RESTORING FUNCTION AND AESTHETICS IN AMELOGENESIS IMPERFECTA: A CASE REPORT

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ABSTRACT

Amelogenesis imperfecta represents a group of hereditary defects of enamel requiring treatment due to aesthetic, functional and related psycho-social problems. This paper reports the management of 19 year old male with amelogenesis imperfecta by conservative and prosthetic rehabilitation with zirconia and metal ceramic restorations.

Keywords: Amelogenesis Imperfecta; Zirconia Crown

Introduction

Amelogenesis imperfecta (AI), is a group of hereditary conditions primarily affecting the enamel, has been associated with dental anomalies, including taurodontism, congenitally missing teeth, delayed eruption.1,2 This enamel anomaly affects both the primary and permanent dentition.3 AI has been categorized into four broad groups based on phenotype- hypoplastic, hypo-calcified, hypomaturation and hypomaturatio-n-hypoplastic.3,4 According to the mode of inheritance at least 15 subtypes of AI exist.5,6 According to the literature, AI patients, regardless of subtype, have similar oral complications: teeth sensitivity, poor dental aesthetics, and decreased occlusal vertical dimension.6,7

Metal-free all-ceramic restoration has become popular due to their high esthetic potential and excellent biocompatibility.8 In comparison with other all-ceramic systems, yttrium-stabilized tetragonal zirconia polycrystalline exhibit superior mechanical properties.9 Rough and irregular junctions increase the length of the margin and reduce the adaptation of restoration. Retention and marginal discrepancy affects the longevity of restoration and the periodontal health.10,11 Advances in dental ceramic materials and processing techniques have increased the strength and improved the fit of ceramic restoration. CAD/CAM technology has facilitated the development and application of excellent dental ceramics.12 This paper reports the management of two cases of amelogenesis imperfecta by conservative and prosthetic rehabilitation with zirconia and metal ceramic restorations.

Case Report

A 19 years old male patient was referred to Department of Prosthetic Dentistry, Inonu University for aesthetic rehabilitation. The patient complained of poor aesthetics and inability to chew food with anterior teeth. On clinical examination functional inadequacy of maxillary and mandibular permanent teeth presented with no abnormal medical history or systemic problems except for Amelogenesis imperfecta. History reveals that patient had an unsuccessful orthodontic treatment and veneer crown restorations. Clinical and radiographic examination of the patient revealed Angle Class II dental relationship, short clinical crowns, exposed dentin in posterior teeth. All molar teeth had treated with veneer crowns and the left lower second molar tooth was impacted. Upper right second premolar, upper left first and second premolar and lower left second premolar teeth were missing. The patient had acceptable oral hygiene and plaque index (PI) especially in posteriors with positive, gingival index (GI), and the bleeding on probing indexes (BOP) were negative. All teeth were prepared with a circumferential shoulder margin under local anaesthesia. The external layer of teeth was removed to reach layers of healthy tissue that would ensure a good adhesion. For the fabrication of acrylic provisional irreversible hydrocolloid impressions were taken. They were cemented with non-eugenol zinc oxide cement. Final impressions were made with a silicone impression material. The zirconia frameworks were fabricated and evaluated intraorally to determine the marginal fit. The patient’s natural occlusal scheme (canine-protected occlusion) and anterior guidance were preserved in the definitive restorations to decrease lateral forces on the posterior dentition. The crowns were completed and cemented with Duolink dual-cured resin cement. The patient was monitored for two years.

Discussion

Amelogenesis Imperfecta has been classified into four groups, based on clinical and radiographic features, histologic appearance and mode of inheritance: Type 1 Hypoplastic; Type 2 Hypocalcification; Type 3 Hypomaturation and Type 4 hypomaturatio-n-hypoplastic.12,13 Patients with amelogenesis imperfecta are often aesthetically and functionally affected because of tooth discoloration, with accompanying hypersensitivity and loss of vertical dimension of occlusion.14 Historically, treatment of patients with amelogenesis imperfecta has included multiple extractions and fabrication of complete dentures. Currently, metal based and Zirconium oxide-based restorative materials are used. Zirconium oxide-based restorative materials have excellent mechanical properties and low bacterial adhesion and they are biocompatible. Also new CAD/CAM blocks can use for these patients. At the end of the treatment, full coverage restorations are likely most effective to manage excessive material loss and poor aesthetics in patients with AI. In this case in addition to replacing the material loss of teeth, the Class II relationship and increased over jet were corrected. Functional and aesthetic expectations were satisfied. The result was stable after two years. There were no fracture or cracking on the surface of porcelain veneer surface and there were no gum recessions at the edges of the restorations. Periodontal examination was conducted and plaque index (PI), gingival index (GI), bleeding on probing indexes (BOP) were evaluated and the results were within the normal range.
Restoring function and aesthetics in amelogenesis imperfecta: A case report

Conclusion
In conclusion, conservative and prosthetic rehabilitation with zirconia and metal ceramic restorations in the management of AI can be achieved by an accurate diagnosis, meticulous treatment planning.

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