

Developmental Anomalies- Catalyst of Periodontal Diseases: A Report of 2 Cases

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Abstract

Periodontal disease is multifactorial; therefore, determining the exact etiology of the same is critical when planning the treatment. Developmental disturbances of the teeth may manifest by variation in number, position, size, shape, eruption, or structure. It can be in generalized or localized form. Concrescence and enamel pearl are developmental anomalies that can cause periodontal pockets to persist by acting as a nidus for plaque accumulation and interfering with patient oral hygiene. This necessitates a proper diagnosis of such anomalies, which, although rare, necessitate suitable management to aid in periodontal therapy and maintenance.

Keywords: Concrescence, Enamel pearl, Periodontal pockets, Nidus for plaque

INTRODUCTION

Developmental variations and morphological abnormalities are seen in human dentition. Internal and external morphological abnormalities might sometimes predispose the affected area to plaque accumulation and periodontal destruction. The radiograph shows dental anomalies such as concrescence, enamel pearl, and periapical or periodontal lesion with angular bone loss along the root surface. Its clinical features may cause pus discharge in the sulcus area, swelling, sinus tract, mimicking an endodontic-periodontic lesion in some situations. It is critical to detect and treat these anomalies as soon as possible because they can lead to tooth loss.

Enamel pearl was first described in the first half of the nineteenth century, and it has since been called enamel droplet, enamel nodule, enamel globule, enamel knot, enamel exostoses, enameloma, and adamantoma¹. The enamel pearl is a well-defined globule of enamel that adheres firmly to the external root surface of teeth. It is often round, white, smooth, and glasslike^{2,3}. The most widely accepted theory is that the pearl forms because of the localized developmental activity of Hertwig's epithelial root sheath cells that remained adhered to the root surface during root development and differentiated into functional ameloblasts^{4,5}. Concrescence is a type of fusion that occurs after root formation is accomplished. Teeth are mainly united by cementum in this condition, which is hypothesized to arise from traumatic injury or crowding of teeth

combined with resorption of the interdental bone, causing the two roots/supernumerary teeth to become united by the deposition of cementum between them⁶. Concrescence causes a loss of gingival architecture, which leads to the generation of funnels, which can lead to plaque buildup and periodontal tissue destruction.

This paper aims to highlight the above-mentioned two distinct developmental anomalies and their respective periodontal management.

CASE REPORT 1

A 27-year-old male patient reported to the Department of periodontics, Maulana Azad institute of dental sciences with the chief complaint of bleeding gums and deposition of food debris in the lower left back teeth region for 2 years. The patient had no relevant dental or medical history. On examination, the patient had bleeding on probing and pocket depth of 4-5 mm involving the mandibular left third molar. During full mouth scaling and root planning, accidentally we found an ectopic enamel deposition present in the lingual aspect of the mandibular left third molar. This anomaly was approximately 0.5cmx

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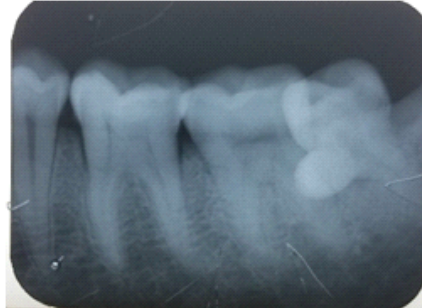


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0.5cmx 0.3cm and was located on the lingual aspect at the level of cementoenamel junction (CEJ) of 38. On radiographic examination, a globular radio-opaque mass was seen at the level of CEJ of 38. We planned to surgically excise this anomaly. This area was anesthetized using 2% lignocaine with 1: 80000 adrenaline. As this enamel pearl was acting as a niche of plaque retention, the globular mass was removed by odontoplasty after flap reflection & smoothed with a finishing bur and sent for histopathological examination. Next, the root surface was planed to make the surface smooth

and amenable for oral hygiene maintenance by the patient. The patient was prescribed 0.2% chlorhexidine mouthwash to be used twice daily 20 minutes after brushing with a soft-bristled toothbrush and use of desensitizing toothpaste over mandibular left third molars to reduce sensitivity. The histopathological examination revealed normal enamel architecture composed of enamel rods and areas of gnarled enamel with few enamel cracks suggestive of enameloma. After 2 months, the patient was followed up for any symptoms. The patient was able to maintain adequate plaque control.



Radiographic examination showing globular radio opaque mass at the level of CEJ wrt 38

Ectopic enamel deposition seen after flap reflection in lingual aspect of 38



Odontoplasty of globular mass done after flap reflection

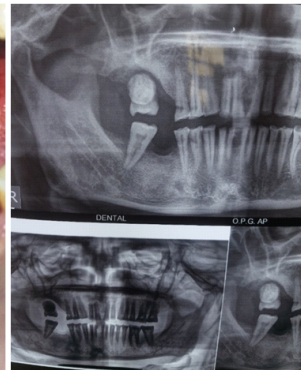
2 months follow up showing complete healing

CASE REPORT 2

A 56-year-old male patient presented with a chief complaint of swelling and pus discharge in the upper right back teeth region. No relevant medical history was detected.

On clinical examination, there was an irregular morphology present concerning the permanent right maxillary second molar tooth. The clinical provisional diagnosis was made such as concrescence, fusion. There were no other

anomalies present all over the dentition. Radiographic examination showed the fusion of the right maxillary third molar with the second molar and severe bone loss around the teeth. The tooth was grade III mobile, so extraction was performed to eliminate the local plaque retentive factor. On gross examination after extraction, the two teeth were fused at the level of the root portion suggesting concrescence of the teeth. The patient was followed for 1 year with no post-operative symptoms.



Concrescence of 2nd molar & 3rd molar-occlusal view

Concrescence of 2nd molar & 3rd molar-buccal view

Post extraction of concrescence affected teeth

Radiographic examination showing the fusion of the right maxillary third molar with the second molar & severe bone loss around the teeth

DISCUSSION

Enamel pearls are also known as enamelomas, enamel globules, or enamel droplets are less prevalent than cervical enamel projections (CEP) which are also a form of ectopic enamel formation. Linderer was the first to report about enamel pearls in 1842³. Moskow and Canut reviewed previous studies on EPs and reported their prevalence ranging from 1.1% to 9.7%¹. Recent studies have shown variation in the prevalence of enamel pearls in populations belonging to various ethnic groups or geographic locations, for example, a study reports the prevalence of 5.1% in the Turkish population, while another reports a prevalence of 4.28% in a Saudi Arabian Adolescent Population^{7,8}. The data regarding the prevalence of enamel pearls in the Indian population is scarce and limited to case reports showing the presence of enamel pearls in aberrant and rare sites such as mandibular anterior teeth or the apical part of the mandibular molar^{9,10}. The present case report shows an enamel pearl associated with a mandibular third molar. The weak connection of the periodontal tissues with the enamel pearl via hemidesmosomes could explain the occurrence of enamel pearl, resulting in attachment loss and plaque formation⁵. So, it was essential to remove the enamel pearl by odontoplasty after flap reflection to help in the maintenance and allow healing of soft tissue. Additionally, enamel pearl acts as an anatomic factor that also determines the prognosis of the tooth affected with periodontal disease. The present case showed adequate healing and reduction in pocket depth after odontoplasty.

Dental fusion and concrescence are the two terms used to describe two distinct morphological dental anomalies that are characterized by the development of a clinically wider tooth. Despite the large number of cases that have been documented in the literature, distinguishing between these abnormalities is difficult. The information needed to diagnose such abnormalities can be obtained via a proper case history, clinical examinations, and radiographic examinations. After a judicious evaluation of all information, we can report that this case represents concrescence of the right maxillary second molar with the maxillary third molar. Concrecence is clinically nearly impossible to be detected. The crowns of the affected teeth appear normal when erupted because there is no enamel involvement, Concrecence can also go undetected on radiographs, leading to misdiagnosis as simple radiographic overlap or superimposition of teeth. In the case of supernumerary teeth, a diagnostic consideration; however, not a rule is those supernumerary teeth are often slightly aberrant and present a cone-shaped clinical appearance. Thus, a fusion between a supernumerary tooth and a normal tooth will generally show the difference in the two halves of the crown. This case of concrescence between maxillary right second molar and third molar perpendicular to each other is very rare and to our knowledge, only a few cases of concrescence being one of the local etiologic causes for localized periodontal destruction have been reported in the literature. The presence of a normal complement of teeth, the level of separation of the fusion of the tooth, the depth and extent of caries, the level of cooperation/motivation of the patient, and, in children, the patient's age are all factors to take into consideration in detail before planning the treatment. Sectioning can be performed if normal complements of teeth are present and fusion does not

extend apically. This is accomplished by raising a flap and drilling the necessary amount of bone. The affected tooth is sectioned at the expense of the tooth that will be extracted. To avoid periodontal complications, subsequent recontouring of the retained root may be performed at the same time. Bone removal should be kept to a minimum so that the attachment apparatus of the retained root is not compromised. The iatrogenic defect caused by sectioning can be treated orthodontically by moving the tooth into the defect. For aesthetics, if a tooth is missing, the option of recontouring the tooth with composites or crowns will be required. When it comes to third molars, extraction is the best option. The current case involved the cemental fusion of a maxillary right second & third molar and extraction was performed to eliminate the defect due to the tooth anomaly.

CONCLUSION

Inadequate examination of teeth with specific anatomical characteristics and inaccurate diagnosis are responsible for many periodontal therapy failures. As a result, a thorough examination of changes in tooth structure is required to achieve a precise diagnosis, a more predictable and trustworthy prognosis, and to select the appropriate periodontal therapy.

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