

Comparison of caries removal using Carisolv or a conventional slow speed rotary instrument on a group of children aged 4-14 years in private specialized clinic in Baghdad

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Abstract

Carisolv is the only NaOCl-based chemical-mechanical caries removal product that is currently available on the market with a pH 11. Participants in the study who had primary caries lesions on their teeth were divided into two groups. The experimental group received chemical-mechanical treatment with Carisolv® gel (N=54) whereas the control group received traditional treatment model- by drilling and excavation (N=47). Children who were participating in the study had at least two primary caries lesions in the same group of teeth and were being treated by a pediatric dentist at a specialty dental clinic. Children with two or more identical caries lesions in the same set of teeth took part in this study. Using Carisolv® gel on one of the selected teeth (the experimental tooth), while drilling and excavating the other tooth as usual, both the experimental and control teeth were placed on the left side of the jaw. It was successful in getting the parents of the children to agree to have them participate in the study. Using Carisolv® gel, we conducted a clinical comparison of the traditional and chemical-mechanical approaches in this study. The aim of this research was to compare a chemical-mechanical approach of caries removal with

rotary instruments for children's deciduous and permanent teeth using Carisolv® gel and determine whether anesthesia is required.

KEYWORDS: Dental Caries; Prevention; Clinical Trial; Fluoride

Citation: Ali, N et al. (2023) Comparison of caries removal using Carisolv or a conventional slow speed rotary instrument on a group of children aged 4-14 years in private specialized clinic in Baghdad
Dentistry 3000. 1:a001 doi:10.5195/d3000.2023.450
Received: February 18, 2023
Accepted: April 10, 2023
Published: April 21, 2023
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Introduction

A significant issue in pediatric dentistry is dental caries. The interaction of environmental, behavioral, and host factors lead to the development of this complex disease. It causes the organic portion of the tooth's structure to be destroyed and its inorganic component to become demineralized [1].

The typical caries removal, which frequently results in discomfort especially in children, is uncomfortable for many patients and requires anesthetics when using rotary instruments [2].

Anesthetic use may be limited under similar circumstances as those with allergies, anxiety, or other illnesses.

Due to children's greater sensitivity to pain than adults, the standard dental treatment for teeth might be problematic for young patients [3].

Drilling can harm the tooth pulp, hence an alternative approach to caries removal is desirable. Carisolv® is a chemo-mechanical caries eradication technique that protects healthy tooth tissue.

Atraumatic restorative treatment (ART), air abrasion, laser, sono abrasion, and chemical-mechanical caries removal (CMCR) are some of the numerous techniques that are included in it [4].

Chemical-mechanical caries removal (CMCR) is a minimally invasive procedure that uses a chemical substance to remove the diseased dentin. The healthy dental structure is also preserved using this technique, preventing patient discomfort and pulp irritation. This method of caries eradication relies on dissolving rather than drilling. This method excavates soft carious dentin using chemical agents and atraumatic mechanical force [5].

The sole NaOCl-based chemical-mechanical caries removal agent that

is currently commercially marketed is Carisolv. Carisolv, the most recent iteration of the NaOCl-based chemical-mechanical agents, was released in 1998 by Medi Team Denta- lutveckling AB, Göteborg, Sweden. The advantage of Carisolv over Caridex is that it does not need to be heated and does not need a particular delivery system because it comes in a gel form [6].

Material and Methods

Children who were participating in the study had at least two primary caries lesions in the same group of teeth and were being treated by a pediatric dentist at a specialty dental clinic. The protocol of this study was approved by the Ethics Committee of (651). Children with two or more identical caries lesions in the same

set of teeth took part in this study. Using Carisolv® gel on one of the selected teeth (the experimental tooth), while drilling and excavating the other tooth as usual, Both the experimental and control teeth were placed on the left side of the jaw. It was successful in getting the parents of the children to agree to have them participate in the study. The study's participants (teeth with primary caries lesions) were split into two groups: the experimental group (N=54) underwent chemical-mechanical treatment with Carisolv® gel, and the control group (N=47) underwent a traditional treatment model by drilling and excavation.

Results

Results are summarized in Tables 1 through 5.

Table 1: Age and diagnosis of patients.

Caries experience in the study participants.				
		Experimental group		
		Total caries lesions	Deep caries	Total
Age	4 - 6	18	14	32
Groups	6 - 14	15	7	22
Total		33	21	54
		Control group		
		Total caries lesions	Deep caries	Total
Age	4 - 6			14
Groups	6 - 14			7
Total				21
				54

Table 2: Complaints within chemical-mechanical treatment group.

		Frequency
Symptom	Pain	12
	Other	12
	No complaints	25
	Unpleasant taste and smell	3
	Pain and unpleasant taste	2
	Total	54

Table 3: Use of anesthetics in the chemical-mechanical treatment group.

		Frequency
Anesthetic use	yes	9
	no	45
	Total	54

Table 4: Use of anesthetics in the traditional treatment (control) group.

		Frequency
Anesthetic use	yes	15
	no	32
	Total	47

Table 5: Use of drill in the chemical-mechanical treatment group.

		Frequency
Use of drill	yes	31
	no	23
	Total	54

Discussion

A primary goal of dental researchers looking for potential alternatives to current conventional approaches in the area of pediatric dentistry has always been the development of new techniques for eliminating caries. Using CarisolvTM gel, we conducted a clinical comparison of the traditional and chemomechanical approaches in this study.

Carisolv[®] can be used as an alternative in many situations, particularly when treating children, apprehensive patients, and patients with allergies. It is, however, unable to completely replace rotational instruments for the elimination of caries.

Participants perceived that the length of treatment to be shorter with Carisolv[®]. On the other hand, because anesthesia was used, which

takes 5–10 minutes to be effective, the overall drilling procedure may take longer. Due to the operators' insufficient training and experience, the working time with Carisolv[®] in our study may have been longer.

The frequency of complaints of discomfort decreased more than two-fold when Carisolv[®] gel was used, proving that this procedure is far less unpleasant than the standard drilling method. Almost half of the patients

who used this approach reported no concerns. Additionally, it might be argued that the chemical-mechanical technique completely lacked disagreeable tastes and odors.

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