

The role of pain in vital pulp therapy of permanent teeth with reversible or irreversible pulpitis

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Vital pulp therapy (VPT) has been recently proposed as an alternative treatment of symptomatic mature permanent teeth with deep caries lesions, with the aim to maintain the pulp vitality over time and/or to postpone root canal therapy (RCT).

However, the outcomes and success of VPT are strictly related to the pulp inflammation severity and the histopathological involvement of pulp tissue. To date, the diagnosis of reversible or irreversible pulpitis is only based on clinical pain quantity and quality, without precisely reflecting the pulp inflammation status. Therefore, the aim of the present study was to review the current scientific literature to provide precise diagnostic tools to categorize the pulp involvement and to guide the treatment choice to improve the prognosis. In addition, endodontic biomaterials applied in VPT were overviewed to assess their potential in tissue inflammation healing and pain relief.

VPT was successfully applied not only in mature permanent teeth diagnosed with reversible pulpitis, but also in permanent dental elements with signs and symptoms of irreversible pulpitis. However, high heterogeneity among studies was observed and further randomized controlled trials should be conducted. Moreover, calcium silicate-based cements showed, among others, favorable outcomes in terms of decrease of pro-inflammatory mediators and of post-operative pain.

In conclusions, pain plays a central role in the chance to perform VPT in mature permanent teeth, since it's considered as a pre-operative diagnostic criterion as well as a parameter of treatment success. In addition, proper assessment of pulp inflammation and choice of appropriate materials are key factors in enhancing VPT success.

Calcium silicate-based cements, irreversible pulpitis; pain; reversible pulpitis; vital pulp therapy.