

Clinical Trial Protocol

Iranian Registry of Clinical Trials

28 Jun 2026

Comparative evaluation of anesthetic efficacy of 1.8 mL articaine and 3.6 mL of articaine for mental nerve block in mandibular premolars with irreversible pulpitis: A randomized clinical trial study

Protocol summary

Study aim

Determine success rate of 1.8 articaine 4% mental nerve block in mandibular premolar with irreversible pulpitis by age and gender Determine success rate of 3.6 articaine 4% mental nerve block in mandibular premolar with irreversible pulpitis by age and gender Comparison of success rate in all 2 groups under investigation

Design

Randomised, parallel group trial with blinded outcome assessment. Randomisation will be written on pieces of paper and kept in sealed envelopes

Settings and conduct

The study will be performed by 2 dentists in a private clinic in Rafsanjan. After the anesthesia injection, patients and the operator are unaware (double-blinded). Patients are instructed to report any pain at any stage of treatment in VAS form.

Participants/Inclusion and exclusion criteria

Healthy adult patients 18-60 years old having mandibular premolar tooth with symptomatic irreversible pulpitis and a normal periapical radiographic appearance

Intervention groups

In the 1st group, 1.8 ml of 4% articaine solution (one anesthetic cartridge three minutes apart), in the second group, 3.6 ml of 4% articaine solution (one anesthetic cartridge and three minutes later followed by a moking injection); 2-3 minutes after the anesthesia injection, the patient is asked about the numbness of the lower lip, and if the answer is negative, he is excluded the study, If the answer is positive, the tooth will be isolate by a rubberdam, the caries will be removed, the access cavity is prepared and instrumentation will be performed.

Main outcome variables

Pain rate by Visual Analogue Scale form

General information

Reason for update

Acronym

MINB

IRCT registration information

IRCT registration number: **IRCT20210515051306N2**

Registration date: **2023-04-24, 1402/02/04**

Registration timing: **retrospective**

Last update: **2023-04-24, 1402/02/04**

Update count: **0**

Registration date

2023-04-24, 1402/02/04

Registrant information

Name

Ramin Abazarpoor

Name of organization / entity

Country

Iran (Islamic Republic of)

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abazarpoor@rums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-12-01, 1401/09/10

Expected recruitment end date

2023-03-16, 1401/12/25

Actual recruitment start date

2022-12-27, 1401/10/06

Actual recruitment end date

2023-04-04, 1402/01/15

Trial completion date

2023-04-04, 1402/01/15

Scientific title

Comparative evaluation of anesthetic efficacy of 1.8 mL articaine and 3.6 mL of articaine for mental nerve block in mandibular premolars with irreversible pulpitis: A randomized clinical trial study

Public title

Anesthetic efficacy of two different volumes of articaine for mental nerve block

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Healthy adult patients 18–60 years old Having a mandibular premolar tooth with symptomatic irreversible pulpitis Normal periapical radiographic appearance

Exclusion criteria:

History of sensitivity to 4% articaine or epinephrine Systemic diseases Pregnancy or breastfeeding Any type of medication that could potentially interact with the anesthetic solution Spontaneous pain Periodontal disease or unable to get restoration Having pain killer late 12 hours

Age

From **18 years** old to **60 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Investigator

Sample size

Target sample size: **64**

Actual sample size reached: **64**

Randomization (investigator's opinion)

Randomized

Randomization description

Simple randomization individually 3 categories (1.8 articaine, 3.6 articaine) were written on 64 pieces of paper and kept in sealed envelopes.

Blinding (investigator's opinion)

Double blinded

Blinding description

The first practitioner who perform the local anesthetic injection will open the envelope, and based on the category each patient will receive either 2 cartridges of the anesthetic solution or a cartridge of the anesthetic solution followed by a mock injection. Another practitioner will perform the rest of the treatment including access cavity preparation and root canal instrumentation. Hence, the second practitioner and the patients won't be aware of the volume of anesthetic solution used.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Rafsanjan University of Medical Sciences

Street address

Imam Ali Blv.

City

rafsanjan

Province

Kerman

Postal code

7717933777

Approval date

2022-12-26, 1401/10/05

Ethics committee reference number

IR.RUMS.REC.1401.185

Health conditions studied

1

Description of health condition studied

irreversible pulpitis of the mandibular premolar

ICD-10 code

pulpitis

ICD-10 code description

k04.0

Primary outcomes

1

Description

Pain score during treatment on Visual Analogue Scale (VAS)

Timepoint

before administration of the anesthetic solution and during the endodontic treatment

Method of measurement

Visual Analogue Scale (VAS)

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: The mental nerve block involved a deposition of 1.8 mL 4% articaine with 1:100,000 epinephrine (Artinibsa, Inibsa, Barcelona, Spain) each patient received a cartridge of the anesthetic solution

followed by a mock injection. The treatment including access cavity preparation and root canal instrumentation were performed 2-3 minutes after the injection. The patients were asked to rate their pain using a Heft-Parkervisual analog pain scale (VAS) before administration of the anesthetic solution and during the endodontic treatment.

Category

Treatment - Drugs

2**Description**

Intervention group: The mental nerve block involved a deposition of 3.6mL 4% articaine with 1:100,000 epinephrine (Artinibsa, Inibsa, Barcelona, Spain) each patient received 2 cartridges of the anesthetic solution. the treatment including access cavity preparation and root canal instrumentation were performed 2-3 minutes after the injection. The patients were asked to rate their pain using a Heft-Parkervisual analog pain scale (VAS) before administration of the anesthetic solution and during the endodontic treatment.

Category

Treatment - Drugs

Recruitment centers**1****Recruitment center****Name of recruitment center**

Private Clinic

Full name of responsible person

Ramin Abazarpour

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Web page address**Sponsors / Funding sources****1****Sponsor****Name of organization / entity**

Rafsanjan University of Medical Sciences

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?**

Yes

Title of funding source

Rafsanjan University of Medical Sciences

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**

Rafsanjan University of Medical Sciences

Full name of responsible person

Ramin Abazarpour

Position

Assistant professor

Latest degree

Specialist

Other areas of specialty/work

Dentistry

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Person responsible for updating data

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

There is no more information

Study Protocol

No - There is not a plan to make this available

Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available