

Unilateral Co-Joined Primary Teeth With And Without Partial Anodontia Of Permanent Dentition – Report Of 2 Cases.

Abstract

Dental anomalies of number, shape and timing of eruption may occur in both the primary and permanent dentition. Various terms have been used to describe dental co-joined anomalies: twinning, fusion, germination, concrescence, double teeth, syndontia, geminifusion and vicinifusion. Co-joined tooth is a term used to describe connate tooth and includes both dental fusion and gemination. Fusion is a condition in which the crowns of two separate teeth have been joined together during the development. This phenomenon occurs infrequently but could cause esthetic, spacing and periodontal problems. Germination is when two teeth develop from one single bud leading to a larger tooth. The present article reports the presence of a co-joined primary mandibular central and lateral incisors in 5 yr. old male child as 1st case where no anodontia was revealed through radiographs. In 2nd case, primary co-joined tooth in a 10 year old female involving primary mandibular left lateral incisor and canine is reported. Radiographic examination in this case confirmed the absence of the permanent left mandibular lateral incisor. Cases with primary co-joined tooth necessitate careful examination as they may be associated with anomalies in the succeeding permanent dentition and require proper treatment planning.

Key Words

co-joined tooth, Double tooth, fusion,, partial anodontia, primary dentition.

Introduction

Odontogenic developmental anomalies are more frequently observed in primary dentition than in permanent dentition during routine intraoral examination. These variations can be numerical (hypodontia or hyperdontia), in tooth structure (size or shape), eruption wise (early or delayed), or a combination of these because of enamel and dentin malformation.^{[1],[2]} Among the variations of tooth structure anomaly, co-joined teeth are most common. It has been described in several different terms, such as Fusion, Gemination, Double teeth, Twinning, Connation of teeth, syndontia and Conjoined teeth. This occurs more frequently in the mandibular incisors region than the maxillary dentition. Incidence of this anomaly is approximately 0.1% in the permanent and 0.5% in the primary dentition^[3].

The tooth bud is made up of cells derived from the ectoderm of the first brachial arch and the ectomesenchyme of the neural crest^[4]. Conjoined anomalies or Twinning come under developmental anomalies of proliferation stage.^[1] These can be attributed to physical pressure leading to the union of teeth^[5] or genetic

inheritance^[6] as possible etiologies. It is suggested to be caused by the persistence of dental lamina between two or more tooth germs, or by the attempt of a supernumerary tooth to develop from the remnants of the dental lamina after it has divided from a neighboring tooth germ^[6]. Since the developmental stage of the buds involved may vary, different clinical and radiographic appearances of these teeth can be found^[7].

The most common problem related to fused teeth is hypodontia of the permanent dentition which has been reported in 50% of affected subjects^{[8],[9],[10],[11]}. Therefore, early diagnosis of the anomaly is of considerable importance.

The aim of this article is to present 2 cases of unilateral Co-Joining of two primary mandibular teeth - lateral incisor & canine and central & lateral incisors along with assessment of the presence of any associated pathology.

Case Reports:

Case No 1.

A 4 year-old boy reported to the Department of Pedodontics and

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Figure 1. Intraoral Photograph showing co-joined 81 & 82

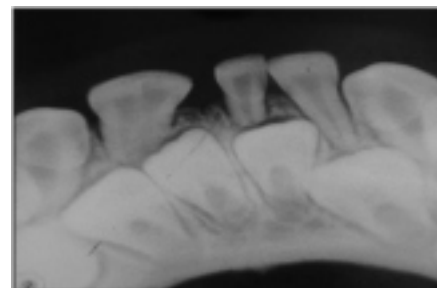


Figure 2. IOPA Radiograph confirming presence of all permanent teeth



Figure 3. Intraoral Photograph showing Co-joined 82 & 83

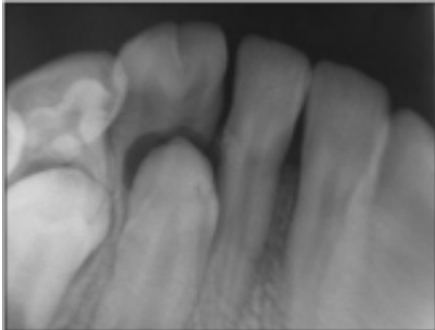


Figure 4. IOPA Radiograph confirming partial anodontia with missing 42.

Preventive Dentistry, Himachal Institute of Dental Sciences, Paonta Sahib with chief complain of cavities. Medical history was non remarkable. The mother reported no medications, illnesses, or complications during pregnancy. There was no history of trauma in oro-facial region. Family history and check up was negative to familial tendency to fused teeth showing no unusual findings.

Intraoral examination revealed complete deciduous dentition. The teeth present were 55, 54, 53, 52, 51, 61, 62, 63, 64, 65, 75, 74, 73, 72, 71, 81, x, 83, 84, 85. Out of these, 51, 52, 54, 55, 64 and 84 were carious. 82 was missing.

The intra oral periapical radiograph of mandibular right anterior region showed the following characteristics:

- Primary right central incisor and lateral incisors were fused.
- Two separate pulp chambers and root canals were present.
- The roots of fused primary teeth had just started resorption.
- All permanent tooth buds were present confirming no anodontia of permanent dentition.

Case No. 2.

A 10 year old girl came to Department of Pedodontics and Preventive Dentistry, Himachal Institute of Dental Sciences, Paonta Sahib for examination of extra wide unsightly tooth. No relevant dental, medical and family history was reported.

Intraoral examination revealed mixed dentition. The teeth present were 16, 55, 54, 53, 52, 51, 61, 62, 63, 64, 65, 26, 36, 75, 74, 73, 32, 31, 41, x, 83, 84, 85, 46. 42 was missing.

The IOPA radiograph of mandibular right anterior region showed the following characteristics:

- Primary mandibular right canine and lateral incisors were fused.
- Two separate pulp chambers and root canals were present.
- The roots of fused primary teeth had started resorption.
- Permanent tooth bud of 42 was missing confirming partial anodontia of permanent dentition.

Informed consent was obtained from the parents of both the patients before any findings were reported.

Discussion

Although there is ample literature on co-joined teeth, there is still much questioning on the nomenclature. Some authors have tried to differentiate these teeth by counting the number or by observing the root morphology. While some use fusion and gemination as synonyms. Some authors call it as “Double teeth” or “connated teeth” to avoid the confusion.^[12]

Fusion is often confused with the process of gemination. Gemination occurs when, during the proliferative stage of dental development, a single tooth germ attempts to divide by invagination. These two can be differentiated by the below parameters:^[13]

Morphology: Gemination results in mirror images of the coronal halves, whereas fusion takes place at an angle causing a crooked appearance.

Anatomy: Pulpal anatomy is very useful in diagnosing the type of double teeth. Fused teeth would mostly have separate pulp chamber and root canals while geminated usually have one big pulp canal.

Location by jaw: Fusion is common in mandible and gemination in maxilla but fusion between supernumerary and normal tooth is more common in maxilla. Teeth usually have one big pulp canal.

Crowding: Fused teeth would more often cause ectopic eruption and

geminated teeth would cause more of crowding. However, when a normal tooth is fused with a supernumerary tooth, crowding and even impaction of other teeth may result. So this factor is not a good diagnostic feature.

Number of teeth: Fusion is counted as one tooth and thus diminishes the number of teeth

whereas number is increased in gemination. According to Mader^[14], the ‘two tooth rule’ may be helpful in differentiating fusion from gemination. If the resulting dental structure is counted as two teeth and the normal number of teeth are present in the region, the case probably represents an example of fusion. If, however, the abnormal dental structure is counted as two teeth and if an extra tooth is present in the region, then the case may represent an example of gemination or fusion between a normal and a supernumerary tooth.

Based on the above criteria, our both cases are more inclined towards fusion. Though involvement of supernumerary tooth and anodontia cannot be ruled out clinically or radiographically.

Fusion can be classified into two types : Complete and Incomplete. Complete fusion starts before calcification of tooth and crown include features of both participating teeth in all the dental tissues as enamel, dentin, cementum and pulp, whereas Incomplete fusion begins at a later stage. In this case, variance in form of separate crowns and limited fusion of roots alone with pulp canals fused or separate.

When fusion occurs, the clinician must be aware of following major dental concerns.

First, since fused teeth are clearly wider, esthetics may be a concern. In our 1st case, the esthetic view was not a problem in the primary dentition and the family was not knowing of the fused teeth until the patient visited dental office. But esthetics was a great concern with our 2nd case of a young girl who has involvement of mandibular right primary lateral incisor and canine, with complete union of the crowns.

Second, when normal teeth fuse, excess dental space can result. This was rather

good in our both cases. In the 1st case excess space would be used up by the presence of all permanent teeth whereas in 2nd case anodontia of 42 saves the concern of space.

Third concern relates to both esthetic and occlusion because of unerupted permanent anterior. This is the major concern for patient and parents. When fusion occurs in the primary dentition sometimes it may cause delayed eruption of permanent teeth. The parent counseling was done regarding this subject.

The final concern involves that the surface contour of fused teeth commonly exhibit labial and lingual grooves running vertically on the crown surface. These grooves are very pronounced in cases of incomplete fusion and are difficult to clean and considered to be caries prone zone^[15].

In the presented cases, there was a complete fusion. Although grooves were present on the teeth surface no caries was detected at the time of examination. Periodic clinical follow-up was also advised to prevent caries, to check the erupting status of permanent teeth and to allow early intervention whenever pulp alterations and fractures occur.

Treatment of a fused tooth will depend on the clinical situation.

Conclusion

Co - joined teeth like fusion and germination are asymptomatic but both can result in a number of difficulties including tooth reduction in the

permanent successors, increased susceptibility to sub gingival bacterial plaque, aplasia or malformation of the permanent successors and impaction. The potential clinical problems associated

with fusion require Orthodontic, Prosthetic, Cosmetic and Periodontal interventions also. Thus, to establish a right treatment to this anomaly, the early proper examination and knowledge to recognize this anomaly is a prerequisite.

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