Clinical Trial Protocol
Iranian Registry of Clinical Trials

17 Sep 2026

Comparing the panoramic and CBCT imaging efficacy in reducing nerve injury and providing appropriate diagnostic information and surgical planning for removal of the impacted lower third molars with intimate nerve proximity: a radiographic and clinical study

Protocol summary

Study aim

Comparing the panoramic and CBCT imaging efficacy in reducing nerve injury and providing appropriate diagnostic information and surgical planning for the removal of the impacted lower third molars with intimate nerve proximity In the candidates for this surgery that referred to the Department of Oral, Maxillofacial Surgery, JundiShapur Dental Faculty, Ahvaz and a private center in Khuzestan.

Design

A clinical trial with a single control group, unblinded; simple randomization; each group has 129 patients.

Settings and conduct

This study will be conducted in the field of wisdom tooth surgery at Jundishapur Dental School of Ahvaz and a private center in Khuzestan, Iran. After clinical and radiographic examination, the treatment plan will be presented and based on a minimally invasive approach. The desired tooth extraction surgery will be performed and the desired parameters will be checked (The case and control group were chosen randomly).

Participants/Inclusion and exclusion criteria

Entry/Not-entry conditions: The presence of a hidden third molar of the lower jaw that needs to be removed; Having radiographic signs of root bresoimposition on the canal. The presence of an underlying disease; The use of drugs that interferes with wound healing; pathological condition in the area; Absence of adjacent second molar; local inflammation; Neurological sensory changes before surgery; Reluctance to obtain CBCT

Intervention groups

The surgical technique will be based on the PAN or CBCT images: The need to section the crown Root sectioning The possibility of safe bone removal on the buccal or lingual side Tooth or root extraction route How close the nerve is to the roots Risk areas in surgery

Main outcome variables

Inferior alveolar nerve damage

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20230313057705N1**
Registration date: **2023-04-08, 1402/01/19**
Registration timing: **registered_while_recruiting**

Last update: **2023-04-08, 1402/01/19**
Update count: **0**

Registration date

2023-04-08, 1402/01/19

Registrant information

Name

Kazem Khiabani

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-04-04, 1402/01/15

Expected recruitment end date

2023-06-20, 1402/03/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparing the panoramic and CBCT imaging efficacy in reducing nerve injury and providing appropriate diagnostic information and surgical planning for removal of the impacted lower third molars with intimate nerve proximity: a radiographic and clinical study

Public title

Comparing the efficiency of panoramic and CBCT in mandibular impacted wisdom tooth surgery

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

The presence of at least one impacted mandibular third molar that needs to be extracted Having radiographic signs of superimposition of the root on the canal (at least half the height of the canal) or the presence of at least one of the classic signs of involvement of the third molar with the IAC in PAN or the contact of the nerve and the underlying tooth (crown or root) in a long path with the nerve and root (like a tooth lying on a nerve).

Exclusion criteria:

The presence of any systemic disease Use of medications that can interfere with the immune response or wound healing after surgery Existence of a pathological condition in the third molar area Absence of adjacent second molar Local inflammation or perichronitis associated with the third molar during extraction Presence of neurosensory changes before the operation Reluctance to obtain CBCT

Age

No age limit

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **258**

Randomization (investigator's opinion)

Randomized

Randomization description

Each person's information (including the image file) is placed in a "sealed envelope". Patients are "sequentially" and based on "simple randomization" directed to two groups, PAN and CBCT. Sampling will continue until the list of the number of people in both groups is complete.

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Ahvaz University of Medical Sciences

Street address

Esfand Ave - Farvardin Blvd - Golestan

City

Ahvaz

Province

Khouzestan

Postal code

61357-15794

Approval date

2022-03-13, 1400/12/22

Ethics committee reference number

IR.AJUMS.REC.1401.576

Health conditions studied

1

Description of health condition studied

Impacted lower third molar surgery

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Inferior alveolar nerve damage

Timepoint

7th day and 1st, 3rd and 6th months after surgery

Method of measurement

1. 2-point discrimination (TPD) It measures the minimum distance that the patient can distinguish between two separate points.This test is done using a caliper and the result will be recorded numerically in millimeters. 2. Pin test: it will be done by touching the skin with a sharp needle to test the perception of pain (the needle is applied to the skin using its own weight).3. Light touch test: A cotton brush is used to test the tactile stimulation by gently touching the skin and the patient's detection threshold is evaluated.

Secondary outcomes

1

Description

Diagnostic efficiency during surgery
Timepoint
At the beginning of the study
Method of measurement
Based on points earned

2

Description
Surgical treatment plan efficiency
Timepoint
During surgery
Method of measurement
Based on points earned

3

Description
Mental comfort of the surgeon during surgery
Timepoint
During surgery
Method of measurement
Visual Analogue Scale

Intervention groups

1

Description
Intervention group: The CBCT group; in which the type of intervention is in the form of having CBCT imaging and diagnostic information and details obtained from it, which the surgeon uses to perform the surgery.
Category
Diagnosis

2

Description
Control group: It is the PAN group.]n which there are basic diagnostic information and details obtained from panoramic imaging and the surgical process will be done based on it.
Category
Diagnosis

Recruitment centers

1

Recruitment center
Name of recruitment center
School of Dentistry, Ahvaz Jundishapur University of Medical Sciences
Full name of responsible person
Kazem Savojbolaghchi Khiabani
Street address
Dey Ave, Farvardin Blvd, Golestan
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2

Recruitment center
Name of recruitment center
A private oral and maxillofacial surgery center
Full name of responsible person
Kazem Savojbolaghchi Khiabani
Street address
Keyhan building - Shahriyar Ave - Amiri Blvd
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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Full name of responsible person
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Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
No
Title of funding source
Faculty members grant
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

Academic

Person responsible for general inquiries

Contact

Name of organization / entity

Ahvaz University of Medical Sciences

Full name of responsible person

Kazem Khiabani

Position

Professor

Latest degree

Specialist

Other areas of specialty/work

Dentistry

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Undecided - It is not yet known if there will be a plan to make this available

Study Protocol

Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan

Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

Undecided - It is not yet known if there will be a plan to make this available

Analytic Code

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Undecided - It is not yet known if there will be a plan to make this available