

ESTHETIC MANAGEMENT OF ANTERIOR TEETH USING CAST LITHIUM DISILICATE POST: A CASE REPORT

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Abstract

Anterior teeth poses great challenge in endodontic restoration due to their critical position in the mouth. Great emphasis on the esthetics in the present day scenario has led to great technologic advances to achieve superior life-like restorations. Numerous tooth colored post materials are currently available with their advantages and disadvantages. Dental practitioners should have the ability to evaluate the clinical situation at hand and based on the relevant findings discern the most appropriate post material. The purpose of this article was to briefly describe the different tooth coloured post materials available, their indications and a case report describing the rehabilitation of a badly broken down anterior teeth using a prefabricated Zirconia post (Cosmopost)

Keywords: Esthetics, Anterior teeth, Tooth-coloured post, Cosmopost

Introduction-

The present era of prosthodontics is witnessing a huge paradigm shift in their emphasis on esthetics. Today's patients not only expect us to provide them with healthy teeth, healthy periodontium and an undisturbed neuromuscular function, many of them also desire beautiful teeth. It is important that the dentist takes note of these expectations that the patient has and attempt within limits to fulfil these expectations.

In clinical practise when a patients presents with a severely broken down teeth, a coronoradicular post is required for the longevity of restorations placed on such teeth after an proper root canal treatment for the teeth is completed.. Earlier, metal ceramic posts were commonly employed because of their long term success. These metal ceramic post and core restorations were associated with compromised esthetics especially when an all ceramic restoration was planned. Metal posts and core may shine through in cervical root areas, altering the appearance of thin gingival tissue. Additionally, certain corrosion products may deposit in the gingival tissues and cause root discoloration.¹

With the increasing use of anterior all ceramic restorations to meet esthetic needs, there is a need for tooth colored posts and cores that are as good if not better than their metallic non esthetic counterparts. Some other advantages of non-metallic posts are its easy retrievability, biocompatibility and their corrosion resistance. There are certain disadvantages of non metal posts like their long term success is lesser than metal posts. Metal posts are stronger in thinner sections therefore minimal ferrule is sufficient as opposed to increased ferrule that is required for non metal posts.²

The metal free posts are of two types based on the composition: composite and ceramic posts.

1. Composite materials: are composed of fibres of carbon or silica surrounded by a matrix of polymer resin, usually an epoxy resin. Recently a polyethylene material (Ribbond) has been used for direct posts. The advantage of this is that it doesn't need canal enlargement as the fibres adapt to the canal.³

An important reason for the success of these restoration can be attributed to their biomimetic behaviour. Due to their greater similarity in elastic properties to dentine these posts allow for a uniform stress distribution to the tooth and surrounding tissues thus yielding a protective effect against root fracture.⁴

2. Ceramic materials: The proven ability of ceramic materials to mimic the appearance of tooth structure has been combined with improvements in strength and durability. The use of all ceramic posts is limited to situations where cast metal posts would have otherwise been indicated.³

The major advantage of these all ceramic post systems is aesthetics. The colour of the final restorations will be dependent on an internal shade that is similar to the optical properties of the natural teeth. Even at the cervical regions it will aid in providing a certain depth at the cervical root areas.

Methods used for fabrication of these all ceramic posts are slip casting, copy milling, two piece technique (Cerapost) and a Heat-Press technique. In this technique a glass ceramic core is heat pressed over a prefabricated zirconium dioxide post

(Cosmopost).⁵ Zirconia posts are a popular tooth colored post material especially in the anterior region. It is especially indicated for patients with high lip line and thin gingival tissue.⁶ Certain disadvantages of the Zirconia posts is its propensity for vertical root fracture and its difficulty in post removal in case an endodontic retreatment is required. It also has a tendency to fracture in the canal.^{7,8}

The case report described below used Cosmopost to rehabilitate a fractured anterior tooth.

CASE REPORT:

Dental Examination and treatment plan:

A 23 year old male patient reported to the Department of Prosthodontics, MCOOS, Mangalore with a fractured tooth in upper front region. History of previous dental treatment reported a PFM crown that been placed 2 years back which had fractured. On intraoral

examination there was a Ellis Class 3 in the upper left lateral incisor tooth region. (22). Bleeding on probing and clinical mobility of the tooth was not pathological suggesting good periodontal status. Further evaluation revealed insufficient tooth structure around the crown. Periapical radiograph showed sufficient length of the root and no loss of bone



Fig 1: Preoperative Frontal View of the Patient

around the tooth. There was a greater amount of visibility of the upper teeth when the patient was asked to smile, emphasizing the need for an esthetic restoration.

Based on these findings, an all ceramic zirconia post followed by an all ceramic

lithium disilicate crown. (IPS eMax press)



Fig 2: Preoperative Occlusal view of the patient

Post and core preparation:

Crown height for the teeth was increased by crown lengthening procedure done using electrocautery. Post space was prepared till a length of 13 mm leaving 5 mm of the apical seal intact. The post space was enlarged using Peeso reamers of increasing size. A 1.5 mm of ferrule was created around canal orifice. A post space impression was recorded using an orthodontic wire in the post space to retain the light body and an elastomeric putty- light body impression was recorded.

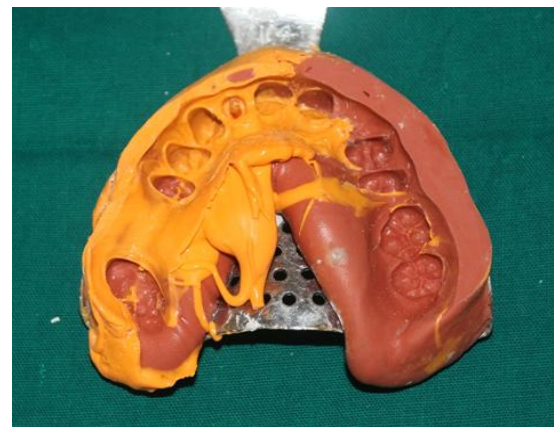


Fig 3: Light body and putty impression of the patient

The impression was sent to the laboratory where a cast was poured using a die stone. A Cosmopost of size 1.4 mm was selected as it adequately fitted the post space. Wax pattern of the core space was made. Heat pressing made a solid post and core restoration. This was tried in a patient's mouth and a radiograph was used to verify the fit.

Cementation of post and crown preparation:

The post part of the restoration was not etched or silanized. The contact portion of the post was etched using hydrofluoric acid and then silanized using Monobond S. The post was permanently cemented using Rely X Unicem Self Adhesive Universal Resin Cement (3M ESPE). Shoulder margins for the tooth preparation were produced using a flat end tapered bur and an elastomeric impression was recorded. An Emax Press all ceramic crown was fabricated and cemented using Resin cement.



Fig 4: Cemented Cosmopost



Fig 5: Prepared tooth



Fig 6: Final restoration with e. max crown

DISCUSSION:

The restoration of endodontically treated teeth has always been a challenge. In the recent times the material market for the posts has undergone a complete makeover.⁹ Tooth colored posts are also gaining wide acceptance especially in the esthetically critical areas. In the present study as there was insufficient tooth structure Fibre reinforced posts was not an ideal option. This is because of their lower modulus of elasticity, and they may undergo flexure under functional stress and produce micromovement at the core, producing decementation of the crown.¹⁰ Due to the high smile line that was observed during the diagnosis, the age of the patient and the teeth that required treatment a prefabricated post (Cosmopost) was used. This was selected instead of the cast metal post and pore as that would have significantly compromised the esthetics of the final crown.

To conclude it is important for the clinical practitioner to have knowledge of the recent advancements in the field of coronaradicular restorations and more so have the ability to deduce the best option based on the clinical situation at hand.

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