



## ENDOCROWN: CONSERVATIVE APPROACH FOR RESTORATION OF ENDODONTICALLY TREATED TEETH- A CASE REPORT

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### Abstract

Coronal rehabilitation of a severely damaged teeth is a challenge for clinician. The Endocrown is indicated for restoration of severely damaged molar, which requires specific restoration technique. This therapy promotes the stability and retention of the indirect restoration, without the need of a cast metal core or reconstruction with intracanal post, thereby reducing the treatment time. The major advantage of an endocrown is the use of the tooth structure remnant, particularly the pulp chamber, to promote retention and stability. This case report represents the restorations of severely damage molar teeth (36) by Endocrown which represented a conservative and aesthetic restorative alternative to full coverage crown.

**Key Words:** Coronal rehabilitation, Dental Restoration, Endocrown, Reconstruction.

### INTRODUCTION

Teeth that have lost substantial amounts of tooth structure are best restored with indirect restorations. A conservative treatment option for endodontically treated teeth is an endocrown proposed by Bindl and Mormann for the restoration of nonvital teeth using the pulp chamber for support of this definitive onlay restoration. Endocrown was first described using the CEREC system; however, other systems may be employed for this particular restoration (Yadav A et al 2016). An endocrown may be produced from composite or mineral ceramic and, because of the slightly lower cost and ease of repair of any potential damage, the patient in the following case chose the composite endocrown.

### CASE REPORT

This case report describes an aesthetic and conservative posterior Endocrown restoration of an endodontically treated tooth with indirect composite restoration. A 19-year old female patient presented for at the Department of Conservative Dentistry and Endodontics, BBD College, Lucknow. On clinical examination, tooth number 36 was endodontically treated. It was asymptomatic and the occlusogingival height of the remaining crown structure was 4mm. The radiographic findings revealed well obturated canals with no periapical changes. A conservative approach of restoring the tooth with an endocrown was decided as the treatment option, as more than half the residual tooth structure was remaining. The tooth was prepared to achieve a butt-joint margin with a depth of 2mm using a pear shaped bur. The appropriate reduction of the buccal and lingual walls was done. In this case, the preserved buccal and proximal walls and the deep tooth chamber provided sufficient retention for such a prosthetic solution.

The preparation margins had a width of 1.5 mm and core exceeded the height of 3mm. Interocclusal space was carefully evaluated and occlusal reduction done to achieve a clearance of 2mm. The mesial or distal remaining marginal ridge protects the tooth from catastrophic mesio-distal fractures.

Guidelines for full occlusal coverage according to Rocca et al <sup>5</sup> :

Palatal and lingual cusps can be simply reduced by 2 to 3 mm with a butt-joint. On the contrary, for buccal cusps there are 3 options:

- The ultra-conservative buccal cusp coverage (1.5 mm)
- The conventional buccal cusp coverage (2–3 mm)
- The full buccal cusp coverage.

The cavity was properly isolated an adhesive system was applied on entire dentin and light cured. Next a thin composite resin layer was applied and light cured to seal with correct taper, minimal undercuts, cervical margins relocated supragingivally and adequate interocclusal space. (Fig.1)



Fig 1 Endodontically treated tooth

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Appropriate shade with a shade guide were chosen. An impression was taken with a polyvinyl siloxane material and sent to the laboratory.

Cementation was done in the next appointment under a rubber dam. To embed the endocrown, a self-etch bonding system was used, which was spread on the surface of the preparation and then light-cured. A dual-cured composite resin cement Paracore was also spread on the surface of the preparation. The endocrown was seated, any excess cement was removed and the restoration was polymerized and finished.



Fig.2 Processed Endocrown



Fig.3- Cementation of Endocrown

## DISCUSSION

An endocrown is a conservative procedure that preserves root tissue and keeps internal preparation of the pulp chamber to its anatomic shape. It also has advantages over conventional crowns like reduced number of interfaces in the restorative system. Stress concentration is less and the preparation design is conservative compared to the traditional crown (Vinothkumar TS et al 2011). Involvement of the biological width is minimal. In comparison to the post and core restorations, bonding surface offered by the pulpal chamber of the endocrown is often equal or even superior to that obtained from the bonding of a radicular post of 8 mm depth (Chang CY et al 2009). The application and polymerization of resins is also better controlled. The endocrown is luted with resin cement. The adhesive monoblock system achieved reduces the need for macroretentive geometry and provides more efficient outcome and better esthetics. Endocrowns have their own disadvantages like, debonding and risk of root fracture because of the difference in the modulus of elasticity between the harder ceramic and softer dentine. Hence, case selection is critical for ensuring clinical success with endocrowns. Endocrowns are indicated in cases where there are minimal functional and lateral stresses (Bernhart J et al 2010). When there is evidence of increased functional and lateral stresses as evident with steep occlusal anatomy, wear facets or parafunction, full coverage crown with or without post is the treatment of choice. (Rocca GT et al 2008) Based on current evidence, endocrowns fabricated using CAD/CAM and pressable ceramic technology can be considered as a reliable option for the restoration of moderately multilaterally endodontically treated posterior teeth. However, long-term followup and longitudinal clinical studies are needed to ensure their overall success.

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