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
  a. Teeth with necrotic pulp, irreversible pulpitis or previous RCT.
  b. 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.

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