

Rehabilitation of Maxillary Anterior with Different Ceramic Materials: A Case Series

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Abstract: - In today's world of dentistry, esthetic is one of the primary factor for overall benefit. Every individual in this world wants to look beautiful and every dentist wants to make esthetically a perfect restoration for the patient. Following the introduction of the first feldspathic ceramic, there has been tremendous increase in demand of ceramic restoration. Ceramics are the earliest group of inorganic material to be structurally modified by man. Dental ceramics are known for their natural appearance and their durable chemical and optical properties. In this case series we are going to discuss about various different ceramic materials used for various simple case scenarios for better esthetic outcome.

Key Words: — *Esthetic, Maxillary Anterior, Ceramic, Metal Ceramic, Zirconia layered Emax, All Ceramic.*

I. INTRODUCTION

Missing teeth in the zone of esthetic has a psychological as well as esthetic effect on patient. Rehabilitation of what is missing with proper understanding and proper choice of material is beneficial.

Dental Ceramics is defined as “An inorganic compound with nonmetallic properties typically consisting of oxygen and one or more metallic or semi metallic elements that are formulated to produce the whole or part of a ceramic based dental prosthesis.” (1)

Due to the property of brittleness, historically the ceramic restoration was used in combination with metal know as porcelain fused to metal or ceramo metal restoration which increased the strength of restoration. (2)

The development of all-ceramic systems for dental restorations has been noteworthy in last three decades. New processing techniques such as heat-pressing, slip-casting, and Computer Aided Design-Computer Aided Machining (CAD-CAM) for dentistry have been developed. In all ceramic restoration, core is itself made up of ceramic hence esthetic outcome of such restoration is excellent (3).

Zirconium dioxide is a crystalline metal oxide that is used in the ceramic industry. It is a crystalline solid; white in colour appears in a mineral Baddeleyite. It is considered as one of the restorative material due to high mechanical properties (4).

In this article three cases of replacement or rehabilitation of missing maxillary anteriors by using porcelain fused metal ceramic, all ceramic Emax and Zirconia Layered with Emax are presented.

II. CASE PRESENTATION

Case 1: A 15year old male patient reported to the department of prosthodontics with the chief complaint of poor esthetic due to fracture teeth in upper anterior region. Extraoral examination showed tapering facial form, straight profile. The lip length was average. Intraoral examination showed Root Canal Treatment done and Ellis class 2 fracture with 11, 21 (Figure 1). As the amount of tooth structure was less so it was decided to do prefabricated post and composite core build up and restoration with porcelain fused metal crown with 11, 21.

A diagnostic impression was made using irreversible hydrocolloid and diagnostic mockup was done. Mock up trial was done. Shade selection was done. Post space was prepared for root canal treated 11, 21 for placement of prefabricated metal post followed by composite core build up. Tooth preparation was done to achieve sufficient ferrule followed by chemico-mechanical method of gingival retraction (Figure 2). Final impression was made using addition silicone elastomeric impression material metal copings were fabricated and tried in patient's mouth (Figure 3). Ceramic build up was done. Final crowns were cemented using zinc phosphate luting cement (Figure 4).

Case 2: A 30-year-old female patient reported to the department of prosthodontics with the chief complaint of poor esthetic due to missing teeth in upper front region of jaw. Extraoral examination showed square facial form and straight profile and medium lip line. Intraoral examination showed missing 21, 22. 11, 23 as mesial and distal vital abutment tooth present respectively (Figure 5). Tooth preparation was done to receive the zirconia layered Emax four Unit fixed dental prosthesis (Figure 6). The zirconia

coping trial was done (Figure 7) and final prosthesis was cemented using resin cement (Relyx cement) (Figure 8).

Case 3: A 25-year-old female patient reported to the department of prosthodontics with the chief complaint of poor esthetic due to missing teeth in upper front region of jaw. Extraoral examination showed square facial form and straight profile and average lip line. Intraoral examination showed missing 21, 11, 22 as mesial and distal vital abutment tooth present respectively (Figure 9). Tooth preparation was done to receive the Emax 3 Unit fixed dental prosthesis (Figure 10). Bonding of final prosthesis was done using resin cement (Figure 11).

III. DISCUSSION

Missing teeth in maxillary anterior region can have various treatment options but depending upon patient's desires and comfort the specific treatment modality has to be selected.

Metal ceramic restoration commonly known as Porcelain fused metal ceramic restoration developed by Weinstein and Weinstein in 1962 is still most commonly used (5). Due to its following advantage of use for long span bridge, high wear resistance, long term clinical durability, good esthetic it is still been used. In the case 1 as the tooth was fractured, enamel loss for there, post and core build was done so porcelain fused crowns were used over all ceramic crowns.

Zirconia used as white crystalline material. It has higher mechanical strength, good load bearing capacity, good esthetic and increase fracture resistance after veneering. Can be used for both anterior and posterior regions with adequate connector dimension, indicated for upto four unit fixed dental prosthesis. So in the second case zirconia layered with Emax Bridge was used. (6)

All ceramic restorations refer to – Any restorative material composed exclusively of ceramic, such as feldspathic porcelain, glass-ceramic, alumina core systems and certain combination of these materials The lithium disilicate ceramic (LS2) of the IPS e.max system shows that esthetics and strength can be successfully combined. Its indication spectrum ranges from thin veneers (0.3 mm) and minimally invasive inlays and onlays to partial crowns, full crowns and three-unit anterior bridges as well as implant superstructures. In case three so three-unit Lithium Disilicate Bridge was used. (7)

IV. CONCLUSION

The aim of restorative and esthetic dentistry is to restore the decayed or missing part of the teeth with a bio-compatible material that matches natural enamel in appearance and

physical characteristics and maintain occlusal anatomy to promote proper oral function.

Each system has its own merits, but may also have shortcomings. Durability and esthetic outcome of restoration can be enhanced depending upon proper case selection for different ceramic materials.

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