasia in 90 cases, missing teeth were observed in 45 cases ,bilaterally missing second Mandibular premolar were seen in 30 cases ,missing teeth were found in maxillary first premolar ,maxillary canines, Mandibular second premolar in seven cases. These developmental problems do occur in children suffering from Rickets.[28]

Present study : Bilateral missing teeth were observed Mandibular –Second premolar in 35 patients.Bilateral missing teeth in Maxillary, first premolar and canine, of Second premolar in 10 patients. Bilateral missing teeth of Deciduous teeth in lateral incisors were seen in 5 patients. Others conditions that were seen were Dental caries, Gingival bleeding Dental cyst and Dental abscess in 30 patients. **In the studies done by Virat Galhotra et al[2015],there were 120 pediatric cases ,in between the age group of 6 -18 years of age due to vitamin D deficiency ,calcium deficiency . Enamel hypoplasia were observed in 90 pediatric cases , missing teeth were found in 45 cases.Bilaterally missing teeth were second Mandibular premolar seen in 30 cases ,they were seen in maxillary first premolar ,maxillary canines, Mandibular second premolar in seven cases. But there were no cases of Anomalous teeth.**

CONCLUSION:

Early diagnosis of dental birth defects, and nutritional deficiency has to be done with proper investigations with planned prolonged treatment gives good prognosis In the community proper screening with proper advice to the parents and subjects will reduce morbidity rates.

TAKE HOME MESSAGE :

Supplementation of vitaminD & Calcium will reduce the morbidity of the pediatric age group.

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