Case Study

# <u>ENDOCROWN-A UNIQUE WAY OF</u> <u>RETENTION-CASE REPORT</u>

### 4 <u>ABSTRACT</u>

5 All the teeth that have undergone root canal therapy will require some form of restoration to enable 6 them to function again. Because endodontic treatment removes the vital contents of the canal, which 7 subsequently leads to reduction in elasticity, dessication and increases brittleness of remaining tooth 8 structure.

9 The loss of structural integrity increases the occurrence of crown fractures and microlekage at 10 the margins of restoration in Endodontically treated teeth compared with 'vital' teeth. Minimally 11 invasive preparation to preserve a maximum amount of tooth structure is considered to be the 12 standard main goal for restoring teeth.

This is a case of Endodontically treated right maxillary molar requiring post endodonticmanagement which was treated with EndoCrown.

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16 Key words- Endodontically treated teeth, Endocrown.

17 INTRODUCTION-

Post-endodontic restoration should preserve and protect the existing tooth structure, while restoring satisfactory esthetics, form, and function. The goal is to achieve minimally invasive preparations with maximal tissue conservation for restoring endodontically treated teeth. This will help to mechanically stabilize the tooth-restoration complex and increase surfaces available for adhesion<sup>1</sup>.

A number of treatment modalities available depends on choice of structural integrity, functional
load and esthetics. In these perspective

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Endocrown is good alternative to full crown followed by post and core in cases with endodontically treated teeth with short crown height but sufficient tissue available for adhesion and stability.

28 In the present paper ceramic endocrowns fabricated and presented as case reports-

# 29 CASE REPORT-

30 A 25-year-old male patient reported for the fractured restoration in upper right back region of

31 jaw. On clinical examination tooth number 16 was root canal treated one month back (Figure 1).

32 It was asymptomatic and the surrounding structures were normal . The radiographic findings

revealed well obturated canals with no periapical changes.



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### 35 **Fig-1:occlusal view after post-obturation.**

Various treatment modalities were explained and 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 and there were no occlusal wear facets and the occlusogingival height of theremaining crown structure was approximately 4 mm.

40 After removal of the provisional restoration, preparation for endocrown was initiated. And 41 undercuts were blocked using Resin modified glass ionomer cement (Fuji II LC GC ASIA). The 42 preparation consisted of a circular equigingival buttjoint margin and central retention cavity into 43 the entire pulp chamber constructing both the crown and the core as a single unit. The 44 appropriate reduction of the buccal and lingual walls was done (Figure 2)



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## 46 **fig-2:-TOOTH PREPARATION.**

Interocclusal space was checked to achieve a clearance of 2 mm. Retraction cord was placed and
impressions made with polyvinyl siloxane impression material (Aquasil LV, Putty/Light Body,
Dentsply,Germany) using putty wash technique.

50 The restoration was fabricated according to the lost wax technique of investing and wax pattern

51 burnout followed by pressing of the ceramic ingot in the pressable furnace at a press temperature

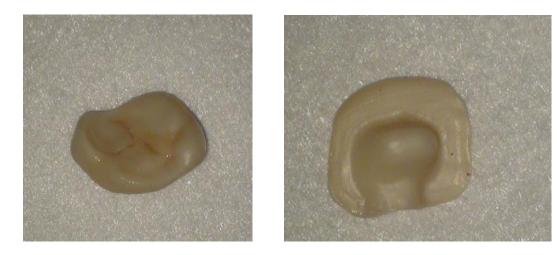
52 of 915–920°C. It was then finished and polished with Proxyt pink polishing paste

53 (Ivoclar/Vivadent, Schaan/Liechtenstein). The cementation was done by resin luting agent

54 (panavia F 2.0 kuraray japan). Follow up was done and a 6 and 18-months followup shows no

signs of decementation. No recurrent caries. No fracture. No radiographic changes evident

56 (Figures3,4,5,67).



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- 58 fig-3:-Endocrown.



60 fig-4:-Etching and cementati





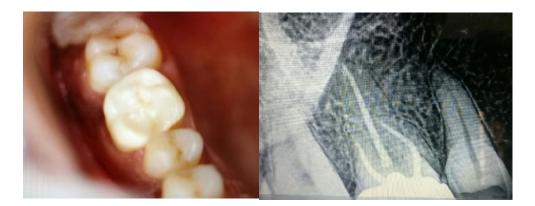
62 fig-5:- Final cementation.



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65 fig-6:- Buccal view after cementation.

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- 68 fig-7:- follow up after 18 months..
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## 70 Discussion-

- A successful endodontic treatment depends not only on proper obturation but proper post-
- endodontic restoration to integrate the pulpless tooth with the masticatory apparatus is also
- essential.<sup>5</sup> in the era of minimal invasive dentistry teeth with more then half of the coronal tooth
- structure is missing, complete occlusal coverage is achieved conservatively using these newer
- 75 method EndoCrown.
- 76 The various conservative treatment modalities based on the same conservative approach such as
- Amalcore, sharonlay for pre-molars, inlays, and onlays are based on this principle. The
- Amalcore, harnessed, the large and retentive contours of the root canal orifices, and the pulp

- chamber to provide a monoblock foundation. Inlays and onlays promoted the concept of a
- supragingival finish line and conservative preparations. The endocrown is a newer esthetic and
- 81 conservative addition to this continuum.
- All ceramics become more popular in this era because of esthetics as well as function  $^{6}$ . Custom
- shaping and precise milling of ceramic restorations is now a reality which can be achieved by
- 84 CAD/CAM systems and software.
- The 18-month followup in the case of EndoCrown showed no esthetic and functional
- degradation on clinically as well as radiographic examination. These results are in agreement
- 87 with the previous studies.
- Bindl and Mormann demonstrated similar results in a clinical study of Cerec endocrowns
   shows that out of 19 endocrown Only one molar endocrown failed because of recurrent caries <sup>7</sup>
- 90 Similar results were reported by Lander and Dietschiwhere a three year follow up of Empress
- 91 Il endocrowns shows excellent results in terms of esthetics, restoration stability, and tissue
- 92 preservation  $^8$ .
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- 94 Merits of endocrown over conventional crowns like reduced number of interfaces in the
- 95 restorative system based on monoblock concepts so Stress concentration is less because of less
- 96 homogenous materials. The preparation design is conservative compared to the traditional crown
- 97 .<sup>9</sup> so biologic width is also mainted so less damage to periodontium also.Bonding surface offered
- 98 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. And the application and polymerization of resins is
- also better controlled.
- 101 In these case report to preserve the tooth structure resin modified glass ionomer cement used and 102 to achieve a monoblock concept endocrown is cemented with resin cement. [10].
- As we all know due to higher differences in elastic modulus of harder ceramic and softer dentin
- it has its own disadvantages such as de-bonding and risk of root fracture. So case selection iscritical.
- 106 Conclusion-
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- 107 Endocrown gives better retention in cases where there are minimal load and lateral stress.
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