

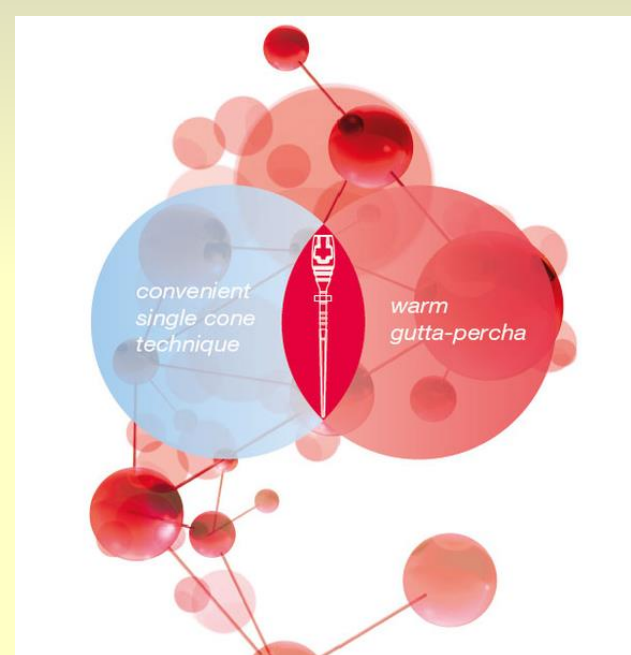


## THE USE OF Nd:YAG LASER IN ROOT CANAL OBTURATION: IN VITRO EVALUATION

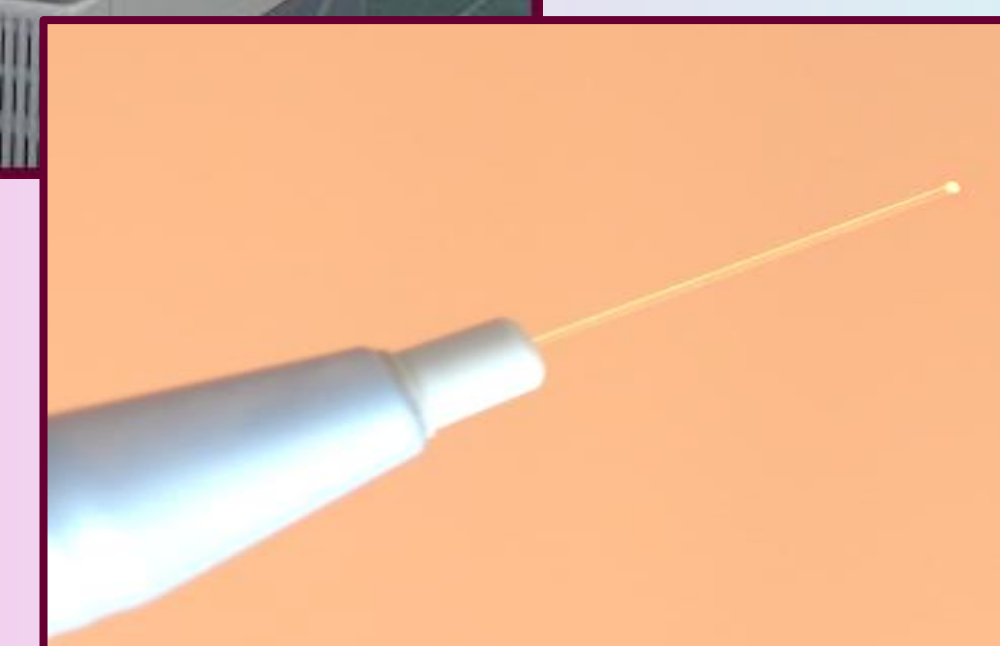
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### Introduction

Tridimensional hermetic root - canal filling is very important part of endodontic treatment which determines the success and post therapeutic condition of tooth.

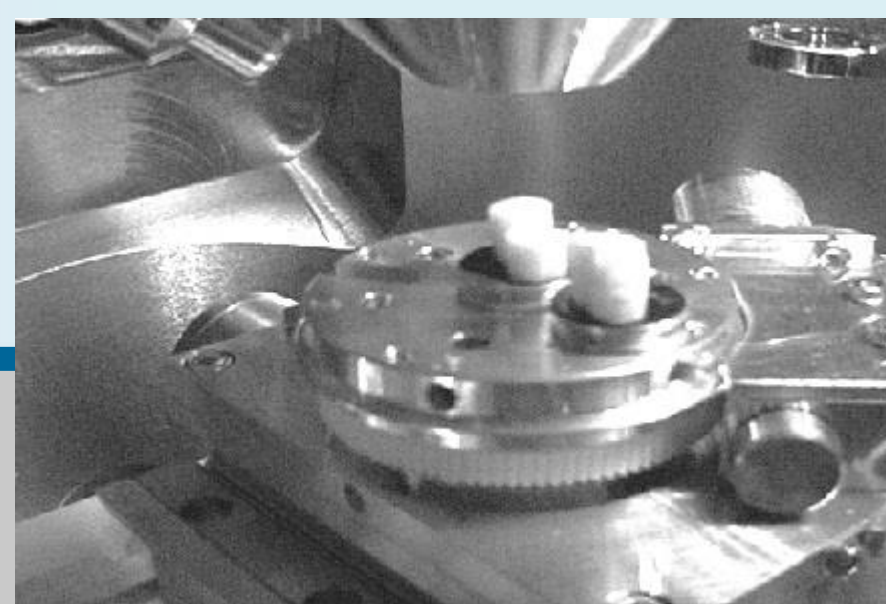
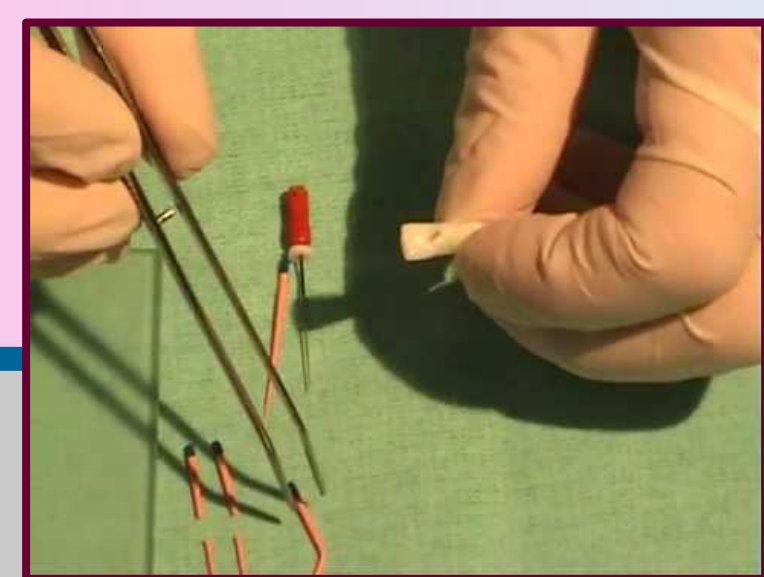
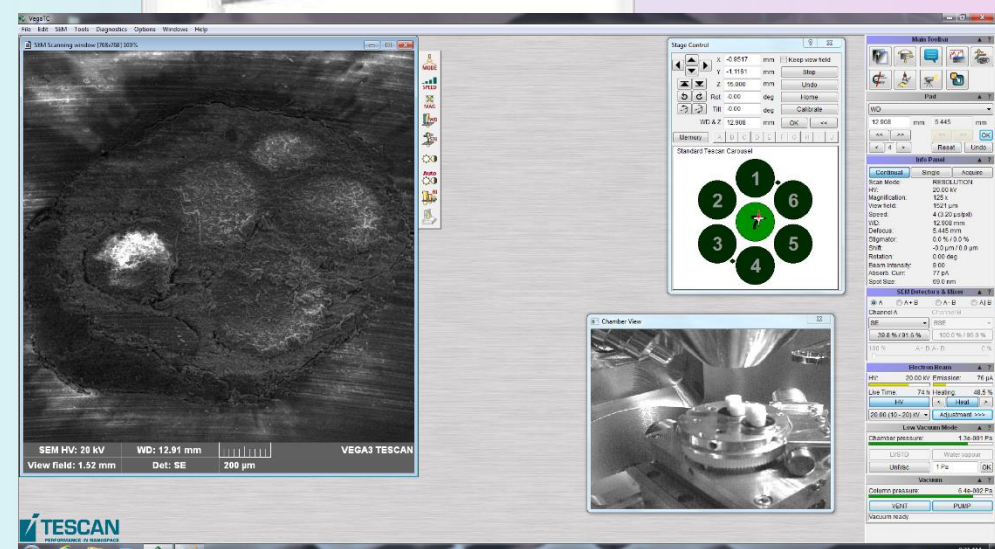
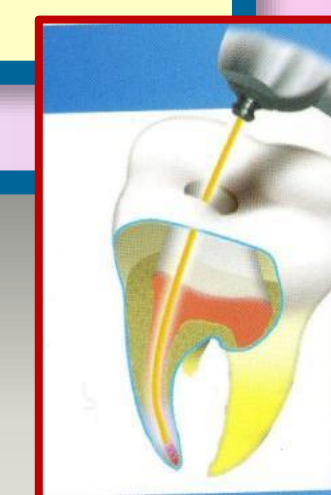


Gutta-percha is an isomer of natural rubber – 1,4 Polyisoprene. It is biologically inert, insoluble in water and on temperature above 49 degrees exceeds from alpha to beta modification, becomes plastic and intensively fills the canal system following its configuration.



### Objective

The aim of this study was to analyze canal obturation with modified conventional gutta-percha technique thermoplasticized with Nd:Yag laser.



### Materials and methods

Thirty single-rooted human teeth were used in this experimental research. Endodontic treatment was performed of all teeth and according of gutta-percha were categorized in 2 groups of 15 teeth. Root canal filling was performed with AH plus sealer and modified single cone gutta-percha technique in the first control group. In the second group after applying of AH plus and modified single cone gutta-percha technique finally with Nd:Yag laser beam were thermoplasticized.

In successive procedure the crowns were cut with turbine and diamond burs. Teeth roots were divided on three cross-cut segments one in orifice level, one in middle and one in apical third with turbine and specific burs.

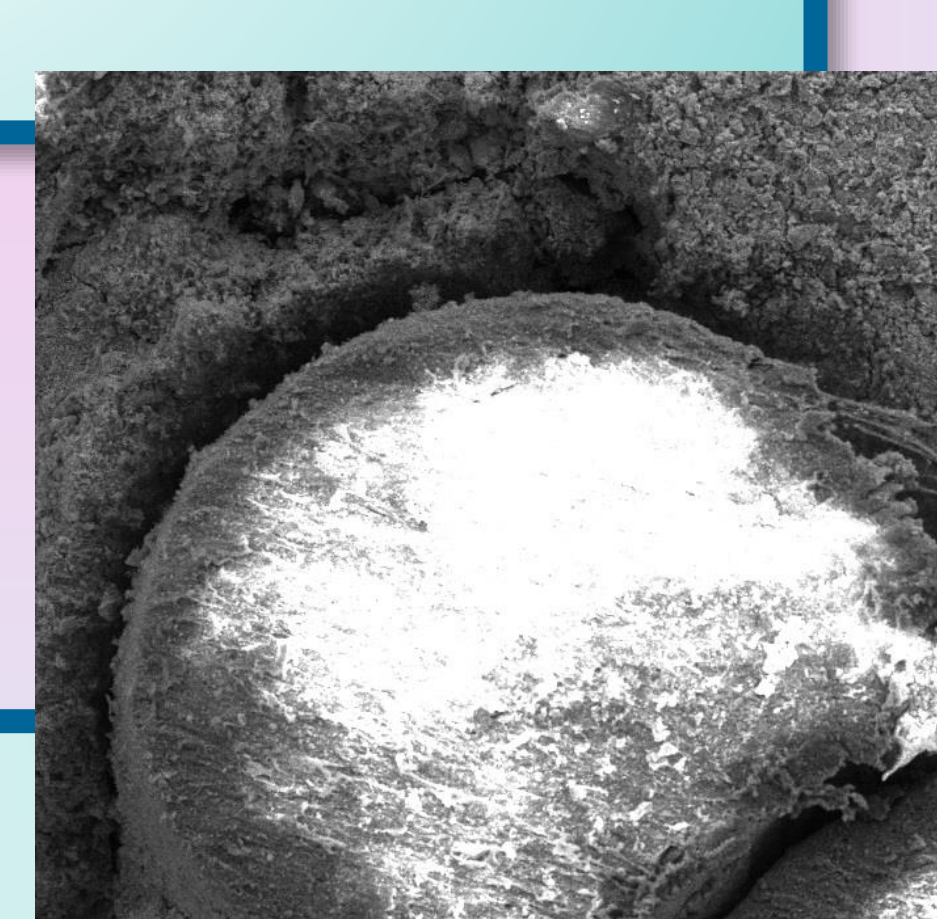
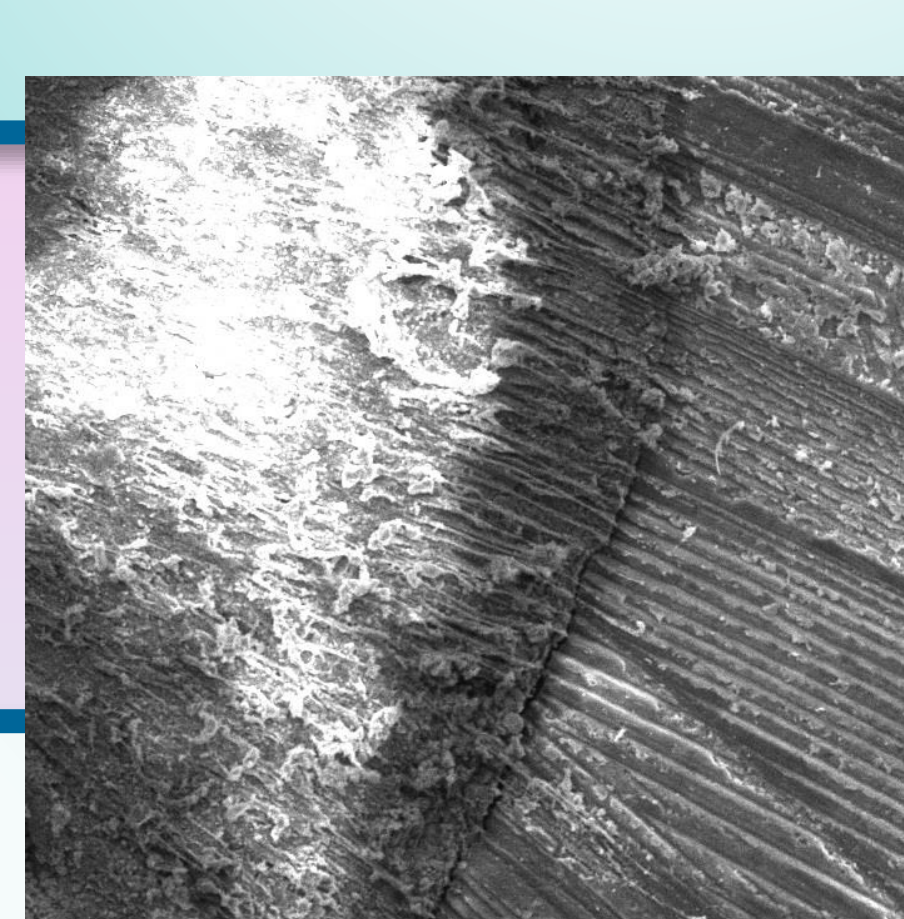
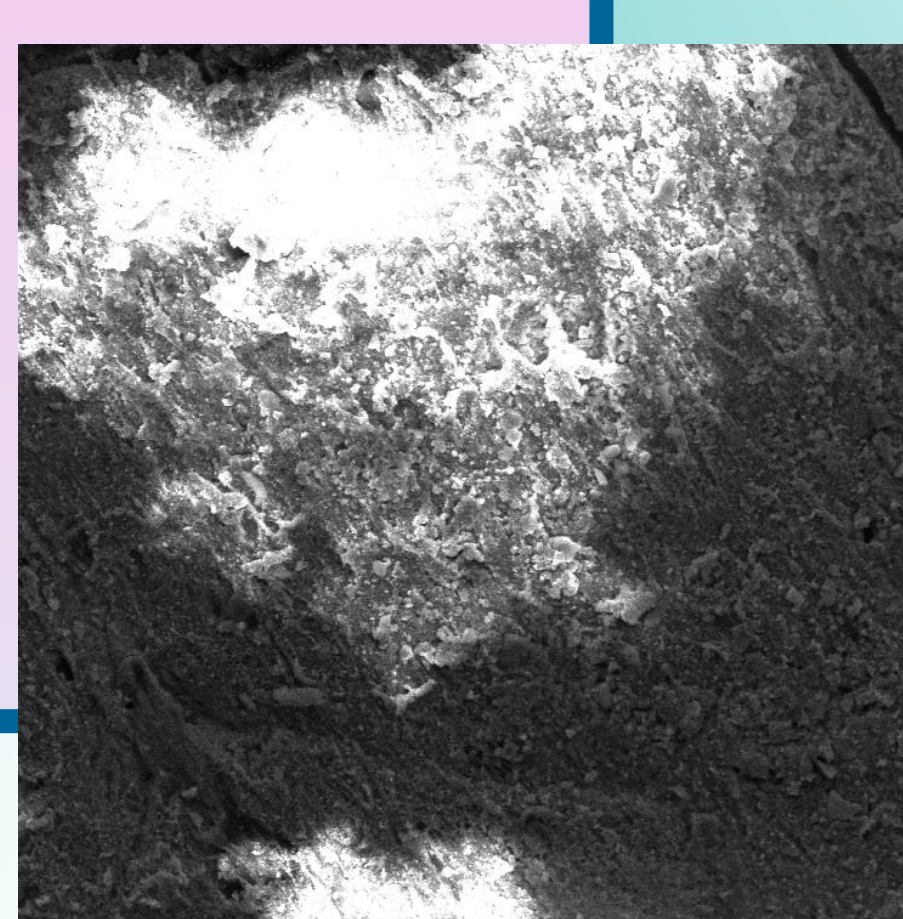
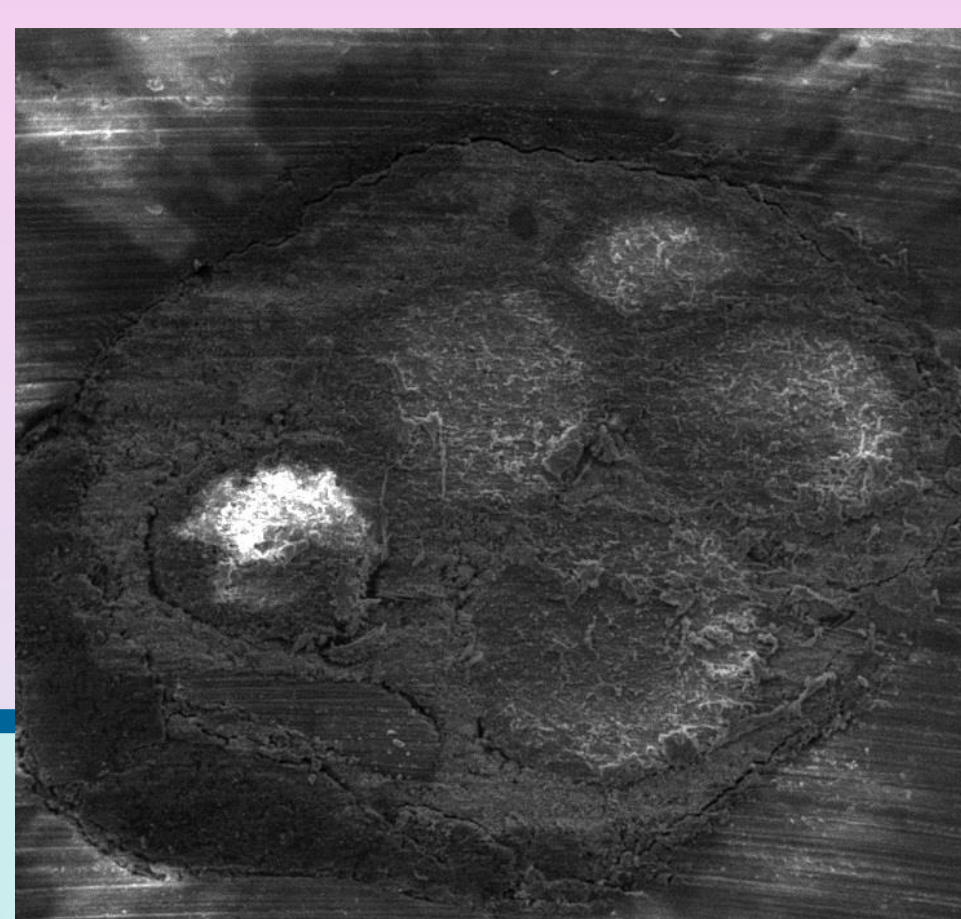
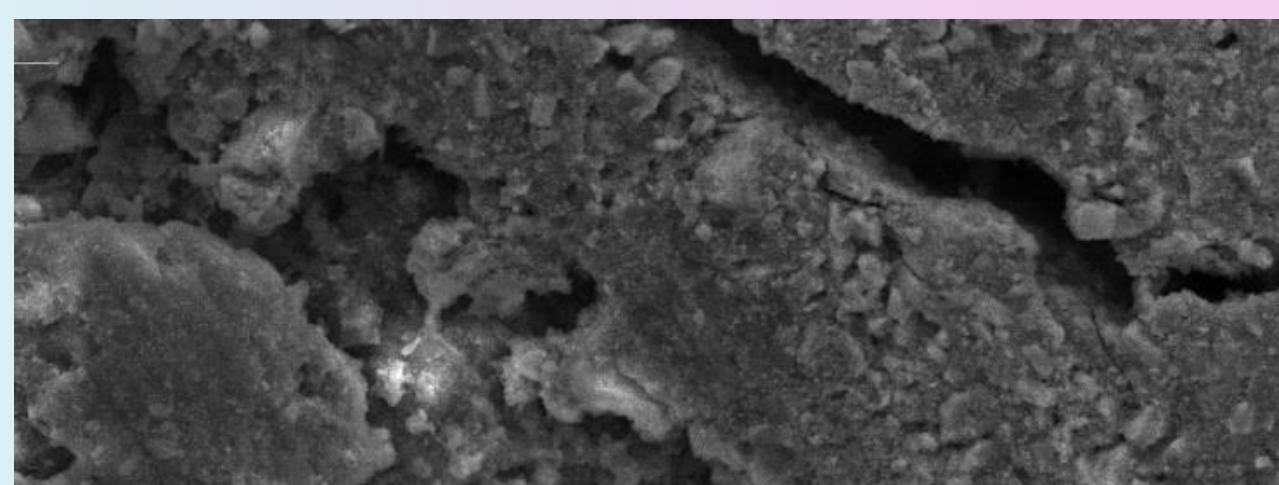
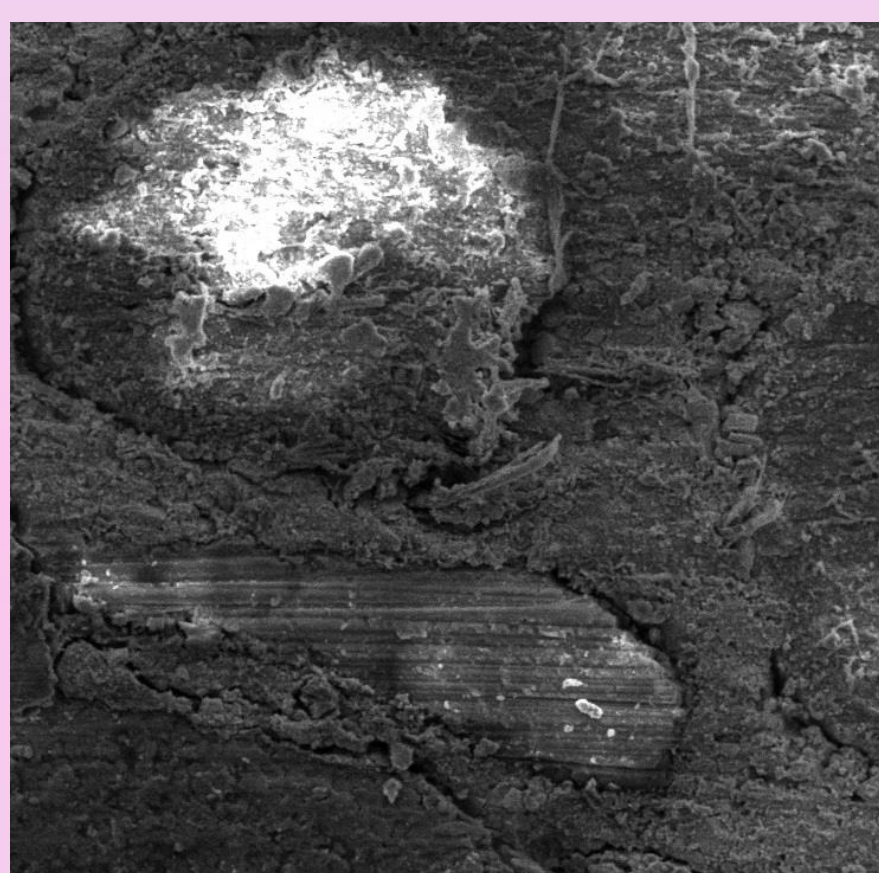
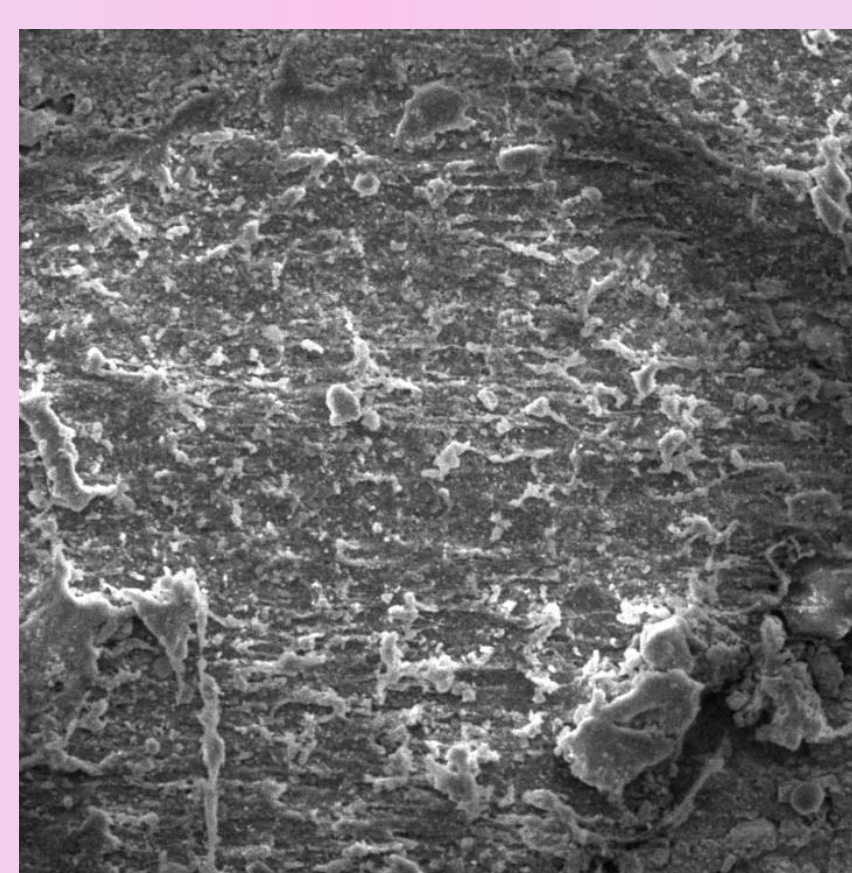
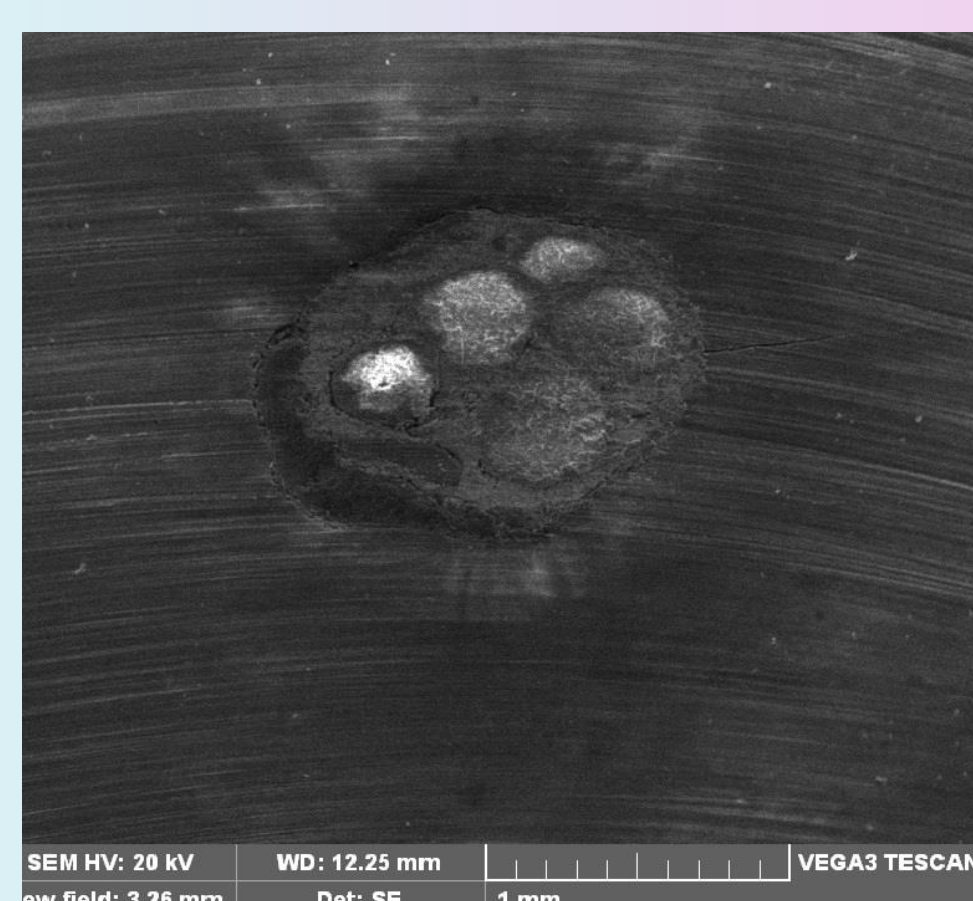
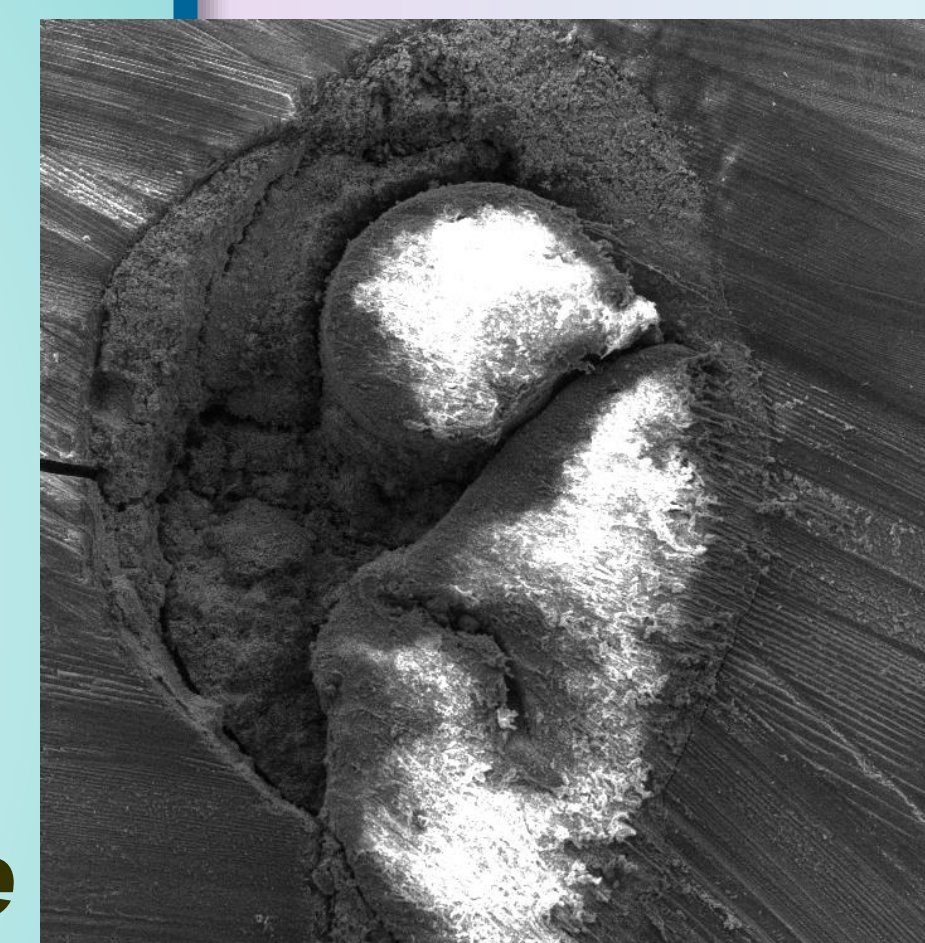
Quantitative and qualitative analysis and evaluation of canal obturation and its marginal adaptability were performed with SEM by two irrespective researchers.

#### ENDODONTIC TREATMENT

- the working length was established with a #10K file at 1mm from the apex
- crown-down technique for root canal instrumentation
- #40K, or #45K file depending on the canal's magnitude
- 2 ml 1% sodium hypochlorite was used between each file change
- final irrigation with 10 ml of distilled water
- dried with paper points

### Results

Evaluations made with SEM showed that gutta-percha technique thermoplasticized with Nd:Yag laser can be performed and it is possible. Plastic gutta-percha due to its condition seals endodontic space the most successfully.



### Conclusion:

Indicative areas of laser technology in endodontic indicates that it is a tool for fusion of gutta-percha. Obturation with gutta-percha technique thermo plasticized using Nd:YAG laser beam results with better root canal obturation when is compared to conventional methods. Using of lasers also can provide adequate cleaning and shaping, which contribute to the success of root canal treatment