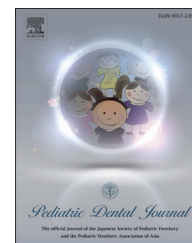


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Review

Direct pulp capping: A treatment option in primary teeth??



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ABSTRACT

Background: Direct pulp capping (DPC) has been literally abolished from the repertoire of endodontic procedures for primary teeth. But with the introduction of new biomaterials, there have been numerous reports of improved success rates.

Purpose: This review earmarks certain parameters that should be analyzed when considering DPC as a treatment option for primary teeth.

Methods: A literature search to identify articles relating to DPC in primary teeth was carried out.

Results: In order to obtain a positive prognosis when performing DPC in the primary dentition it is imperative to place due emphasis on certain treatment considerations and make use of newer biomaterials available today.

Conclusion: DPC should not be disregarded as a vital pulp therapy procedure in the primary dentition.

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1. Introduction

With advances in the field of tissue repair/regeneration, vital pulp therapy has received impetus in both the permanent, as well as, primary dentition. Although procedures preserving pulp vitality are intriguing, they remain replete with controversies. One such vital pulp therapy procedure is direct pulp capping (DPC), which has been literally abolished from the repertoire of therapeutic procedures for primary teeth.

DPC in primary teeth has had limited application due to dwindling success rates. The key reason cited for this is the high incidence of reported internal resorption. Theoretically it has been suggested that the high cellular content of the dental pulp in primary teeth when subjected to stimuli (from carious exposure or the pulp capping material itself) results in differentiation of mesenchymal cells into odontoclasts and the ensuing internal resorption [1]. In addition, there have been reports of pulpal inflammation/calcifications and loss of periapical bone following DPC in primary teeth [2]. But with the advent of newer materials, DPC has taken a turn towards improved success rates and negligible complications [3].

The purpose of this article was to review dental literature and determine the following: (1) Is DPC a treatment option in primary teeth? (2) What are the treatment considerations to be undertaken when performing a DPC? (3) Which is the best material for DPC in primary teeth?

2. Literature review and discussion

2.1. Is DPC a treatment option in primary teeth?

DPC has been disregarded as a treatment option for primary teeth due to increased chances of clinical failure. Contrary to this statement, documented literature promotes using DPC as therapeutic alternative for primary teeth bearing in mind that cases are carefully selected [4]. A two-year prospective clinical trial carried out by Cho et al. involving a total of 100 primary molars carried out to evaluate the outcome of DPC using different pulp capping materials showed an overall success rate of 93% [5]. Thus it may not be rational to completely abandon DPC as an alternative vital pulp therapy procedure.

2.2. What are the treatment considerations to be undertaken when performing a DPC?

2.2.1. Case selection

The foremost criterion to be observed is proper case selection [6]. The etiology of pulp exposure (whether carious, iatrogenic, traumatic, etc.) strongly influences the treatment outcome. Seltzer & Bender (1973) proposed that DPC should be reserved for cases of mechanical or traumatic pulp exposure, as carious exposure invariably result in microbial contamination and inflammation of the pulp [7]. Even the American Academy of Pediatric Dentistry (AAPD) guidelines on pulp therapy for primary teeth suggests reserving DPC as a treatment procedure for pinpoint mechanical exposure resulting iatrogenic or traumatic insults [8]. On the other hand, research suggests that DPC may be employed to treat any tooth with minimal or no signs of pulpal inflammation [3].

Another aspect to be considered is the size of the pulp exposure. Studies have laid down an empirical guideline that a "pin-point" pulp exposure (i.e. less than 1 mm) can be capped, as this impedes bacterial ingress [9]. Additionally, researchers suggest that limiting the width of the exposure site is mandatory as availability of odontoblast-like cells remains limited; and larger pulp exposures cause greater debris impaction [10].

Contrary to this belief, some authors have intentionally achieved an exposure size of 1-mm-diameter, as they believe that wider exposures remove inflamed pulpal remnants and carious dentin which may have been inadvertently left behind, allowing better contact of medicament with the pulp tissue [4,11]. Thus, it is likely that the size of the pulp exposure is immaterial as long as an infallible capping procedure is undertaken.

An additional observation to be earmarked is the location of the pulp exposure. DPC should not attempted in exposures on the axial wall [6]. The reason cited for this dictum is that pulp tissue coronal to the axial exposure would not benefit from the therapeutic properties of the capping material.

2.2.2. Debridement

Care should be taken to excavate only peripheral masses of infected/necrotic dentin chips and never at the exposure site. Studies have repeatedly stated that infected material is

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