ANODAL ELECTROTonus USING A SEPARATE ELECTRODE TO SUPPRESS PAIN DURING CAVITY PREPARATION IN LABIOCERVICAL CAVITIES

BY

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ABSTRACT

A method to apply anodal electrotonus during the cavity preparation in labiocervical cavities was presented. The amount of the electrotonus through a separate different electrode was determined to the maximum allowable current which ranged between 0.1 and 1.5 mA.

In 35 teeth from 22 patients, analgesia, starting from the introduction of anodal tonus to the end of the cavity preparation, was observed in 22 (63%) teeth.

INTRODUCTION

In 1952, Suzuki[1] reported an operating procedure that incorporated the anodal electrotonus to suppress pain during cavity preparation. He applied the anodal tonus (4 or 10 µA) through the cutting instrument (different electrode) to the cavity. The negative indifferent electrode was placed in the palm of the patient.

Since then, several papers[2-9] were published based on Suzuki’s principle to minimize pain during cavity preparations. The effective group in these reports, however, contained complete elimination of pain and some reduction of pain during the anodal tonus. In this report, we described an improved method for applying anodal tonus during the preparation of labiocervical cavities.

MATERIALS AND METHODS

A stainless steel electrode (diameter, 0.8 mm) was used as the different electrode which was insulated except the tip. The different electrode was held by the operator and placed on the dentin in close proximity to the site to be drilled. The distance between the positive different electrode and the tip of the cutting instrument was maintained within 3 mm. The negative indifferent electrode was a carbon rod (diameter, 20 mm) covered with saline-soaked gauze. This was placed in the palm of the right hand of the patient.

If the cavity was wet in the case of removing the soft dentin, no special material was required to improve the electrical contact between the electrode and the dentin. If the cavity was dry, as in the case of drilling the retention form, a small amount of electro-conductive paste (ECG paste) was applied between the electrode tip and the dentin. A direct current source, originally designed as an iontophorator was used throughout this experiment. The outline of this apparatus is shown in Fig. 1. The commercially available rheostat that cor-

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esthesia. When the patient expressed perception of pain, the different electrode was connected to the circuit and the anodal tonus was applied. Then the cutting procedure was restored. The optimum current differed in each case ranging between 0.1 and 1.5 mA. Queries for pain sensation were made to patients before, during, and after application of the electrotonus.

Analgiesia, due to the anodal tonus, was observed in 22 (63%) of 35 teeth.

Discussion

Two important refinements were made in this study when compared with the former methods. The first was the use of the maximum allowable current. When the cutting instrument is used as the different electrode in the conventional methods, the current fluctuation caused by the rotation is inevitable. Therefore, the fluctuating current that does not elicit pain is not strong enough to allow full usage of the anodal depression, and also the maximum allowable anodal tonus is always painful if it fluctuates. The present method was able to avert fluctuation of the current and to obtain the full usage of the anodal tonus. The creep-in phenomenon must also be accounted for in obtaining this favorable result.

The wide view secured by the lip extractor and the firm positioning of the different electrode were indispensable to obtain stable results.

References


