

RECONSTRUCTION OF A RARE ECCENTRIC CASE OF AMELOGENESIS IMPERFECTA - A CASE REPORT

Dentistry

Pravin E. Raipure*	MDS, Assistant Professor, Department of Prosthodontics, Nair Hospital Dental College, Mumbai *Corresponding Author
Vishwas Kharsan	MDS, Professor, Department of Prosthodontics, Nair Hospital Dental College, Mumbai
Ravindra Pawar	MDS, Assistant Professor, Department of Prosthodontics, Nair Hospital Dental College, Mumbai

ABSTRACT

This clinical case report shows an invariable pattern of Amelogenesis Imperfecta involving only posterior teeth. Amelogenesis Imperfecta is known to be a developmental disturbance disorder during the enamel structure formation. It is a rare disorder but is encountered most commonly in day-to-day practice with varying degrees of frequency. The present case describes the rehabilitation of the affected posterior teeth with conventional PFM crowns and bridges. The final treatment result provided the patient with improved esthetics and functional efficiency.

KEYWORDS

Amelogenesis imperfecta, Rehabilitation, Esthetics, Developmental disorder, Discoloration.

INTRODUCTION

Amelogenesis imperfecta (AI) is a developmental structural disease of an enamel that characterizes clinically with pitted, grooved, opaque or chalky thin enamel structure and is at risk of spontaneous fracture.¹ These defects, which vary amongst affected people, can affect both multiple teeth or all of the teeth in less or equal intensity.² It is usually categorized into 4 major types depending upon its morphologic and genetic configuration: hypoplastic, hypomaturation, hypomineralized/hypocalcified, and hypomature-hypoplastic enamel.³ Amongst above four categories, hypoplastic is the most commonly encountered as compared to hypomaturation and hypomineralized type.⁴ AI can be X-linked or autosomal-inherited and mutations in the amelogenin gene (AMELX) results in X-linked AI whereas mutations in the enamelin gene (ENAM) causes autosomal-inherited forms of amelogenesis imperfecta.⁵ These proteins are concerned with the formation of tooth, that is the hard, calcium rich that protect the outer layer of each tooth.⁵ As a result, mutations in these genes results in abnormally thin or tender and can have a yellow or brown shade and are at risk of fracture. The whole treatment plan for a patient affected by amelogenesis imperfecta (AI) have to be aimed at shielding the complete stomatognathic system and protecting the affected teeth.⁶ The above case indicates one such variance of AI presenting with brownish discoloration of only posterior teeth which was rehabilitated with the full coverage PFM restorations.

Clinical Report

The patient reported in our institution presenting with a dark yellowish brown discoloration of posterior teeth, some of them pitted and grooved (Fig.1A-D). There was no familial history, and medical history was not relevant. The patient had these discolored teeth since childhood, and his deciduous teeth were similarly discolored too. The patient's complete history was taken, which revealed that the patient used to live in a remote place where his family used to drink borewell water. This was the only relevant previous history.

On intra-oral examination, there was generalized yellowish-brown discoloration of all the posterior teeth along with pitting of occlusal surfaces. Based on previous history and clinical examination a tentative provisional diagnosis of amelogenesis imperfecta was made. The patient was advised OPG that showed generalized thinning of enamel on maximum tooth surfaces and enamel was even absent in certain areas (Fig.2). So on the basis of history, clinical findings, and radiological report, the case was diagnosed as Amelogenesis imperfecta.

The diagnostic impressions were made using Alginate impression material (Tropicalgin Zhermack) and the facebow record was taken with the centric and protrusive records. The diagnostic mounting was done as per the centric records and careful examination of the occlusion, vertical dimension, and occlusal interferences were assessed (Fig.3). Diagnostic wax-up was done maintaining the same vertical dimension of the patient (Fig.4). The posterior teeth on right quadrant were prepared and temporary crowns/bridges were given

maintaining the same vertical dimension. Similarly, the posterior teeth on the left quadrant were prepared and temporaries were given. The temporary restorations were assessed for 15 days for any esthetic, functional impairments, and comfort (Fig.5). After 15 days when the patient was comfortable with the temporaries at that vertical dimension the final impressions were planned. Before making final impressions, the anterior jig was made with impression compound maintaining the same posterior occlusion as per the cemented temporaries in centric relation. The anterior jig index was taken out and then the posterior temporaries were removed. The bite registration was taken on the posterior teeth as per the anterior jig index previously taken, which maintained the same vertical dimension (Fig.6).

The metal trial was evaluated in the patient's mouth before the ceramic build-up to verify the fit and accuracy (Fig.7). The final pfm crowns were then cemented with all the posterior teeth (Fig.8). The protrusive and intrusive interferences were evaluated and rectified. Canine-guided occlusion was given on the left side and group function was maintained on the right side as the distal incisal slope of mandibular right canine was having minimal contact with the maxillary canine. The patient was given the option of all ceramic zirconia restoration on posterior teeth but he opted for PFM restoration. The patient was suggested to go for the rehabilitation of anterior teeth for better esthetic results but due to the poor economic conditions of patient, he opted to do it later.

DISCUSSION

The above case may be provisionally diagnosed as hypoplastic type of amelogenesis imperfecta based on the clinical presentation and radiological findings. It appears to be purely genetic in origin and not hereditary in nature, based on his family history. These enamel defects can present with discoloration, pitting, grooved to complete absence of enamel matrix.⁷ Various classification systems have been proposed for the different types of AI. Witkop in 1988 gave classification of AI which was widely recognized, which was amended by Nusier in 2004.⁸ In this case the patient presented with complaints of dentinal sensitivity, loss of tooth structure, and esthetics. Various concepts were stated by many authors regarding the planning of such cases depending upon the type and severity of the disease, age and socioeconomic status of the patient.⁹ The line of treatment to such patients should be aimed at protecting the orofacial musculature, TMJ, and debilitated teeth by restoring it with full coverage restorations which preferably shouldn't be bonded as the enamel thickness is less.¹⁰ The treatment plan suggested by Gokce et al and Sari et al focuses on the PFM restorations as one of the alternative for bonded restorations as bonded restorations might lead to poor marginal adaptation and periodontal breakdown.¹¹⁻¹² In this present case, porcelain fused to metal restorations was preferred on the posterior teeth for better long-term stability, satisfactory esthetics, and protection of the remaining tooth structure. The patient was suggested to go for the rehabilitation of anterior teeth for better esthetic results but due to the poor economic conditions of the patient, he opted to do it later. The follow-up of 1 year has been done till date with no postoperative problems in function and esthetics. The need to

do further follow-up is required for this case and in the future the patient might demand the rehabilitation of the anterior teeth for better esthetics. Furthermore, there is a need to investigate the unique characteristic of involvement of only posterior teeth affected by amelogenesis imperfecta which is a rare entity.

Summary

Management of such rare entity of amelogenesis imperfecta, where majorly posterior teeth were affected possess a challenge to restorative dentist in terms of shade matching with the remaining anterior teeth besides restoring the form, function and vertical dimension of the patient. The limitation of the removal of adequate tooth structure during preparation due to hypersensitive dentin resulted in mild overcontoured PFM restorations. The regular follow up of the restoration every 6 months is necessary as most of the posterior teeth were not endodontically treated. The need for restoring the anterior teeth should also be considered in future for better esthetics.

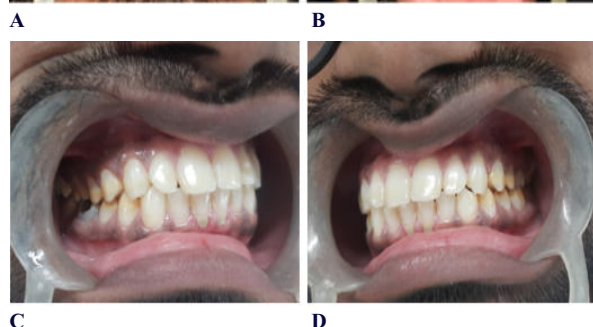


Figure 2. OPG

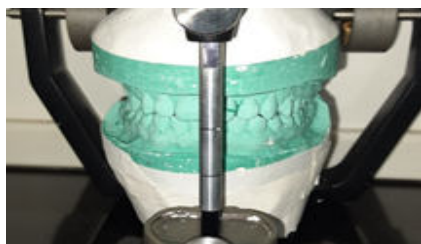


Figure 3. Diagnostic mounting.



Figure 4. Diagnostic wax up.



Figure 5. Provisional restoration.



Figure 6. Anterior jig and centric bite.



Figure 7. Metal trial.



Figure 8. Final postoperative picture.

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