Remaining Coronal Structure and Trends for Cusp Coverage - Descriptive Review

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Introduction
Weakened coronal structures can compromise tooth resistance to fracture, by occlusal loads, and may require reinforcement with restorative cusp coverage (CC).

Methods
A search in Pubmed was done with the keywords: Resin-based composite, Composite, Ceramic, Tooth fracture, Cusp coverage, Bicuspid, Weakened teeth, Cavity preparation design. Thirty articles were identified. Methodology included review, clinical and in vitro studies, published between 2005 and 2015 years.

Results
Seven publications were selected. The CC can be executed through direct (composites) and indirect (ceramic materials and/or composites) restorative techniques. Several clinical conditions guide to CCs, such as endodontically treated teeth and, in this group, premolars teeth are more susceptible to fracture, by anatomic factors as shape and location (Table 1; Figure 1); and still, variations in cavity dimensions and cavity preparation designs (Figure 1). However, some authors suggested that less aggressive preparations (Figure 2) are adequate rather than extended preparations over the cusps to prevent fracture, when using adhesive indirect restorations with resin-based composites.

Conclusions
Cavity preparation design influence cusp stiffness: more deep and wide cavity designs promote cusp deflection greater loads. The remaining coronal structure, occlusal loads and the selected materials/techniques are important factors in cups coverage restorative decisions.

Clinical Implications
Cusp coverage is a safe option to functionally restore posterior teeth with weakened remaining coronal structure.

References

Keywords
Resin-based composite
Ceramic
Tooth fracture
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Cavity preparation design