Title: Diagnostic Accuracy of Artificial Intelligence, CBCT, and Clinical Examination in Detecting Number of Root Canals in Conventional and Retreated Maxillary and Mandibular Molars

NCT Number: “Pending”

Date: 29/10/2024

Informed consent
Researcher's name:

Research Title: Diagnostic Accuracy of Artificial Intelligence, CBCT, and Clinical Examination in Detecting Number of Root Canals in Conventional and Retreated Maxillary and Mandibular Molars

Patient's name: ..... Age: ..... Gender: .....

Address: .....
Phone: ..... Mobile: .....

1. Introduction: We ask you to participate in a medical research study. Introduction: We are asking you to participate in a medical research study. This document contains important information about the reason for the study and what you should do if you choose to participate in this study.

Its title is: " Diagnostic Accuracy of Artificial Intelligence, CBCT, and Clinical Examination in Detecting Number of Root Canals in Conventional and Retreated Maxillary and Mandibular Molars"

2. Participation in the research is voluntary and free of charge: there are no burdens or costs for the volunteer, and the volunteer has the right to withdraw from the research at any time. Participation in the research is voluntary and free of charge: there are no burdens or costs on the volunteer, and the volunteer has the right to withdraw from the research at any time.

3. Scientific background and purpose of conducting the research: Dentists face many challenges during root canal treatment, including the failure to detect all canals in the root canal system, which leads to incomplete disinfection and, consequently, root canal treatment failure. Scientific background and research objective: Dentists face many challenges during root canal treatment, including the failure to detect all the canals in the root canal system, which leads to incomplete disinfection and consequently root canal failure. The aim of this study is to determine the accuracy of the artificial intelligence program in detecting the number of root canals in the first molars of the lower jaw compared to the clinical methodand using 3D imaging.

4. Research location: Clinics Complex, Facultyof Dentistry, Misr International University

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5. Number of participants in the study: 212 patients Number of participants in the study: 212 patients

6.Method of selecting participants in the study:

Participants in the study are selected from both genders aged 18-40 years, who are interested in general oral health, able to adhere to follow-up conditions, do not suffer from any organicdisease, non-pregnant and non-lactating women, who do not regularly take painkillers or antiinflammatory medications before the study date, and have no history of allergy to any of the materials used in this study.

7. Details of the research steps: Details of the research steps:

Patients who attend the dental clinics at the International University of Egypt and have permanent molars requiring root canal treatment or retreatment according to eligibility criteria will be selected. Informed consent will be obtained, and then two-dimensional X-rays will be conducted before the treatment. Three-dimensional imaging will be performed for all cases. Other radiographs will be avoided between treatments to reduce the patient's exposure to radiation. Patients will be assigned to graduate students specializing in root canal treatment, who will then perform a procedure to access the root canals and record their number. After comparing the doctor's report with the 3D scans and the artificial intelligence program, the patient will be referred to the graduate students to complete the treatment procedures.

8. Duration of the study: One day per patient within the trial. Duration of the study: One day per patient within the trial.

9. Potential side effects of conducting the research: Potential side effects of conducting the research:

- The procedure may not be 100% successful, which could necessitate re-treatment or surgeryon the affected tooth.
- Pain may occur after the end of the root canal treatment session, or swelling, bruising, or inability to move the jaw normally, which may last for several days or more.

- Some tools may break inside the nerve during treatment, and they can either be left as they are or surgically removed by a specialist.
- Some of the tools used may cause a hole in the tooth, which might require additional surgical intervention by a specialist or could result in tooth loss.
- Nerve injury, which may lead to temporary and sometimes persistent numbness or tingling in the lips, chin, tongue, or other areas.
- The tooth may need a post placement or filling reconstruction before the crown is placed.

10. Expected benefits of the research: reducing diagnostic errors that may lead to root canal treatment failure. The expected benefits of the research: reducing diagnostic errors that may lead to root canal treatment failure. Secondly, reducing treatment time and increasing its accuracy, which will enhance the successrate of your treatment by eliminating human error.

Confidentiality of your information: Your information will be treated with complete confidentiality, and only researchers and members of the ethics committee will have access to your data. After the study is completed, you will be informed of the research results. You have the right not to answer any question you do not wish to answer. Photographs or videos of my teeth may be taken and used solely for documentation, educational, or research purposes, focusing on the teeth without showing the face.

11. Your right to withdraw: You have the right to withdraw from the research at any time without providing reasonsand without any negative consequences for you. Your right to withdraw: You have the right to withdraw from the research at any time without providing reasonsand without any negative consequences for you.

In case of any inquiries regarding the treatment, a number will be assigned for the research, and you can contact it.

Name of the physician conducting the research: Salma Khaled Kamel (01000101236)

Position: Assistant Lecturer

Misr International University

I acknowledge that I have reviewed and understood the procedures that will be carried out through this research and I agree to them.

Participant in the research:

Name:

Signature (thumbprint):

First witness (if present/in case of verbal consent):

Date:

Researcher's signature:

Date: