

بسم الله الرحمن الرحيم

﴿قالوا سبحانك لا علم لنا إلا
ما علمتنا انك أنت العليم الحكيم﴾

صدق الله العظيم

سورة البقرة ﴿٣٢﴾

**Root Strengthening and Adaptability of Warm
Vertically Compacted Resilon
Versus Gutta-percha.
“An-Invitro study”.**

Thesis

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Dedication

*I dedicate this thesis to my sister, father, uncle
Dr. Magid and of course to the rest of family for
their support and understanding.*

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Introduction

Every year despite the effectiveness of preventive dentistry and dental health care, millions of fillings and extractions are being done. The term “Root canal treatment” is now more accepted by the public after being known as a painful doubtful treatment, more people now prefer to go for root canal treatment and save their teeth.

The objectives of endodontic treatment are the total debridement of the pulp space, development of a fluid tight seal at the apical foramen; totally obliterate the root canal system and preserve the coronal portion by suitable restoration.

The progress in adhesive dentistry has directed the research for increasing the sealing between the filling material and the root canal walls. Recently methacrylate based resin sealers have been developed. The advancing bonding technique encourages the formation of deep resin tags extending into the dentinal tubules of the root canal. These deep resin tags help enhance bonding of the obliteration material to the canal walls, as well as reinforcement of the tooth.

Different techniques have been used in order to introduce the gutta-percha into the root canal system in an attempt to achieve a void-free homogenous filling. Whereas advances have been made in alternate obturation techniques, the cold lateral condensation technique is still one of the most frequently used techniques. Warm vertical condensation of gutta-percha is claimed to provide a greater density of gutta-percha at the apical portion and obturate lateral canals. It improves the adaptation to the root canal walls and reinforces the obturated roots.

Therefore, we have to shed a light on the degree of the sealing ability and strengthening of tooth filled with either Resilon (Resin filling material) versus Gutta-percha using warm vertical condensation technique.

Aim of the study:

Is to compare a new root canal obturation material (Resilon) versus gutta- percha using warm vertical condensation technique, performed by the use of system B heat source system to show

- 1- The effect of each material on root strengthening.
- 2- The differences in the adaptation to the internal root canal surface between the two types of materials.
- 3- The difference in apical microleakage between the two materials.

Review of literature Classification

- I- Historical Review.**
- II- Comparison of Obturation Technique.**
- III- Sealing ability of Gutta-Percha Versus Resilon.**
- IV- Fracture resistance of roots filled with Gutta-Percha versus
Resilon.**

Review of literature

Since that root canal filling represents about 60% of the root canal treatment success, so every effort was done through time in order to reach the best results and the best type of obturation materials.

I- Historical Review:

Obturation core material is one of the important factors that can determine the success or failure of the treatment. In which at the early ages of endodontics silver points as well as titanium points were used as obturation materials as they were having the advantage of being easily inserted into the root canal as well as their definitive radiographic appearance. However, many investigators have discouraged the use of silver cones because they produce corrosive by-products that can cause an inflammatory response.

West et al., (1979) ⁽¹⁾ study suggested that silver cone coated with negatively charged Teflon somehow might enhance the formation of osteodentin incrementally in dogs. The test material also appeared to reduce the severity of the inflammation and thus might partially or completely eliminate the undesirable corrosive bi-product of the uncoated silver cones. One young dog about 8 months old was the animal used in this experiment. The maxillary right third premolar, treated with noncharged Teflon points, had mixed inflammatory cells while the periapical tissue of eight roots filled with charged Teflon point extended beyond the apex showed only few scattered chronic inflammatory cells. This showed that both types of obturation materials had shown inflammatory reaction.

Palmer et al., (1979) ⁽²⁾ made a histological comparison of the tissue reaction to two metal-cone and root canal sealer endodontic filling systems. With use of two rhesus monkeys as experimental animals, 12 roots were prepared and filled