The Antibacterial Capacity of Ozone on Microorganisms Associated with Pulp Necrosis and Apical Infection

(In – Vivo Study)

THESIS

Presented to the

Faculty of Oral and Dental Medicine

Cairo University.

In

Partial Fulfillment of the Requirements

For Masters Degree

In Conservative Dentistry

By

Mohamed A. El_banna

B.D.S (1999)

Faculty of Oral and Dental Medicine,

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2014

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The dental pulp is a very soft tooth structure resides in a rigid chamber which provides strong mechanical support. However, if this rigid shell loses its structural integrity, the pulp is under the threat of the adverse stimuli from the mouth. The response of the pulp to irritation is inflammation and, if unattended, this will eventually progress to pulp necrosis. [1]

A correlation seems to exist between the size of the periapical lesion and the number of bacterial species and cells in the root canal. [2] It has been shown that diseases of the pulp and periapical tissues are, in general terms, either inflammatory in nature or due to infections.

The bacterial microflora in root canal infections of untreated teeth is dominated by anaerobic bacteria, and several different species are commonly found.

It has been proven that it is impossible to obtain complete disinfection in all cases, even after thorough cleaning, shaping and irrigation with disinfectants and antiseptics. [3]

Several irrigating solutions are being used in today's modern practices such as sodium hypochlorite alone or sodium hypochlorite in combination with other irrigating or chelating agents such as Rc-prep and EDTA. [4]

Residual bacteria in the apical part of the root canal have been held responsible for failures; in addition, some of mechanical

preparation techniques tend to push the bacteria periapically, which is very difficult to be removed even by irrigation.

Ozone presents several properties that can be useful in medical fields. In view of its powerful oxidizing actions, ozone has a very rich chemistry and the oxidation of critical biomolecules undoubtedly accounts for its broad-spectrum biocidal properties Indeed, ozone can attack a very wide variety of biomolecules. [5]

The property of ozone to inactivate different species of microorganism has been described. In fact, the bactericide, virucide, and fungicide effects are known since the beginning of this century and have been employed in the treatment of infected local lesions.

Ozone is a powerful oxidative agent and presents greater bactericide properties when compared to chloride and with the advantage of presenting lower toxicity. Its activity is related to the interference on bacterial growth and viral inactivation. [6] In addition to its gaseous state that helps in infiltration to accessory canals and periapical lesions.

Therefore, it is important to shed a light on the effect of ozone (healozone) on cleaning, disinfection and healing of periapical lesions.

Review Of litrature