

THE ANTIMICROBIAL EFFECT OF IODINE-POTASSIUM IODIDE AFTER CLEANING AND SHAPING PROCEDURES IN MESIAL ROOT CANALS OF MANDIBULAR MOLARS

Javier Tello-Barbaran¹, Hilda Moromi Nakata¹, Doris Salcedo-Moncada¹, Clovis M. Bramante², Ronald Ordinola-Zapata²

¹Faculty of Dentistry, San Marcos University, Lima, Peru.

²Department of Endodontics, Dental School of Bauru, University of São Paulo, Brazil.

ABSTRACT

The aim of this study was to evaluate the antibacterial activity of 2% iodine potassium iodide (IKI) used as a final rinse after the cleaning and shaping procedures in mesial root canals of mandibular molars infected with *Enterococcus faecalis*. Seventy two mandibular first molars were used. The root canals were infected with *Enterococcus faecalis* for 30 days. After the infection procedures, the root canals were cleaned and shaped by using the ProTaper rotary system and manual files. The teeth were randomly assigned to four experimental groups (N= 18). In group 1, the root canals were irrigated with sterile distilled water (control). In group 2, the root canals were irrigated with 1% Sodium hypochlorite (NaOCl) during instrumentation. In group 3, root canals were irrigated with 1% NaOCl during instrumentation and a five minute final irrigation using 2 %

IKI. In group 4, the root canals were irrigated with 1% NaOCl during instrumentation and a 15 minutes final irrigation with 2 % IKI. Bacteria colony-forming units (CFU) from root canals were semi-quantified and the presence of negative cultures among the groups was compared using Fisher's test ($p < 0,05$). The order of effectiveness was: 1% NaOCl plus 2% IKI for 15 minutes (95%), 1% NaOCl plus 2% IKI for 5 minutes (44%), 1% NaOCl (17%) and sterile distilled water (0%). Fisher's exact test showed a significant difference among the groups ($p < 0,05$). It was concluded that under in vitro conditions, IKI was able to eliminate the *Enterococcus faecalis* from infected dentin significantly in a 15-minute time frame after the cleaning and shaping procedures.

Key words: dentin, dental materials, apical periodontitis, *Enterococcus faecalis*.

EFFECTO ANTIMICROBIANO DEL YODURO DE POTASIO YODADO SOBRE DENTINA INFECTADA

RESUMEN

El objetivo del presente trabajo fue determinar el efecto in vitro del yoduro de potasio yodado al 2% posterior a la preparación quimiomecánica en conductos radiculares infectados con *Enterococcus faecalis*. Para este estudio, se emplearon 72 primeras molares inferiores permanentes de humanos, los cuales fueron infectados con *Enterococcus faecalis* ATCC 29212. Los conductos fueron preparados mediante instrumentación rotatoria y distribuidos de manera aleatoria en cuatro grupos de acuerdo al irrigante empleado: Grupo 1, agua destilada estéril; Grupo 2, NaOCl al 1%; Grupo 3: NaOCl al 1% más IKI al 2% durante cinco minutos; y, Grupo 4: NaOCl al 1% más IKI al 2% durante 15 minutos. Se tomaron muestras pre y postoperatorias de los conductos y se realizó la semicuantificación microbiológica de las

unidades formadoras de colonias de las bacterias. Fue comparada la presencia de cultivos negativos en los grupos mediante el test de Fisher utilizando un nivel de significancia de $p < 0,05$. El orden de efectividad para la desinfección de los conductos radiculares de mayor a menor fue: NaOCl al 1% más IKI al 2% durante 15 minutos (95%), NaOCl al 1% más IKI al 2% durante 5 minutos (44%), NaOCl al 1% (17%) y agua destilada (0%). Se concluye, que bajo las condiciones in vitro de este estudio, el yoduro de potasio yodado empleado después de la instrumentación fue capaz de eliminar significativamente a la bacteria *Enterococcus faecalis* en un tiempo de 15 minutos.

Palabras clave: dentina, materiales dentales, periodontitis apical, *Enterococcus faecalis*.