

## Localized Idiopathic Cemental Hyperplasia involving all four third molars: Report of a Rare Case

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### ABSTRACT

"Cemental Hyperplasia" or "Hypercementosis" a non-neoplastic, hereditary condition characterized by excessive deposition of cementum in continuation with the normal radicular cementum. This condition is associated with various factors like developmental disorders, inflammation in the root apex, aging and systemic conditions, however most of the cases of hypercementosis are found to be idiopathic nature. Most commonly this disease entity affects posterior teeth and occurs as an isolated or involve multiple teeth or can be seen as generalized form. The purpose of this article is to present a rare case of occurrence of cemental hyperplasia or hypercementosis in an Indian female patient.

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## Introduction

“Cemental Hyperplasia” also called as “Hypercementosis” is an abnormal excessive deposition of cementum on the root surface exceeding physiological limit of the tooth. It is characterized by general thickening of the cementum with nodular enlargement of the apical third portion of the root [1].

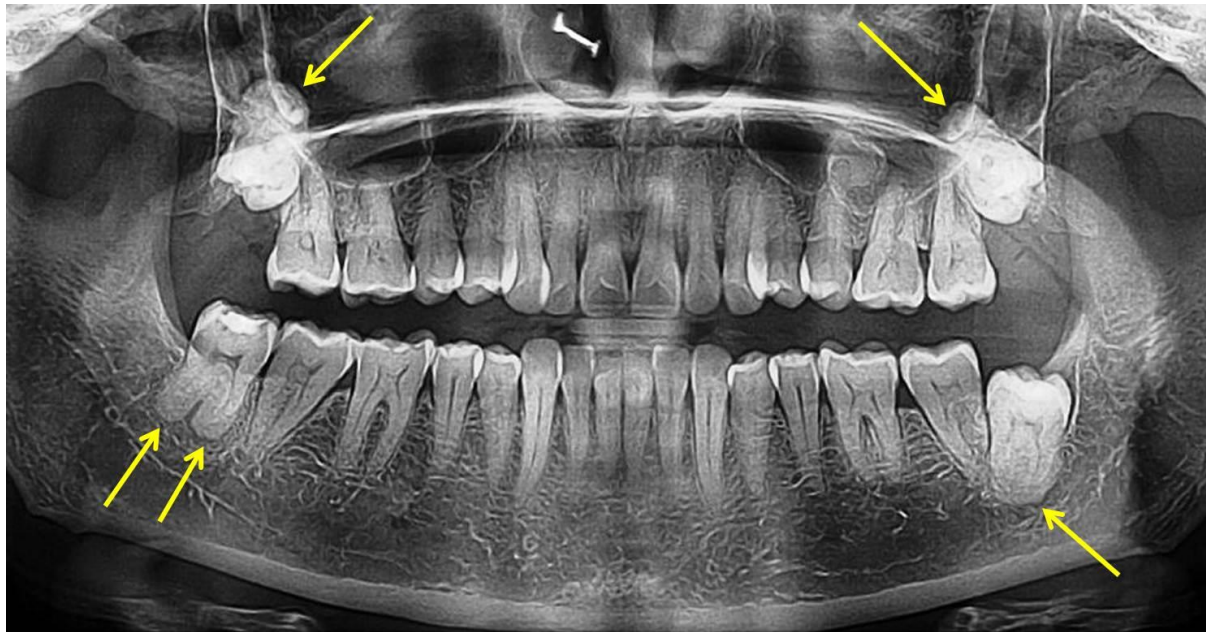
The prevalence of hypercementosis varies with different population studied and varies from 0.12% to 84%. Studies performed among Turkish, German and Iranian populations found a prevalence of 0.2%, 2.4% and 0.12% respectively [2-4]. The variation in prevalence rates may due to different diagnostic tools used for the evaluation. For evaluation of hypercementosis, conventional radiographs such as panoramic and periapical radiographs have been used in most studies. Recently advanced imaging techniques like Cone Beam Computed Tomography (CBCT) scans have been used in the diagnosis of hypercementosis [5]. This condition is more common in males seen with a prevalence of 0.3% compared to females in whom the prevalence is just about 0.02%. However, it is also reported that no gender-related differences exist pertaining to this entity and some reports showed an increased incidence of hypercementosis in females [2-4]. This may be due to difference in the diagnostic evaluation method employed and different population sample studied.

Occurrence of cemental hyperplasia influence and complicates some dental procedures during treatment such as endodontic and extraction procedures [6,7]. Various therapeutic modifications should be followed during these dental procedures in teeth associated with hypercementosis [6,7]. Therefore, knowledge about this condition is highly among all dental specialties to detect, diagnose and provide appropriate dental care to the patient. Hence, the present article was prepared to enlighten the existing literature pertaining to occurrence of cemental hyperplasia by presenting a case of

hypercementosis which occurred in Indian female patient.

## Case Report

A 38-year-old female patient reported to a private dental clinic complaining of pain in the lower left back tooth region since past ten days. Patient was well nourished, moderately built with well behaviour. Patient did not show any history of past illness or signs and symptoms of systemic disorder, metabolic or syndromic diseases. There was no history of previous hospitalization or any orthodontic treatment taken in the past. Intraoral examination was performed which showed an erupting mandibular left third molar covered with inflamed peri-coronal flap. On contralateral side, the third molar was erupted and visible in the oral cavity. In the upper arch both right and left third molars were not erupted clinically. No other dental findings were observed apart from this. To confirm the presence of upper third molars and to see the condition of the lower left third molar a radiographic examination was carried out. On radiographic examination (orthopantomograph), mandibular left third molar was found with normal vertical position with insufficient space for its eruption (Figure 1). On further examination, it was found that roots of all third molars was bulky and bulbous with blunt root apices. The radiopacity was found all around the root encompassing entire length of the roots (Figure 1). This radiographic feature was not observed in other teeth. Finally based on the literature evidence and radiographic findings the case was diagnosed as localized idiopathic cemental hyperplasia or hypercementosis involving all four third molars. As patient's chief complaint was associated with left lower third molar, a treatment plan consisting of surgical extraction of this particular tooth was made and patient was scheduled for the surgical extraction under local anaesthesia.



**Figure 1: Orthopantomograph showing localized Cemental Hyperplasia or Hypercementosis involving roots of all four third molars (yellow arrows)**

## Discussion

There is no exact etiology behind the appearance of hypercementosis in human teeth. Literature shows various factors responsible for occurrence of hypercementosis like functional stress due to the occlusal forces, incorporation of periodontal cementicles during physiologic cementum deposition, traumatic occlusion, continuous dental eruption or supra eruption, reactionary deposition as a response to periapical inflammatory processes and systemic factors like acromegaly, paget's disease, hypertrophic arthritis, thyroid diseases and atherosclerosis [8].

Reports have shown a correlation between age and cementum thickness in erupted and in functional teeth. The occurrence of hypercementosis is related to conditions like functional stress arising from continuous dental eruption, occlusive force and incorporation of periodontal cementicles during physiologic deposition. It is shown that functional teeth exhibit a lower frequency of hypercementosis compared to non-functional teeth. The continuous occlusive force might inhibit formation of cementum around roots to

maintain shock absorption rather than adhesion to surrounding bony tissue [5]. The severity of hypercementosis increases with age of the patient. This has been shown in a recent CBCT study performed by Ohbayashi et al. Authors showed an increase in severity of hypercementosis as follows. In 19 years of age 0%, in 20-24 years 14.1%, in 25-29 years 57.7%, in 30-39 years 83%, in 40-49 years 92.7%, 50-59 years 93.4% and in 60 years 96.8% of cementum deposition was noticed. In this study authors also found that the incidence was significantly less for occluded teeth compared to non-occluded teeth [5]. A study involving 22,000 affected teeth revealed that the mandibular molars were reported most frequently followed by the mandibular and maxillary second premolars and the mandibular first premolars [6].

On radiographic examination, the excess cementum formed in this condition was diagnosed of two types [9]. In one type, the secondary cementum appears with similar density as compared to primary cementum and dentin. In another type, the secondary cementum appears less dense and is clearly

differentiated from the primary cementum and dentin [10-12]. In the present case, on radiographic examination the deposition of secondary cementum was categorized as type I because the cementum appeared similar in density as of primary cementum and dentin. The roots in these teeth affected by hypercementosis are separated from the periapical alveolar bone by a normal-appearing periodontal ligament space along with normal architecture of surrounding lamina dura.

### Classification of Hypercementosis/Cemental Hyperplasia

The rare entity, hypercementosis has been classified by various authors in numerous ways based on different criteria. Based on 1,160 CBCT image analysis, the severity of the hypercementosis occurring in mandibular third molars were evaluated by Ohbayashi et al [5] in 2021 and classified this condition into four types as Grade 0 to 3 (Table 1). Based on this classification, the hypercementosis condition occurring in the case presented here was classified as Grade 3. Because in all four third molars the hypercementosis was surrounding the entire root surface from cervical third of root to the root apex.

**Table 1: Grading of Hypercementosis based on CBCT evaluation (Given by Ohbayashi et al in 2021) [5]**

Grade	Description
0	No hypercementosis present
1	Hypercementosis surrounding less than half of the root surface
2	Hypercementosis surrounding more than half of the root surface
3	Hypercementosis surrounding the entire root surface

Pinheiro et al [8] classified hypercementosis into three types based on the macroscopic appearance and it is shown in Table 2. Among

these three types, the focal type was the most common type observed in many patients.

**Table 2: Pinheiro et al classification on Hypercementosis [8]**

Type	Description
Club shaped	Cementum forming around multiple foci of tooth roots
Focal	Cementum formation is limited to the root apex
Circular Cemental Hyperplasia (CCH)	Cementum formation around the entire root surface

Based on Pinheiro classification [8], the present case was classified as Circular cemental hyperplasia (CCH).

Based on the number of teeth affected with cementum deposition, there are two types of

hypercementosis as mentioned in the literature. They are localized and generalized type (Table 3) [1-3].

**Table 3: Types of Hypercementosis [1-3]**

Type	Description
Localized	<ul style="list-style-type: none"><li>• Affects single tooth</li><li>• Presents as generalized thickening of cementum with nodular thickening of apical third of root</li></ul>
Generalized	<ul style="list-style-type: none"><li>• Characterized by increased thickness of cementum involving all teeth</li><li>• Classical feature of Paget's disease or</li><li>• Most of the time associated with systemic conditions such as calcinosis, acromegaly, thyroid goitre, rheumatic fever and arthritis</li></ul>

Rushton and Cooke in 1959 explained that in rare cases, excessive occlusal trauma may lead to the formation of serrated hypercementosis or cemental spikes which follows the course of Sharpey's fibers [12-15]. Jeddy et al in 2014 [7] reported an unusual occurrence of hypercementosis in the form of multiple cemental spikes distributed throughout the entire length of the root similar to Rushton and Cooke's explanation. In 2015, Vijay and Chandan [6] reported a case of third molar in a 49-year-old Indian male patient in which following extraction the third molar exhibited a mammoth, dumbbell-shaped disto-buccal root due to excess deposition of cementum. This clinical feature is not described in none of the above classification systems. This indicates the necessity in upgrading of the existing classification system pertaining to cemental hyperplasia and should be incorporated into the existing literature including text books and atlas of dental anomalies.

The occurrence of hypercementosis is associated with several practical and clinical significances [13,16]. The influence of hypercementosis on endodontic prognosis and its direct influence on therapeutic procedures has a controversy in an endodontic field. There is a dilemma regarding whether to keep instrumentation and root canal filling above or beyond the cementum-canal junction in teeth with hypercementosis [8]. Moreover, hypercementosis also impairs apical limits for root canal preparation during endodontic treatment.

The diagnosis of third molar condition is highly essential following radiographic examination before the procedure of extraction [17-21]. Because surgical removal of third molars involves some occurrence of potential risks like inferior alveolar nerve damage, cortical bone fracture, postoperative infection and inflammation and lingual nerve damage. Therefore, presence of hypercementosis in turn complicates the surgical removal and its associated complications as well as post-operative sequel [22-23]. In some cases, sectioning of the tooth is required for easy removal of the impacted or erupted teeth. Recently, advanced imaging tools such as CBCT plays a major role in diagnosing such morphological variations occurring in third molars, its relation with adjacent anatomic structures and in treatment planning [22-24]. Very rarely hypercementosis occurs in more extensive form leading to fusion of two or more adjacent teeth by a layer of cementum [16]. This condition is called as acquired concrescence in the dental anomalies' literature. Nagaveni NB [16] recently published a rare case of concrescence between maxillary second and third molars in an Indian patient which was successfully extracted through surgical procedure.

It is been shown that functional stress is not the etiologic factor in many cases of hypercementosis [11]. Because third molar as like first molars are rarely or sometimes don't bear the brunt of the occlusal stress. Even in the present case stress was not the etiologic factor. Therefore, this factor was also ruled out.

Moreover, in a tooth with absence of opposing tooth, hypercementosis is usually manifest as a nodular thickening of the apical third of the root and occurs as an attempt to maintain the width of the periodontal ligament and to compensate the accelerated eruption of tooth. In the present case, patient was not having any systemic or metabolic diseases [6-10]. Therefore, these conditions were also ruled out and finally it was considered as due to aging or idiopathic nature, the hyperplasia of cementum might have occurred in the present case as reported in other publications.

In differential diagnosis, all radiopaque structures that occur in the vicinity of the root such as a dense bone island or mature cemento-osseous dysplasia should be considered [1]. The peculiar differentiating characteristic feature is the presence of the periodontal membrane

space around the tooth with hypercementosis cases. Other condition that also should be considered is the small cementoblastomas [1-6]. In addition to these, sometimes severely dilacerated roots also give the appearance of cemental hyperplasia [1].

## Conclusion

Occurrence of cemental hyperplasia or hypercementosis as presented in this article alarms all dental practitioners about the possible presentation of this rare condition during general dental practice. Clinicians should use either conventional radiographs or advanced imaging techniques before initiating any dental procedure as presence of hypercementosis influence the treatment outcome or complicates the treatment procedure.

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