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Rampant caries in adolescence

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Abstract
Rampant caries progresses at a faster rate and it involves multiple teeth which are usually considered immune to decay. Hence early diagnosis and initiation of preventive and restorative therapies are imperative in its management. Rampant caries can affect the early permanent dentition if the child has improper dietary habits and poor oral hygiene maintenance. This purpose of this report is to present a case of adolescent rampant caries in a 13 - year - old child. Endodontic treatment was done on the affected maxillary incisors and was then restored with polycarbonate crowns.

Keywords: rampant caries, polycarbonate crown, fiber post

1. Introduction

Rampant caries is a rapidly progressing type of caries involving many or all teeth which are usually not susceptible to decay. The etiology of rampant disease is multifactorial and has a close relationship with a number of risk factors like past caries experience, plaque accumulation, oral hygiene practices, dietary habits, attitude and health beliefs, presence of physically, mentally or socially compromising factors, saliva quality and quantity, related to systemic disease, medication, or alcohol and drug abuse, fluoride exposure, immune system, socioeconomic status, and tooth morphology [1].

During adolescence, some children have the habit of placing sweets, chocolates in the mouth before going to sleep which most likely results in the multiple carious involvements of maxillary incisors [2]. The pattern of such adolescent rampant caries is similar to that of early childhood caries involving the primary anterior teeth.

This article presents a case report of a 13 - year - old boy with severe carious involvement of all the permanent maxillary anterior teeth with a pattern similar to that of rampant dental caries in children. The carious destruction of maxillary incisors was so extensive that root canal therapy (RCT) was done, fiber posts were placed and restored with polycarbonate crowns.

2. Case Report

A 13 - year - old male patient was referred to the Department of Pedodontics and Preventive Dentistry with the chief complaint of pain and discolouration in relation to upper front teeth. There was a history of the previous visit to the nearby dental clinic and esthetic rehabilitation of the front tooth was done. On repeated episodes of pain, the patient was referred to the department for the complete rehabilitation of the multiple carious teeth.

Diet history of the child revealed that he had a habit of keeping food in the mouth for a longer period before swallowing. Even though the child had no much craving towards sweet foods he gives a history of frequent snacking and brushes his teeth only once daily. Deciduous teeth present were also similarly carious but they have not taken any treatment for the same expecting the newly erupting teeth to be caries free.

On clinical examination, all the upper incisors were discoloured and carious (Figure 1, 2). The first molars in the left side were grossly decayed, there was deep dentinal caries in upper right first premolar and pit and fissure caries in the erupted lower posterior teeth.

Treatment options of rampant caries were explained to the patient and root canal treatment were done on 22, 21, 11 and 12 and the patient was recalled for esthetic rehabilitation of upper anterior teeth. The patient failed to report for the recall visits and reported back after one month with a cervical third crown fracture on 21 and 22. Fiber posts were placed on 11 and 12 (Figure 3) and polycarbonate crowns were given on permanent maxillary incisors (Figure 4). Endodontic treatment was carried out in 26 and restored with stainless steel crowns. All the other carious surfaces were restored and proper dietary habits were explained to the child and parents and the required preventive measures were initiated.

Fig 1: Recurrent smooth surface caries in the upper anteriors

Fig 2: Palatal aspect showing discoloured and decayed upper anteriors

Fig 3: Fibre posts placed in 21 and 22

Fig 4: Polycarbonate crowns placed in relation to 12, 11, 21, 22

3. Discussion

Rampant caries has been described as a lesion of acute onset involving many or all of the erupted teeth, rapidly destroying coronal tissue, often on surfaces normally considered immune to decay, and leading to early involvement of the dental pulp [3]. Subjects with active, rampant dental caries were defined as those who had five or more new carious surfaces per year [4].

The pattern of rampant caries in young children is usually related to the order of tooth eruption, with the exception of the mandibular primary incisor. The mandibular incisors are probably more resistant to caries because of their proximity to the salivary glands as well as the cleansing action of the tongue during the process of suckling the bottle. The four maxillary incisors are usually the most severely affected, as they are normally among the first teeth to erupt and therefore have the longest exposure to the cariogenic challenge. In the severity of caries, the maxillary incisors are first followed by the first molars, second molars, and canines, depending on the eruption sequence. Teeth erupting after discontinuation of the cariogenic habit (for example, canines, second molars), are affected less than maxillary incisor [5].

The initial lesion usually appears on the labial surface of the maxillary incisors, near to the gingival margins, as a whitish area of decalcification or pitting of the enamel surface. These lesions soon become pigmented to a light yellow and extend laterally to the approximal surfaces and downward to the incisal edge. Less commonly, the decalcification may present initially on the palatal surfaces, or even at the incisal edge in some extreme cases. At a more advanced stage, the carious process will often extend around the circumference of the tooth, leading to pathologic fracture of the crown on minimal trauma [6,7].

Rampant caries can also be seen in the permanent dentition of teenagers if there is a frequent intake of cariogenic snacks and sweet drinks between meals. Typical rampant caries in adolescents is characterized by buccal and lingual caries of premolars and molars and proximal and labial caries in the maxillary incisors [6]. Johnsen *et al* have shown that children with early childhood caries who are receiving ongoing comprehensive dental care are more susceptible to lesions in approximal surfaces of primary molars than are children who are initially caries free.[8]

Infants with rampant caries are likely to develop the same condition in the permanent teeth unless successful preventive measures have been implemented. A specific form of rampant caries may occur in children and adolescents who have a greatly reduced salivary flow as a result of radiotherapy for the treatment of cancer of the head and neck region or as a result of the surgical removal of neoplasms in the oral cavity [6].

Various studies have shown that caries determinants during early childhood have an impact on approximal caries in adolescence. A strong relationship was observed between caries during preschool years and caries development in the permanent posterior teeth up to mid-teenage [9, 10].

If appropriate preventive measures are not implemented the faster carious progression can destroy the tooth structure and lead to early fracture of the tooth. This necessitates the need for complex endodontic and restorative treatment of the affected tooth.

Prefabricated crowns made from polycarbonate resin with microglass fibers can be considered ideal for short- or longer-term use, as an esthetic, temporary for patients with economic considerations. Polycarbonate material provides adequate strength and durability and can be contoured and crimped similar to metal crowns to yield easy adaptation to margins. The universal shade No. 62 can be adjusted using cements and liners for better esthetics in the anterior region.

Polycarbonate crowns, unlike stainless steel crowns, do not resist strong abrasive forces. Occasionally, fracture or dislodgment of the crown has been noted. The parents of a child receiving such a service should be made aware of these occasional problems [11].

The endodontically treated anterior tooth had little coronal tooth tissue remaining which necessitates the need of post to retain the core and restoration. Fibre posts were selected as various laboratory-based studies have shown that these posts have high tensile strength and modulus of elasticity, similar to dentine.[12,13] Fibre posts can flex under load and distribute stresses between the post and the dentine when compared to a rigid metal post which resisted lateral forces without distortion and resulted in stress transfer to the less rigid dentine causing potential root cracking and fracture [14].

4. Conclusion

The important factor in the treatment of rampant caries is to control the disease as early as possible. Patients with multiple active carious lesions require proper diagnosis and effective disease control. Caries risk assessment is necessary to evaluate optimal therapeutic regimens for prevention, diagnosis, non surgical treatment, and management of caries as an infectious disease.

Successful management of rampant caries needs a coordinated team approach among the pediatrician, pediatric dentist, parents, and the child. The pediatrician should educate the parents about good nursing and dietary habits and the importance of good oral hygiene to the general health of the child. The parents should be encouraged to bring their child to the dental office within the first year of life for a screening examination and oral health checkup and to plan necessary interventions and preventive programs as required.

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