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Case Report

Rehabilitation of Amelogenesis Imperfecta- A Case Report

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Abstract: Amelogenesis imperfecta (AI) is a developmental condition affecting the enamel structure and quality of all or nearly all the teeth. Rehabilitation of a patient with AI is a major challenge to the prosthodontist. The affected teeth have a yellowish discoloration and significant attrition associated with it. The treatment plan depends on the age as well as the functional and esthetic need of the patient. The psychological impact of the disease and the improvement of the psychological aspect should also be taken into consideration. The following is a case report of a twenty-three-year-old male, with compromised occlusion and poor esthetics owing to Amelogenesis Imperfecta. The affected teeth were restored using metal ceramic crowns. The esthetic, functional and psychological demands of the patient were fulfilled.
Keywords: Amelogenesis imperfecta, full mouth rehabilitation, metal ceramic crowns, Occlusal stability

INTRODUCTION

Amelogenesis Imperfecta (AI) constitutes a complex condition affecting the developing enamel structure and involves primary as well as the permanent dentition [1-4]. The mutations occurring in the genes controlling Amelogenesis is the most probable cause and has an autosomal dominant, autosomal recessive or X-linked pattern of transmission. The incidence of varies between 1:700 and 1:16,000, depending on the population and the diagnostic criteria used [4-7]. AI have been broadly classified into— hypoplastic, hypocalcified, hypomaturation, and hypomaturation-hypoplastic [1-4,8-10]. Amelogenesis imperfecta is an important condition that causes accelerated wear of teeth. The contributing factors for excessive wear of teeth are evaluated and should be removed or reduced if possible. The following case report describes the sequenced treatment of a young patient with Amelogenesis Imperfecta.

CASE REPORT

A 23-year-old male patient reported to Dept. of Prosthodontics with the chief complaint of discoloration of teeth. A detailed medical and dental history was recorded. The family history was not relevant. A thorough intra-oral examination revealed yellowish brown discoloration of all teeth with mild attrition, generalised spacing and mild proclination of the anterior teeth (figure 1). The oral hygiene was satisfactory. The patient was diagnosed to have AI. Diagnostic alginate impressions (ALGIPLAST, INDIA PVT.) were made to fabricate study casts which were analyzed to formulate a treatment plan. Patient education regarding the treatment and oral hygiene maintenance was done. It was decided to rehabilitate both arches using metal ceramic restorations.

Fig-1: Preoperative View

Diagnostic casts were mounted on a semi-adjustable articulator (Dentatus Articulator type ARL) with the help of a face-bow. A hard wax record (Bite registration wax) was taken at a slightly raised vertical dimension of about 2mm and this was used to mount the mandibular cast in centric relation. Auto polymerized acrylic resin jig was made so that it could

be positioned between the maxillary and mandibular anterior teeth of the articulated cast (Figure 2). Acrylic jig was used as an index during tooth preparation. Canine protected occlusal scheme was planned considering the age and periodontal health of the patient.

Fig-2: Acrylic Jig

The maxillary and mandibular posterior teeth were prepared using the centric jig as an index. Full crown preparations were done on the maxillary and mandibular posterior teeth except the third molars. Gingival retraction was done and maxillary and mandibular impressions were made with polyvinyl siloxane (ELITE HD DENTSPLY). The posterior segmental relationship was then registered using bite registration paste (Bitrex, EQUINOX Germany) with the resin jig in place. Shade selection was done (A2 shade was selected-VITA CLASSIC SHADE GUIDE).

Provisional restorations were fabricated using autopolymerising acrylic resin by indirect technique. The patient was allowed to wear these provisional restorations for a period of 2 weeks to confirm the functional acceptance of the occlusal design. They were cemented in place with non-eugenol temporary cement (Freegenol). Patient was recalled after a period of 2 weeks. Metal copings (wironet, Germany) were fabricated and tried intra-orally to verify marginal fit and accuracy. Bisque trial for mandibular and maxillary posterior crowns was done. The occlusion was checked in centric and eccentric positions. Once proper occlusion was established, the maxillary & mandibular metal ceramic crowns were glazed and cemented in place with Glass ionomer cement (GC CORP, JAPAN) (Figure 3 & 4).

Fig-3: Maxillary posterior crowns and anterior tooth preparations

Fig-4: Mandibular posterior crowns and anterior tooth preparations

The patient was given instruction regarding oral hygiene and diet and to report after 2 weeks. The patient was found to be comfortable with the restorations. Then the next phase of treatment was undertaken to restore the maxillary and mandibular anterior teeth. Full crown preparations were done for all the six maxillary and mandibular anterior teeth (Figure 3 & 4). Poly vinyl siloxane impressions (ELITE HD DENTSPLY) were made and poured in type IV dental stone to obtain working casts. Provisional crowns were fabricated for the anteriors using auto-polymerizing acrylic resin. The metal ceramic crowns were fabricated to be in harmony with the pre-established vertical height. Try in of metal copings followed by bisque trial was done. After ascertaining the patients comfort levels, the glazed crowns were cemented into place using Glass ionomer cement (GC CORP, JAPAN) (Figure 5).

Fig-5: Post-operative View

The patient was educated regarding oral hygiene and maintenance of the crowns. Recall evaluations at 2-month interval was done. The patient was satisfied as his esthetic and functional expectations were met.

DISCUSSION

Management of AI in the young adult using fixed prosthodontics is not a novel approach, but is possibly an underutilized one [11]. Treatment planning for Amelogenesis Imperfecta depends on many factors like age of the patient, socioeconomic status, the type and severity of the disorder, and the intraoral situation at the time of treatment planning [12]. Usually the affected teeth show soft enamel of normal thickness that chips and wears easily and has a radiodensity similar to that of dentin. The various symptoms include discoloration, pitting and staining of enamel, occlusal wear or chipping, sometimes exposing dentin, tooth sensitivity and a possible loss of vertical dimension of occlusion [13]. Occlusal wear is most often attributed to attrition and results in occlusal disharmony, functional and esthetic impairment. Pulpal pathology may also accompany.

Evaluation of the existing vertical dimension of occlusion is an important step in fixed prosthodontic treatment. Various techniques like phonetics, interocclusal distance, facial soft tissue contour, cephalometrics, electromyography and patient's neuromuscular perception have been used with success [14]. Dawson stated that even when the teeth have gone down to the gum line, the vertical dimension is not lost because of the eruption of the teeth along with the alveolar bone. The potential problems of restoring the vertical dimension are clenching, muscle fatigue, soreness of teeth, muscles and joints, headache, intrusion of teeth, fracture of porcelain, occlusal instability due to shifting of restored teeth and continual wear [15]. Carlsson *et al* concluded that moderate increase in vertical dimension of occlusion does not create problems provided occlusal stability is provided [16]. Checking and periodic occlusal adjustment up to a year is mandatory to assess occlusal stability.

The various forms of treatment of teeth affected by AI include inlays, onlays, crowns, laminate veneers, overdentures, implants etc. and the treatment options depend on the severity of the disease. For many years the most predictable and durable esthetic restoration of anterior teeth has been achieved with jacket crowns [17]. In case of severely affected cases root canal therapy followed by crowns or extraction followed by fixed or removable partial prosthesis may be advised. Despite the disadvantages such as lack of marginal adaptation and poor bonding [18] porcelain laminate veneers have become the best treatment option for anterior teeth as it is considerably conservative and esthetic [19].

Considering the age of the patient in this particular case, individual metal ceramic crowns with a canine guided occlusion were inserted. The occlusion was restored with minimal overjet and overbite. During & after the treatment oral hygiene and dietary advice were reinforced to prevent future problems. A periodic review of the patient's oral hygiene and periodontal health was done to achieve long term success. Psychological health is also an important aspect which improved tremendously following the treatment.

CONCLUSION

Complete occlusal rehabilitation in patients having AI is challenging due to the fact that replacement of the lost tooth structure and restoration of the lost vertical dimension of occlusion have to be carried out simultaneously. The early rehabilitation of patients with AI is critical to prevent the progressive loss of vertical dimension of occlusion. The appropriate intercuspation and the exact vertical height will allow the temporo-mandibular joint to function in a stable & healthy manner. Treatment not only helps in improving the function and esthetics; but also provides a boost in the self-confidence.

REFERENCES

1. Weinmann JP, Svoboda JF, Woods RW. Hereditary disturbances of enamel formation and calcification. J Am Dent Assoc. 1945;32:397-418.
2. Aldred MJ, Savarirayan R, Crawford PJM. Amelogenesis imperfecta: a classification and catalogue for the 21st century. Oral Diseases. 2003;9:19-23.
3. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial Pathology. 2nd ed. Philadelphia: Elsevier. 2002;89-94.
4. Witkop CJ, Rao SR. Inherited defects in tooth structure. Birth Defects Orig Artic Ser. 1971;7:153-84.
5. Backman B, Holm AK. Amelogenesis imperfecta: prevalence and incidence in a northern Swedish county. Community Dent Oral Epidemiol. 1986;14:43-7.
6. Sundell S, Koch G. Hereditary amelogenesis imperfecta. Epidemiology and clinical

classification in a Swedish child population. Swed Dent J. 1985;9:157-69.
7. Witkop CJ. Hereditary defects in enamel and dentin. Acta Genet Stat Med. 1957;7:236-9.
8. Sundell S, Valentin J. Hereditary aspects and classification of hereditary amelogenesis imperfecta. Community Dent Oral Epidemiol. 1986;14:211-9.
9. Witkop CJ. Amelogenesis imperfecta, dentinogenesis imperfecta and dentin dysplasia revisited: problems in classification. J Oral Path. 1988;17:547-53.
10. Aldred MJ, Crawford PJM. Variable expression in amelogenesis imperfecta with taurodontism. J Oral Pathol Med. 1988;17:327-33.
11. Mink JR, Okeson JP. Fixed prosthodontics for the young adolescent.In: Goldman HM. Current therapy in dentistry. Vol VI. St. Louis: Mosby.1977;493-5031.
12. Sari T, Usumez A. Restoring function and esthetics in a patient with amelogenesis imperfecta: a clinical report. J Prosthet Dent. 2003;90:522-5.
13. Seow WK. Clinical diagnosis and management strategies of amelogenesis imperfecta variants. Pediatr Dent. 1993;15:384-93.
14. Sharry JJ. Complete denture prosthodontics 3rd edition.
15. Dawson DE. evaluation, diagnosis and treatment of occlusal problems St. Louis, C.V. Mosby.
16. Carlsson. Effect of increasing vertical dimension on the masticatory system in subjects with natural teeth. J Prosthet Dent. 1979;41:284-289.
17. Peumans M, Van Meerbeek B, Lambrechts P, Vanharle G. Porcelain veneers: a review of the literature. J Dent. 2000;28:163-77.
18. Karlsson S, Landahl I, Stegersjo G, Milleding P. A clinical evaluation of ceramic laminate veneers. Int J Prosthodont. 1992;5:447-51.
19. Zalkind M, Hochman N. Laminate veneer provisional restorations: a clinical report. J Prosthet Dent. 1997;77:109-10.