

Anterior Rehabilitation With Five Unit Zirconia Bridge – A Case Report

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Abstract

Objective: The greatest challenge which dentist faces is restoration of anterior missing teeth. In fixed prosthodontics dentist prefer either implants or fixed partial denture considering the need of the patient. Recent advancements in dental material have increased the use of all ceramic restorations over conventional metal ceramic restoration, which are highly esthetic, long standing and biocompatible. Zirconia, which is a all ceramic restorative material is successfully used in recent years.

Clinical consideration: Today patient require esthetic and minimum invasive restoration of teeth. Zirconia is successfully used in recent years as a anterior all ceramic restorative material.

Conclusion: This case report summarises the use of zirconia crown for achieving best possible esthetic rehabilitation of missing upper right central and lateral incisor.

Keywords: zirconia bridge, esthetic, procedure, crown preparation, all ceramic.

Introduction

The patients demand for Esthetic and minimum invasive dentistry has increased in recent years. It has become necessary for the dentist to keep in mind the science, as well as the demand. [1] The clinician must have knowledge of optical properties of available ceramic systems to make appropriate choices in various esthetic challenges. [1] Several all ceramic materials have been developed which are highly esthetic, long standing and biocompatible. [2] Zirconia is successfully used in recent years as it is esthetic, biocompatible and have good mechanical properties [3] It was first discovered in 1789 by the chemist Martin Klaproth. [4] Zirconia can be used as restorative material for dental bridges, crowns, inserts, and implants because of its biocompatibility, high fracture toughness, and radiopacity. [5] Zirconia is a polymorphic material. It has 3 crystal phases – 1) monoclinic (m), 2) tetragonal (t), and 3) cubic (c). At room temperature, zirconia is in monoclinic phase and transforms into tetragonal phase at 1170°C, followed by a cubic structure

at 2370°C. In monolithic zirconia materials, there are two types: - 1) opaque and 2) translucent zirconia. Opaque zirconia offers significantly greater flexural strength and indicated in the posterior regions of the mouth. Translucent zirconia has more natural esthetic properties. [6]

Case report

Basic history

A male patient aged 34 years old reported to the department of prosthodontics and crown and bridge and implantology in C.S.M.S.S. dental college Aurangabad Maharashtra with chief complaint of missing anterior teeth. He was examined clinically and radiographically. His medical, dental and social history was obtained. History of trauma four months back was there. On intraoral examination teeth absent were 11 and 12. Various treatment options were explained to the patient including implant, porcelain fused to metal bridge and zirconia bridge. Amongst which zirconium was the option preferred by the patient. Pre-restoration photographs were taken.



Figure 1: Pre-restoration record

Procedure

Diagnostic impression was recorded with alginate and diagnostic cast were poured and prepared using dental stone.



Figure 2: Diagnostic Impression

The facebow was recorded and maxillary cast was mounted on the articulator. Bite of the patient was recorded with the help of bite registration wax and mandibular cast was mounted accordingly on the articulator.



Figure 3: Facebow



Figure 4: Mounting

Mock-up was done with mock up wax on 11 12 13 21. The mock was shown to the patient. 22 was not looking esthetically pleasing. With the patients consent, wax up of 22 was also done. Now consent of the patient was taken by showing the mock up.



Figure 5: Mockup

With patient's approval crown preparation was done on 13 21 22. The crown preparation of all ceramic preparation is more conservative than porcelain fused to metal crown. Here extra space for metal is not needed. The preparation was done with diamond cutting burs with shoulder finish line preparation on buccal, palatal, mesial and distal sides. The taper of zirconium crown preparation should be 5 to 15 degree. The buccal, palatal, mesial and distal preparation should be 1mm and the occlusal clearance should be 1.5 to 2 mm.



Figure 6: Crown Preparation



Figure 7: Occlusal Clearance

Gingival retraction of prepared teeth is done using retraction cord and cord packer for proper marginal impressions.



Figure 8: Gingival Retraction

Then final impression was taken with C- Silicon and Putty.



Figure 9: Final Impression

Then shade matching was done using shade guide.

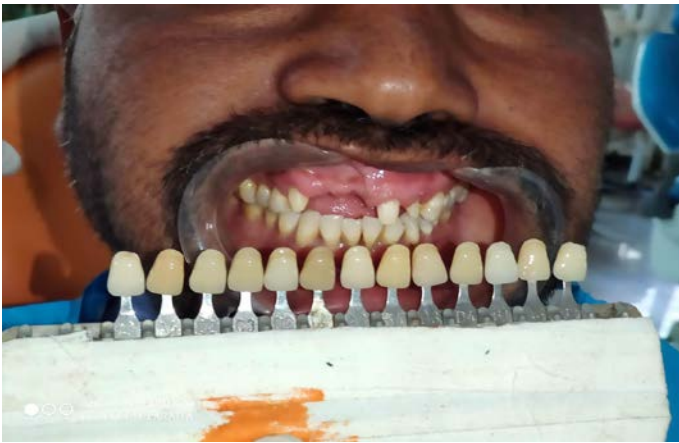


Figure 10: Shade Matching

Then provisional restoration was cemented with tempelute (temporary luting cement).



Figure 11: Provisional Restoration

Then coping trial was done.



Figure 12: Coping Trial

Then final restoration was cemented with resin cement.



Figure 13: Final Restoration



Figure 14: Satisfied Patient

Clinical significance

Zirconia is a type of all ceramic dental material. It is very popular material today for making all ceramic dental crowns. In past metal fused to ceramic crowns were popular, as they were of good strength, biocompatible and esthetic. But there is a black line difficulty, chipping of porcelain associated with porcelain fused to metal crown. Plus, more tooth has to be prepared, to compensate for metal and ceramic both. Whereas in all ceramic crown, less tooth structure has to be prepared, comparatively. As zirconia has sufficient strength, biocompatible and

esthetic, it can be used instead of PFMC crown. Zirconia can overcome the disadvantages of PFMC crown.

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