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Analyzing second molar configuration in a Syrian population using 3D radiograph

Submission date
05/06/2024

Recruitment status
No longer recruiting

Registration date
14/06/2024

Overall study status
Completed

Last Edited
05/08/2024

Condition category
Oral Health

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol
Background and study aims
Root canal treatment (endodontics) is a dental procedure that treats infection at the centre of a tooth. Successful endodontic treatments require a comprehensive knowledge of the root canal anatomy, so the aim of this study was to investigate the root number and morphology of the maxillary second molars (back teeth on the upper jaw) in Syrian patients.

Who can participate?
Patients aged between 15 and 65 years who had cone beam computed tomography (CBCT) scan images taken for orthodontic or surgical reasons Damascus University Faculty of Dentistry from November 2020 to January 2022

What does the study involve?
The CBCT images were examined by two endodontists. The detailed analysis included the number of roots, the number of canals and their configurations, bilateral symmetry, and relation to gender.

What are the possible benefits and risks of participating?
This study could improve our understanding of root canal anatomy and improve the outcomes of endodontic treatment. There are no risks as the patients are not exposed to radiation (for the CBCT scan) because of this study but rather because of other orthodontic or surgical reasons.

Where is the study run from?
Damascus University (Syria)

When is the study starting and how long is it expected to run for?
September 2020 to January 2022

Who is funding the study?
Damascus University (Syria)

Who is the main contact?
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Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
3238

Study information

Scientific Title
Cone beam computed tomography analysis of the root and canal morphology of the maxillary second molars in a Syrian subpopulation

Study objectives
A x2 test was used to assess left and right maxillary second molar symmetry in males and females

Ethics approval required
Ethics approval required

Ethics approval(s)
1. Approved 11/11/2020, Research Ethics Committee of the Faculty of Dentistry (Damascus University, Damascus, 22743, Syria; -; president@damasuniv.edu.sy), ref: 0932114205

2. Approved 11/11/2020, Research Ethics Committee of the Faculty of Dentistry (Damascus University, Damascus, 22743, Syria; +963 (0)932114205; mouhmmad9. altayyan@damascusuniversity.edu.sy), ref: 0944231399

Primary study design
Observational

Study design

Observational epidemiological study

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
The number of roots and configuration of the root canals of maxillary second molars across various levels (axial, coronal, sagittal, oblique, and 3D)

Interventions
Two experienced Endodontics performed image evaluation and data analysis of 250 CBCT images containing 500 maxillary second molars in patients aged between 15 and 65 years. Subsequently, a third dental specialist researcher randomly reviewed 10% of the sample. The study investigated the number of roots and configuration of the root canals of maxillary second molars across various levels (axial, coronal, sagittal, oblique, and 3D).

Intervention Type
Other

Primary outcome(s)
Number of roots in maxillary second molars and root canal configuration, recorded after being observed visually by two experienced Endodontics who performed CBCT image evaluation and data analysis across various levels (axial, coronal, sagittal, oblique, and 3D). Measured at a single timepoint for each patient and two experienced endodontics examined the CBCT images again 2 months later to ensure the accuracy of the recorded results.

Key secondary outcome(s)
The symmetry of the number of roots in maxillary second molars and symmetry in the numbers and configuration of the root canal, recorded after being observed visually by two experienced Endodontics who performed CBCT image evaluation and data analysis across various levels (axial, coronal, sagittal, oblique, and 3D). Measured at a single timepoint for each patient and two experienced endodontics examined the CBCT images again 2 months later to ensure the accuracy of the recorded results.

Completion date
12/01/2022

Eligibility

Key inclusion criteria
1. 250 CBCT images containing 500 maxillary second molars of patients aged between 15 and 65 years
2. Specified fully erupted maxillary second molars on both right and left sides
3. Possessing complete roots with a closed apex

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
15 Years

Upper age limit
65 Years

Sex
All

Total final enrolment
250

Key exclusion criteria
1. Root resorption (internal or external)
2. Apical lesions
3. Post and core
4. Calcified canals
5. Previous endodontic treatment
6. Teeth presented with dental malformations

Date of first enrolment
11/11/2020

Date of final enrolment
12/01/2022

Locations

Countries of recruitment
Syria

Study participating centre
Damascus University
Faculty of Dentistry
Damascus
Syria
22743

Sponsor information

Organisation
Damascus University

ROR
https://ror.org/03m098d13

Funder(s)

Funder type
University/education

Funder Name
Investigator initiated and funded

Funder Name
Damascus University

Alternative Name(s)
University of Damascus, , DU

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
Syria

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analyzed during the current study during this study will be included in the subsequent results publication

IPD sharing plan summary
Published as a supplement to the results publication