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Restoration of Primary Mandibular Molar, With or Without Injection?

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ABSTRACT

Aim: Managing a child in a dental office requires especial skill and expertism for performing a procedure. This becomes more crucial if “injection” is a part of the procedure. The present study evaluates the success rate of Class I restoration of primary mandibular second molar when with no injection.

Materials and Methods: A prospective clinical trial study was performed on thirty healthy children with the age range of 3-8 years. The children were selected with Class I carious lesions in both right and left mandibular second primary molars. Restorations were done without injection in one quadrant and with injection in the other side of the mandible, totally 60 restorations. The children were evaluated based upon Frankl Behavioural Rating Scale.

Results: No statement of pain, verbal complaint, body and hand, or eye movement was recorded during the treatment procedure in children of either group of study. The success rate of class I restoration in both groups of study was 100% in both treatment modalities.

Conclusions: According to the result of this study, restoration of Class I carious lesions of primary teeth can be performed with no injection. This treatment modality would benefit the child for no post-injection complication and the practitioner for less stress, resulting in easier behavior management.

INTRODUCTION

Pain control is one of the most important aspects of dental procedures in dentistry. It comes to more importance when dealing with a very young patient. Adults occasionally may tolerate some discomforts but children generally have much less compliance level. Injection may cause some difficulties for practitioner for managing the child behavior, if not causes treatment refusal ^[1]. Child’s fear of injection is the top reason for dental phobia. Due to this fear, it is very clear that most kids over react to any step of treatment. Numbness of a part of the jaw also gives an unpleasant feeling to a kid after leaving a dental office. Since this feeling does remain for some hours, it restricts the child from regular activity, as well. It should not be forgotten that behavior management of a child is also a "stressful job" for a dentist ^[2].

For different purposes “Block”, “Gow-Gates”, “Inter-ligamentary”, or “infiltration” are injection of choices in dentistry ^[3,4]. Injection in any modality may cause multiple side-effects. These are like: allergic reactions, lip biting, needle breakage, prolonged anesthesia or para anesthesia, facial nerve paralysis, trismus, soft tissue injury, hematoma, pain on injection, burning on injection, infection, edema, sloughing of tissue, post-anesthetic intra-oral lesions ^[3,5]. Fortunately, previous study proved that there is a high success rate for infiltration compared to Block technique for restoring Class I caries ^[6-12]. Furthermore, other studies also indicated that pulpotomy can be safely performed with infiltration technique as much effective as Block method for the second

lower primary molar [11,12].

For many reasons infiltration is much preferable than block injection, if possible [13]. Unfortunately, lip biting and/or tongue biting are the frequent consequences of Block injection in children [1,3,6]. Generally, block injection is much more painful than infiltration technique. It also requires more time for anesthetization [6]. Undoubtedly, the success rate of block is less than infiltration. Infact, because of local effect of infiltration injection is much more convenient than Block injection.

The present study is designed to evidence based detect whether the infiltration injection can be eliminated from the treatment procedures of Class I restoration for second primary molar.

MATERIALS AND METHODOLOGY

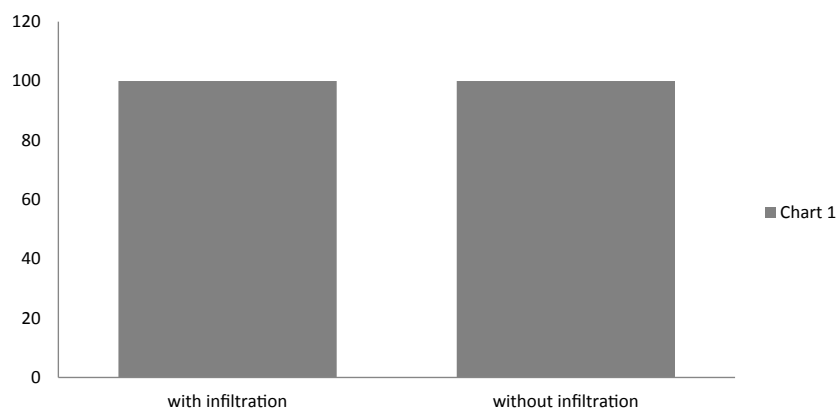
This study was a prospective & clinical trial on 30 children (60 quadrants). The age of children was the least 3 and the most 8 years. All kids were examined for general health. They were either at primary or early stage of mixed dentition. All kids required bilateral Class I restoration on mandibular second primary molars. Infiltration was performed on one side and no anesthesia was delivered for the antimere side.

Parents were given a consent form for permission. The form also indicated that injection would be delivered if any sign of discomfort or pain was observed. As incentive, restorations were performed with no charge and participants were also paid for first visit transportation.

A single practitioner restored all right and left teeth. A research assistant took child under observation for recording the "Frankl Behavioural Rating Scale"14 form during the procedure. Injection was performed with a Mepivacaine Hydrochloride 3% carpule (Scandinibsa, Spain) containing no Epinephrine. Topical anesthesia was applied to the tissue for more comfort before injection. The dental procedure subsequently started 10 minutes after anesthetization. The paired t-test statistical analysis was performed to compare the result of study.

RESULTS

The number of girl participants were 20 (40 cases, 66.7%) and of boy participants were 10 (20 cases, 33.3%). Half of the samples (30 restorations, 50%) were treated with injection and the other half (30 restorations, 50%) without any injection. According to the result of this study, none of the cases (0%) or control samples (0%) showed any sort of reaction as indicated in 5 Frankl Behavioral Rating Scales (pain feeling, eye movement, body movement, verbal complaint, or crying) to dental restoration procedure in neither approach (**Graph 1**).



Graph 1. The frequency of success rate of restoration with or without injection is presented in this chart. As indicated, the success rate of restoration without infiltration is equal (100%) to with injection.

Equally successful restoration in non-injected group with the injected group proved that no tooth anesthetization is required for Class I restoration, even for mandibular second primary molar. In addition, gender difference has no effect on the success rate of no injection technique for Class I filling. The paired t-test statistical analysis showed the least probability rate (0.00) against the result of this study.

DISCUSSION

Local anesthesia is routinely recommended for restoration of primary teeth [3]. However, anesthesia -itself- is the stressful part of a dental procedure for dentists and for young patients [2]. In addition, the success rate of anesthesia is higher in upper arch than of the lower arch. Besides, regardless of the injection technique, anesthesia is not always fully effective especially for primary posterior teeth. Even effective, oral anesthesia may sometimes cause allergic reactions or some types of side effects in children [4].

This study proved (100%) that Class I restoration of mandibular second primary teeth is possible without applying any

injection and with no complication. None of the kids of either group showed any adverse reaction based upon "Frankl Behavioural Rating Scale". Previous studies showed that Block injection is not necessary for Class I restoration of mandibular second primary molar [11,14]. In fact, Block injection is not even recommendable for pulpotomy treatment, neither [12]. This study showed that infiltration is efficient for the pulp treatment procedure.

From the anatomy point of view, the effectiveness of infiltration is related to the less bone density of Childs' lower jaw. Thus, the anesthetic liquid would easily penetrate the body of mandible and affect the pulp of the primary tooth [7,15]. Some studies have also emphasized on the efficiency of infiltration technique for restoring Class I caries [7,8,13,16]. Sharaf [6] and Donohue et al. [8] found that the infiltration technique as equally effective as Bock technique. Some other studies even advise infiltration technique for pulp treatment of primary teeth [9,11,12]. Tudeshchoie et al. [10] in a randomized clinical trial found the infiltration technique more advantageous in comparison to Block method for lower first primary molar.

"Frankl Behavioral Rating Scale" still is a valid indicator for evaluation of child behavior during provision of an oral health care service. This is also emphasized by psychologists and pediatric nurses as a guideline for monitoring a child during treatment [17,18]. Additionally, this study was designed the way that "one operator" in a "one mouth" performed both fillings in two sides of "one jaw", right and left, with the "same caries classification". Therefore, all confounding factors are eliminated from this study. As an important goal, comfort of a young patient is all the quality care in a dental visit for dentist [19,20].

Treatment without anesthesia would make the "management of a child" much easier, the appointment time much shorter, the occasions of treatment refusal very limited, and definitely would improve child-dentist relationship. Finally, keeping recall and other treatment visits will not be troublesome for parents due to no negative child memory. Not to mention the very important fact that, a non-anesthetic session would be a stress-free appointment for the "practitioner". This would certainly improve self-confidence and self-satisfaction sense of the dentist; and would persuade him/her for further care for future visits. As such, when patient is well managed and the dentist is not forced to complete the treatment hastily, the procedure will conclude with "higher quality of treatment".

CONCLUSION

Anesthetizing the mandibular second primary molar is confidently unnecessary for restoration. This brings about less stress for practitioner, for eliminating the most stressful step of dental treatment. It is also advantageous for patient concerning the better compliance with the treatment. Finally, it provokes less/no adverse consequences of injection

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