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Full Mouth Rehabilitation of Amelogensis Imperfecta Patient; A Case Report

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ABSTRACT

Amelogenesis imperfecta (AI) is a hereditary developmental disorder affecting deposition, calcification, or maturation of dental enamel. In general, it affects all or nearly all of the teeth in both the primary and permanent dentitions leading to functional as well as esthetic inadequacies. Henceforth, early recognition followed by appropriate preventive care and oral rehabilitation is essential in the successful management of AI. This clinical report discusses the oral rehabilitation of 24-year-old lady diagnosed with hypoplastic type of AI. Management strategies include PFM veneers for anterior teeth and posterior teeth and some implant supported crown in maxillary left posterior region. This approach decreased tooth sensitivity and enhanced esthetics, function, and boosted the self-esteem of the patient.

Keywords: Amelogenesis imperfecta, sinus lift, full mouth rehabilitation.

INTRODUCTION

Amelogenesis imperfecta is a group of rare genetic conditions in which the outer layer of the teeth (enamel) fails to develop properly. People with Amelogenesis imperfecta will have small, yellow, or brown teeth that are very prone to damage and breakage.

Amelogenesis imperfecta is caused by mutations in the genes AMELX, ENAM, or MMP20. These genes are responsible for making the proteins needed for normal formation of enamel. Enamel is the hard, mineral-rich material that forms the protective outer layer of your teeth. A mutation in any one of these genes can prevent it from making the correct protein; leading to enamel that is thin or soft.AI has been classified on the basis of clinical, radiographic, and histologic appearance of the enamel defect and the mode of inheritance of the trait. AI has been categorized as hypoplastic (autosomal dominant/autosomal recessive/x-linked dominant), hypocalcified (autosomal dominant/autosomal recessive), hypomaturation types (autosomal recessive/x-linked recessive/autosomal dominant) and hypoplastic-hypomaturation type. Hypoplastic AI represents 60 to 73% of all cases, hypomaturation AI represents 20 to 40%, and hypocalcification AI represents 7%.[1,2]

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The hypoplastic type accounts affects mainly females.[2,3] The enamel is usually thin but of normal hardness, and there is a deficiency in the quantity of enamel that is properly mineralized. The surface is usually smooth but with localized areas of thicker enamel resulting in an abnormal crown contour. Alternatively, the enamel may be pitted or have horizontal or vertical ridges.[4,5] The crowns appear to be hard and shiny and have normal to opaque white or yellow-brown color and may be malformed. The hypomaturation type affects usually occurs in males.[6] It is caused by defect in the final growth and maturation of enamel crystallites. The thickness of the enamel is initially normal; however, it is lost soon after eruption because of its poor mineralization and reduced hardness, thereby exposing the underlying dentin.[7,8]

Hypocalcified AI is thought to result from a defect in initial crystallite formation followed by defective growth. The enamel is insufficiently mineralized and extremely soft and clinically appears as chalky and dull in color with the susceptibility of a rapid break down. [9] Literature supports that irrespective of the subtype AI patients show similar oral complications such as extensive loss of tooth tissue, poor esthetics, and tooth sensitivity. [7-10] Pulp and dentin are usually normal, and the teeth are usually caries resistant. Other dental anomalies associated with AI include abnormalities in dental eruption, congenitally missing teeth, pulpal calcifications, root and crown resorption, hypercementosis, root malformations, taurodontism, and open bite malocclusion.[11-14]In addition to causing functional

and esthetic concern, it also has a profound psychological impact affecting the individual's self-esteem and social interactions. Since they are not conditions caused by neglect and cannot, yet, be prevented.[14] This clinical report outlines the management of children with hypoplastic type of AI. In this case report, step by step full mouth rehabilitation of a young lady patient suffering from Amelogenesis Imperfect (AI) is described.

CASE REPORT

Figure 1: Pre-treatment front view and intraoral view

Figure 2: Pre-treatment front view and intraoral view

Figure 3: Pre-treatment front view and intraoral view

A 25 year female patients was reported in Career Post Graduate Institute of Dental Sciences with chief complaint of poor esthetic and difficulty in eating since 2 years. Patient was asymptomatic 2 years back then she noticed unaesthetic appearance due to worn out and discolored teeth. She has lost some of her upper and lower posterior teeth due to caries and periodontal disease. Patient underwent extraction of maxillary and mandibular posterior teeth 6 months back. Patient brushes once daily with toothpaste. During intra oral soft tissue examination marginal inflamed gingiva was found. Bleeding and probing was present. Hard tissue examination showed stain and calculus. Attrition was seen wrt. 14, 15, 16, 17, 27, 37, 44, 45, 46, 47. Generalized spacing in lower and upper anterior teeth. Missing teeth- 24, 25, 26, and 36. Root canal treated treated-14,15,16,35,37,45. Patient was having Canine guided occlusion. After history, clinical examination and radiographic correlation, patient was diagnosed with hypoplastic Amelogenesis Imperfect. [Figure 1-3]

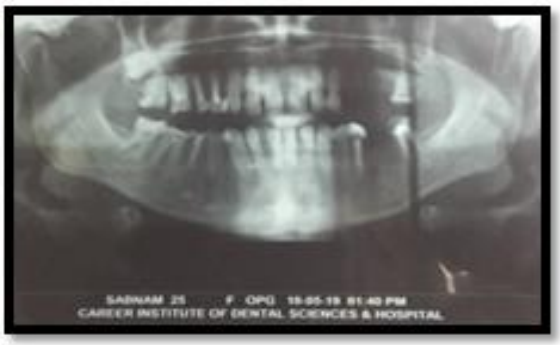

Figure 4: Pre-treatment OPG

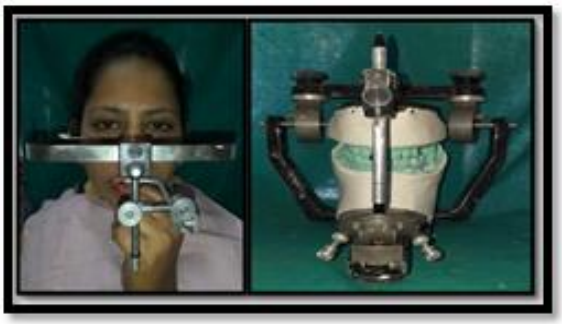

Figure 5&6: face-bow record

Figure 7: Temporization

Multiple Treatment options given to the patient was; light cure GIC veneers, composite veneers, porcelain laminates, all ceramic crown for anterior region and pfm for posterior region, implant

supported FDP wrt. 24,25,26, cast partial denture, flexible rpd. Finally, patient was agreed on full mouth rehabilitation with PFM crowns and implant supported fixed dental prosthesis in relation to -24, 25, 26. [Figure 1-4]

Figure 8: implant placement

Figure 9: Post treatment-OPG

Figure 10: Pre-treatment intraoral view

Figure 11: Post-treatment intraoral view

Steps:

First scaling and polishing was completed.Tentative jaw record was taken with facebow. [Figure 5,6] Diagnostic wax-up followed by crown lengthening-44, 45, 46 done. Endodontic treatment wrt-14,15,16,17,27,35,37,45,44,46 done. Full mouth rehabilitation with Pankey Mann Schulyer Technique was planned. First the upper anterior teeth are prepared followed by lower anterior and then lower posterior teeth followed by upper posterior teeth

After temporization implant was placed wrt 24,25,26. [Figure 7,8] Second stage surgery and loading was done after 4 months of Osseo integration period. Implant protected occlusion was given on 24,25,26. After six-month follow-up, patient was satisfied with esthetics and function. [Figure 9-12]

Figure 12: post-operative smiling view

DISCUSSION

The main symptom of amelogenesis imperfect is defective enamel. This occurs in both baby teeth and adult permenant teeth. In general symptoms include,smaller than normal teeth, yellow or brown discolouration of the teeth that are prone to damage and breakage, sensitive teeth. There are various treatment options available for amelogenesis imperfect patients. The most predictable and durable esthetic treatment option is to restore the affected teeth with complete crowns. Though the treatment of AI with crown requires tooth preparation, but still this treatment option is more suitable as other requires extraction of remaining teeth and placement of implant or removable prosthesis. Implant placement requires surgical interventions and lots of expenses. As patient was not ready to wear removable prosthesis, so the

rehabilitation with fix crown is more appropriate treatment of choice.[15-18]

In this case report patient was having hypoplastic amelogenesis imperfecta. In this type of AI, her dental enamel was very thin, yellow brown ditches and depression was present. Patient lost her self-confidence due to discoloured teeth. Immediate rehabilitation of her smile and some teeth structure was necessary as she was going to marry soon.so the treatment given to her was CAD-CAM PFM crown after root canal treatment, and some implant supported crown on missing areas. The CAD CAM PFM crowns have excellent mechanical properties at low cost. These crowns restored her smile and she gained her self-confidence. As patient was not ready for removable prosthesis on upper left molar region so implant supported prosthesis was planned.[19,20]

In this case report 6 month follow-up showed good results and esthetics. Patient was fully satisfied with form, function and esthetics.

CONCLUSION

In the mentioned case report, esthetic and functional rehabilitation of hypoplastic AI was performed with the use of CAD CAM PFM crown and implant supported prosthesis. The treatment plan for case of AI is related to many factors: The age of the patient, the socioeconomic status of the patient, the type and severity of the disorder, and the intraoral situation at thetime the treatment.The patient's functional and esthetic expectations were achieved and no problem was detected at the 6-month clinical visit. The cumulated evidence on outcomes of alternative restorations for each type of AI is critically needed. With such evidence, clinicians may then select more favorable approaches to treat individual AI patient and to optimize their patient's oral health and long term prognosis.[20]

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