

A Prospective Study of the Incidence of Asymptomatic Pulp Necrosis Following Crown Preparation

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Aim

- To evaluate the incidence of asymptomatic pulp necrosis during crown preparation & cementation.
- To assess the +Ve predictive value of electric pulp testing (EPT).

Materials & Methods

- 33 patients (120 teeth) scheduled to receive crowns were included in this prospective study.

Exclusion

- Teeth with necrotic pulp, irreversible pulpitis or previous RCT.
 - Teeth that were endodontically treated due to irritation following crown preparation.
- Teeth to receive crowns as well as other control teeth were tested by an EPT before crown preparation.
 - Teeth were divided into two groups according to:

A- Pre-op crown condition

- 1) Intact teeth
- 2) Teeth with caries, restorations or crowns

B- Tooth type

- 1) MAX anterior
 - 2) MAX posterior
 - 3) MAN anterior
 - 4) MAN posterior
- Crown preps were made by undergraduate students and temporary acrylic crowns were placed.
 - EPT were repeated at the beginning of the impression making session and at the session where the permanent restoration was placed before final cementation.
 - Both experimental & control teeth were tested and EPT responses at the 3 sessions were evaluated.
 - A -Ve EPT response was considered an indication of pulp necrosis & teeth were sent for RCT.
 - During access, the condition of the pulp was noted to assess the +Ve predictive value of EPT.
 - Statistical analysis was performed to explore possible associations between tooth type and crown condition and the presence of pulp necrosis.

Results

- 11/120 teeth were diagnosed with pulp necrosis (9%)

According to Pre-op crown condition

- The incidence of pulp necrosis in intact teeth was 5%, whereas in teeth with preoperative caries, restorations or crowns were 13%.
- The incidence of pulp necrosis was significantly higher in teeth with pre-op caries, fillings or crowns.

According to tooth type

- The highest incidence of pulp necrosis was observed in MAN anterior teeth (12%).
- The lowest incidence was observed in MAN posterior teeth (7%).
- No significant differences between the groups according tooth type.
- The +Ve predictive value of EPT was found to be 1.00 (100% accurate).

Conclusion

- The possibility of asymptomatic pulpal necrosis following crown preparation in healthy teeth is around 10%.
- Presence of pre-op caries, restorations or crowns prior to crown preparation may result in a significantly higher incidence of pulp necrosis.
- EPT is a useful diagnostic instrument for determining the pulp condition.

Authors

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Reference: Kontakiotis EG, Filippatos CG, Stefopoulos S, Tzanetakis GN. A prospective study of the incidence of asymptomatic pulp necrosis following crown preparation. Int Endod J. 2015 Jun;48(6):512-7.