

INTRODUCTION

Partial coverage ceramic restorations with fiber post (PCCR+post) and endocrowns are conservative restorations. Many dentists still use the classical post and core approach to restore endodontically treated posterior teeth with extensive coronal loss. Intraradicular posts are used to increase the restoration retention in teeth with extensive destruction of the crown. However, the additional removal of sound tissue for fitting the post into the root canal weakens the structure, increases the risk of root fracture, and often hinders the possibility of further interventions.

Alternatively, endocrown monoblock restorations are retained by adhesive cementation using the pulp chamber and remaining coronal tooth structure for retention. This minimally invasive treatment concept could presents advantages in comparison with the classical post and core approach: (1) dental tissue preservation, (2) reduced risk of catastrophic failures (root fractures or perforation; contamination of the endodontic treatment and failures related to the amount of adhesive interfaces to create), (3) no need of sufficient interocclusal space; (4) less appointments, and (5) decreased cost.

PURPOSE

This double-blind RCT aimed to evaluate the 2-year survival rates, procedure time and perception of endocrowns and PCCR with fiber post.

METHODS & MATERIAL

Forty (40) participants fulfilled the eligibility criteria, and they were randomly allocated in 2 groups:

- Endocrown or
- PCCR+post.



FIGURE 1- Endocrown group- A: removal of restoration and gingival retraction; B: Glazed specimen; C: Occlusal view of the cemented endocrown; D: Radiographic view.

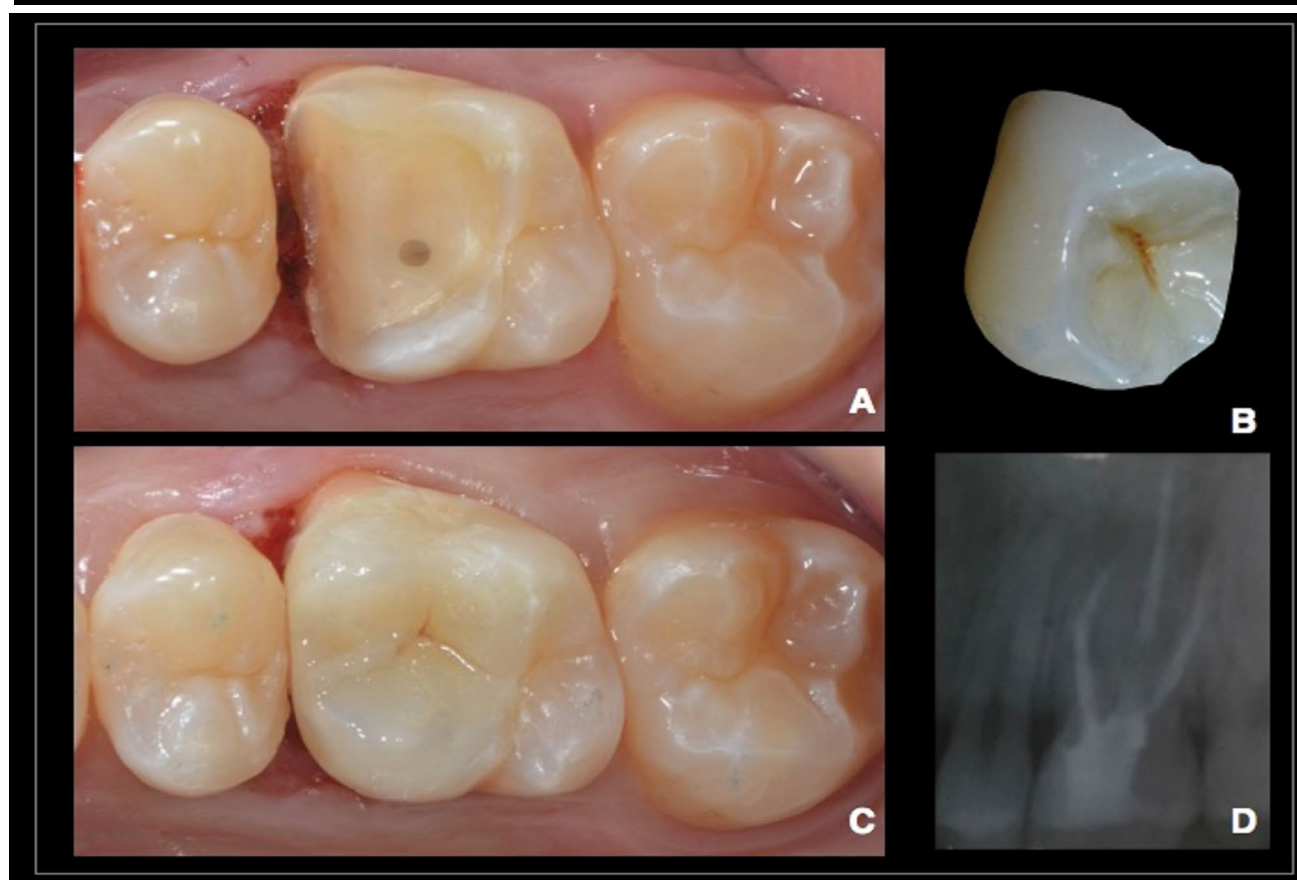


FIGURE 2- PCCR + post group- A: Occlusal view of tooth with post placement and filling with composite resin; B: Glazed specimen; C: Occlusal view of the cemented partial coverage ceramic restoration; D: Radiographic view.

Endocrown group: The space of the pulp chamber was included in the preparation.

PCCR+post group: A fiber post (White post, FGM) was cleaned with alcohol, dried, and treated with Monobond (Ivoclar Vivadent); Multilink primer were applied to the tooth (Ivoclar Vivadent), without previous acid etching, and then air-dried. After that, the post with a size compatible with the main canal was inserted half-way in the canal and luted with Multilink resin cement (Ivoclar Vivadent), followed by light-curing for 20 seconds. The teeth were filled with composite resin (Tetric N Ceram bulk fill- Ivoclar Vivadent) in 1-2-mm increments, and each layer was light-cured for 20 seconds.

Occlusal and proximal boxes were prepared, leaving a maximum of 2 mm for ceramic thickness. A 2-mm round chamfer finish line was created along the crown's outside margin using a cylindrical-conical diamond burs. In both groups, the cusps were preserved whenever possible. In cases where veneering was needed, the occlusal surface was abraded to allow a 1.5-to-2 mm space for the veneer. The proximal contact point was removed with metal files. The color was chosen using the Vita classical shade guide (Vita Zahnfabrik).

The double impression technique (Virtual heavy and regular body - Ivoclar Vivadent) and double cord technique (Ultra-pack- Ultradent) were used. The provisional restorations were fabricated with acrylic resin and cemented with Temp Bond NE (Kerr Corporation).

The survival rates were assessed based on USPHS modified and radiographic examinations. Kaplan-Meier and Log-rank tests were used to estimate the survival. Procedure time and patient's perception were also assessed.

RESULTS

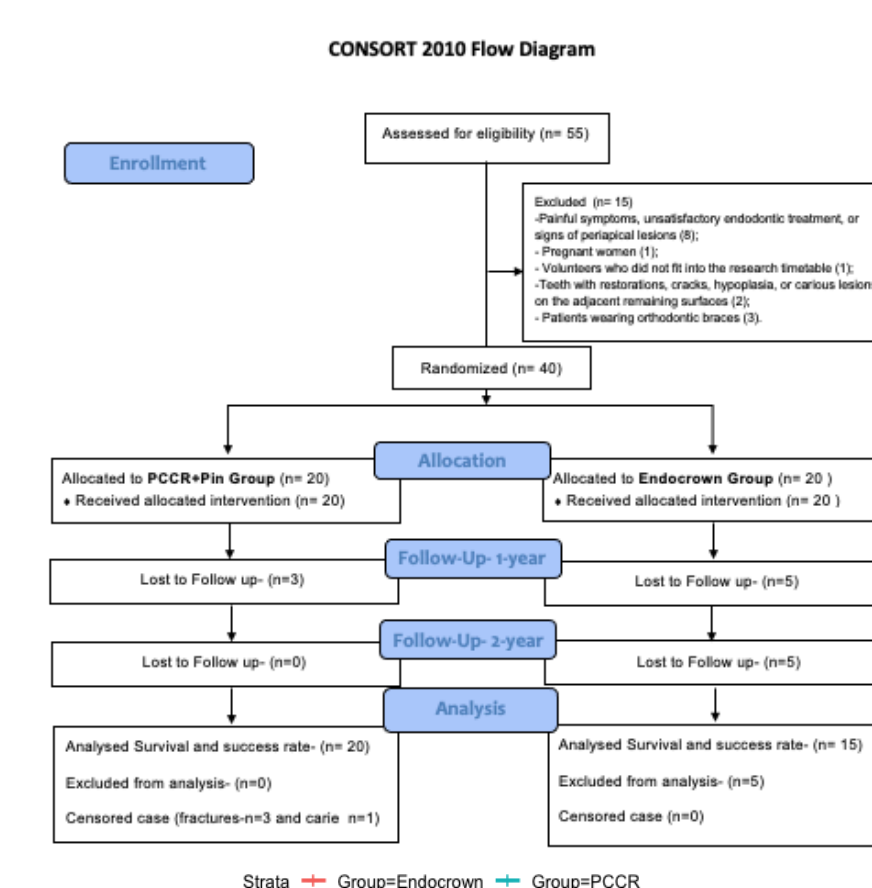


Figure 3: Flow diagram of the progress through the phases of a parallel randomized trial of two groups

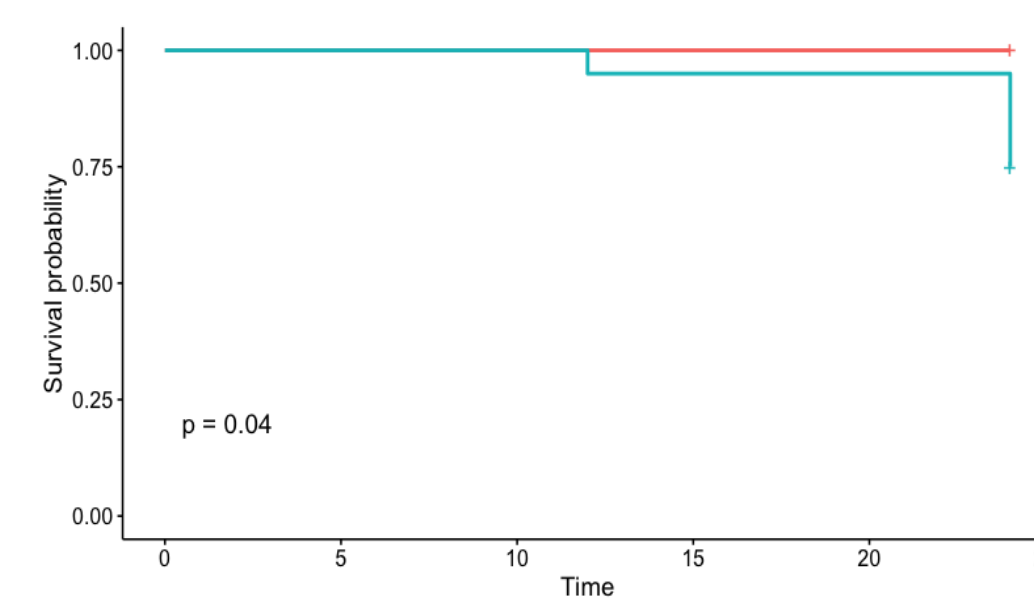


Figure 4 - Kaplan-Meier curve of the survival analysis from experimental groups.

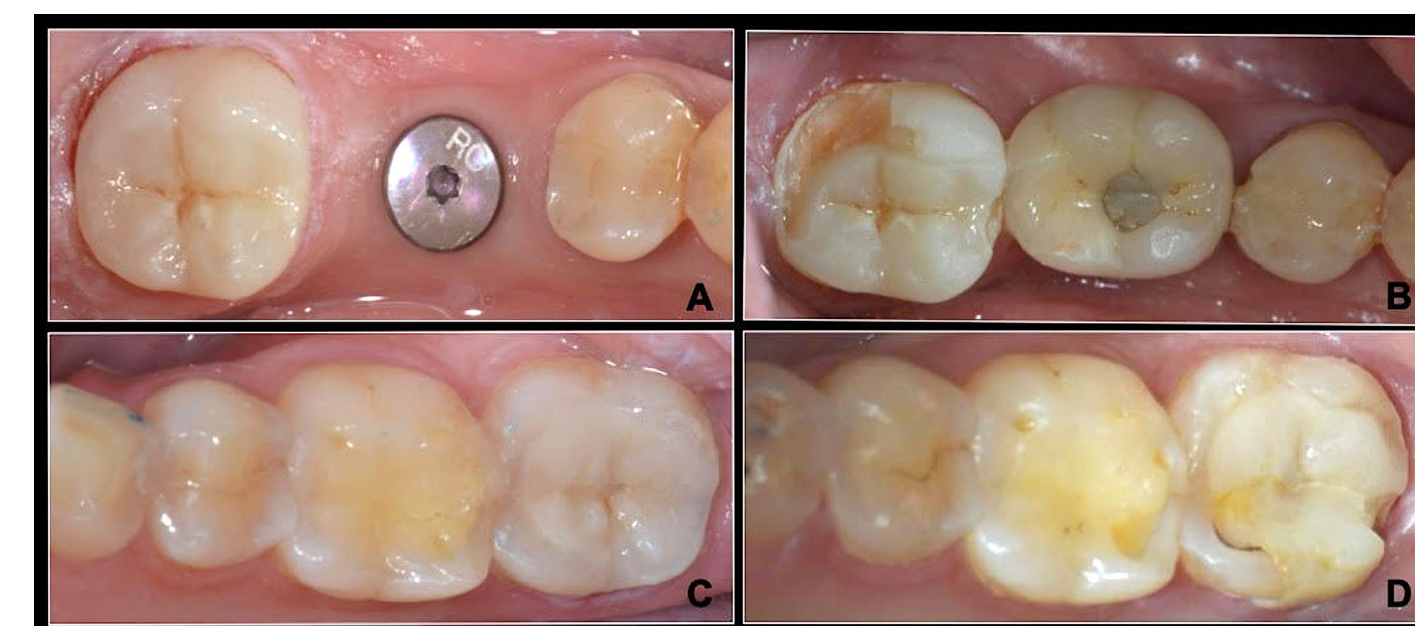


Figure 5: Fractures in PCCR+post group- A: Occlusal view (tooth 37) immediately after cementation; B: Fracture after the 2-year follow up; C: Occlusal view (tooth 47) immediately after cementation; D: Fracture after the 2-year follow up (female participant with Sjögren's Syndrome).

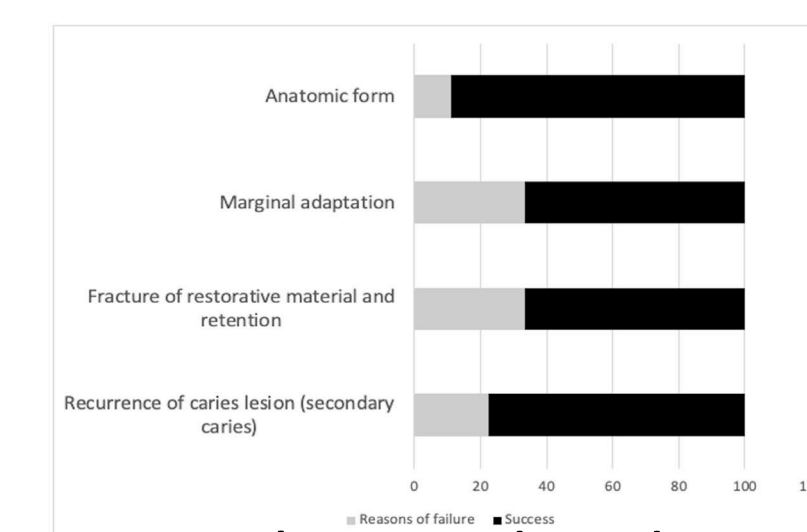


Figure 6: Distribution of reasons of the failures according FDI World Dental Federation- Clinical Criteria for the Evaluation of Direct and Indirect Restorations.

With regard to discomfort, 90% of participants in the PCCR+Post group reported little or no discomfort, whereas 82.5% in the Endocrown group replied in a similar way. There was no association between the explanatory variables and the discomfort reported by patients. The level of satisfaction was 100%. Chair time in the Endocrown group (129.7 min±29.78) was similar to the PCCR+Post group (134.1 min±29.64)

CONCLUSION

Endocrowns is a promising conservative restorative option and this clinical concept seems to be feasible and reliable approach to restore endodontically treated posterior teeth, due the highest 2-year overall success and survival rates. both techniques had a high level of satisfaction, less discomfort, and similar chair time.

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