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Improving chewing function to treat chronic pain

Submission date	Recruitment status	[X] Prospectively registered
03/07/2014	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
22/07/2014	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
17/04/2019	Digestive System	

Plain English summary of protocol

Background and study aims
The cause of long-term disorders of the jaw joint called chronic temporomandibular joint disorders (TMD) is unknown and therapy is usually not predictable. Because the risk factors for TMD include contact between teeth that hinders normal movement and habitual chewing on the affected side, this study attempts to find out the effect of the therapy in restoring jaw closure and improving chewing.

Who can participate?
Adults age 18-65 with TMD who are suffering from pain can take part in this study.

What does the study involve?
Patients will be randomly allocated to one of two groups: active therapy and placebo (dummy treatment). Patients allocated to the active therapy group will have their premature teeth contact rectified. Patients allocated to the placebo group will be subjected to a similar procedure but tooth enamel will not be removed.

What are the possible benefits and risks of participating?
The benefits are that the therapy could completely eliminate or reduce pain and/or help with alteration of limited mouth opening. It may help the joint return to its normal position (not always achieved) and to prevent an increase in joint, muscular and dental damage. The only risk or inconvenience appear to be from the grinding down of the enamel, which is irreversible. Hypersensitivity could occur during the treatment. If this were to occur, your treatment would be stopped immediately. This may mean that you would not be able to eat vigorously, which is what is hoped for, the treatment could therefore be ineffective.

Where is the study run from?
University of Santiago de Compostela (Universidad de Santiago de Compostela) (Spain)

When is the study starting and how long is it expected to run for?
July 2014 to June 2016

Who is funding the study?
Ministry of Science and Innovation of the Government of Spain

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

ClinicalTrials.gov (NCT)
NCT02144233

Protocol serial number
UTN: U1111-1134-0832

Study information

Scientific Title
Restoring physiological jaw closure and MAsticatory function as treatment for chronic Pain: a randomized clinical trial

Acronym
MAP

Study objectives
Current hypothesis as of 04/05/2016:
That the restoration of physiological jaw closure and impaired chewing function by occlusal adjustment therapy will relieve chronic TMD-pain. Efficacy will be demonstrated by showing

significantly superior pain relief at the 6-month visit with active treatment as compared with placebo.

Previous hypothesis:
The primary endpoint will be the average change in pain score from baseline to the 3- and 6-months assessments. Efficacy will be demonstrated by superior pain relief with the active treatment compared with the placebo.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Autonomic Committee of the Research Ethics of Galicia, updated on 29/11/2013, CAEI approval number 2009/017

Study design
Interventional single-centre, randomized, single-blind, blinded assessment, placebo-controlled, open-label, controlled study

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Facial pain: Chronic temporomandibular joint (TMJ) disorders (TMD)

Interventions
Active therapy will consist of the elimination of premature tooth contacts and the reduction of the steeper lateral anterior guidance. Placebo therapy will be conducted in a manner identical to the active adjustment, but no enamel will be removed.

Added 09/05/2016:
Interim analysis plan and stopping rules:
The Data and Safety Monitoring Board will be responsible for activating early stopping. The study will employ an interim analysis plan with a single interim analysis after 70% of participants have completed the six-month follow-up visit. Using the Lan-DeMets version of the O'Brien-Fleming stopping rule, the critical value for statistical significance at the interim analysis (under intention-to-treat approach) will be +2.438, corresponding to a nominal two-sided P value of 0.0146.

Intervention Type
Procedure/Surgery

Primary outcome(s)
Current primary outcome measures as of 04/05/2016:
Self-reported affected-side pain-intensity across the trial (baseline, 3- and 6-Months) on a 0–10 numerical rating (NRS) or visual analogue (VAS) scales (0 = no pain, 10 = worst possible pain).

One after-MAP time: 9-12-Months after therapy is anticipated. Independent assessment. According to Comet Initiative, this outcome assessment follows the IMMPACT guidelines (DOI: 10.1016/j.pain.2004.09.012).

Previous primary outcome measures:
Self-reported pain intensity on the affected side. Measurement method: visual analogue scale (VAS); 0 = no pain, 10 = worst imaginable pain. Time points: baseline, 3 months and 6 months follow-up.

Key secondary outcome(s))
Current secondary outcome measures as of 04/05/2016:
1. Maximum unassisted jaw opening, using a Boley gauge. Limited if ≤38 mm (females) or ≤40 mm (males)
2. Chewing function (alternate vs. one habitual chewing side):
2.1. Clinically observed habitual chewing side (if at least 7/10 almonds by the same side); alternately, observing the lateral bolus of chewing-gum placement during chewing tests (Christensen & Radue, 1985)
2.2. Interview: actual and retrospective chewing function (Diernberger et al., 2008)
3. Quality of life assessed by the self-administered Spanish validated questionnaire SCL-90-R (Derogatis et al., 1976; González de Rivera et al., 1989)

Previous secondary outcome measures:
1. Maximum unassisted mouth opening (using a Boley gauge)
2. Chewing function (observed: alternate vs one habitual chewing side)
3. Quality of life using self-administered tests
Time points: baseline and 3 months and 6 months follow-up.

Completion date
30/06/2017

Eligibility

Key inclusion criteria
Current inclusion criteria as of 04/05/2016:
1. Pre-screened patients satisfying the TMD-pain instrument (Gonzalez et al., 2011); TMD-pain diagnosis requires each of two findings: pain of sufficient frequency across a recent period and modification of the pain by jaw function. Assessors (JLC, FLF, MPC) will apply this instrument for eligibility
2. Patients suffering self-reported significant chronic TMD-pain (Joint and/or Muscle pain) according to DC/TMD (Schiffman et al., 2014)
3. Aged 18–65 years
4. Completely dentate adults with normal (or adequately restored with fixed crowns or bridges) occlusion
5. Suffering from significant TMD-pain (≥4 and ≤9 scores, in a 0–10 visual and/or numerical analogue scale-VAS/NRS; 0 = no pain to 10 = worst possible pain)
6. Had requested therapy for TMD-pain, referred to the Hospital/University Service
7. After more than 6 months of treatment with conservative therapies

Previous inclusion criteria:
TMD patients, aged 18-65 years with full dentates and normo-occlusion suffering significant pain (pain scores ≥4 and ≤9; method: visual analogue scale (VAS); 0 = no pain, 10 = worst imaginable pain)

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
65 years

Sex
All

Total final enrolment
21

Key exclusion criteria
Current exclusion criteria as of 04/05/2016:
1. Psychosis
2. Major depression
3. Substance abuse
4. Cognitive impairment
5. Addiction to morphine or derivatives
6. Litigation or asking for disability/retirement compensation for chronic pain
7. Dental care professionals
8. Orthodontic therapy during the last 2 years
9. Degree 2 to 3 of tooth mobility
10. Patients with any pain that is more severe, in the same location as, or cannot be clearly distinguished from TMD pain
11. Individuals for whom minimally-invasive occlusal adjustment could not achieve occlusal equilibration (assessed by the experts in occlusion, Drs. USM, MJM), to minimize tissue removal. Over 2 mm of difference between the maximal intercuspal position and the centric occlusion; and/or over 4 mm (2 mm on any side) of difference between upper and lower arches measured: between the mesial fossae of the first upper premolars with respect to the cusps of the first lower premolars; and the mesiopalatal cusp of the first upper molars with respect to the central fossae of the first lower molars. A Boley gauge (Beerendonk, nº REF 042-750-00; Dentaurum GmbH & Co., KG, Ispringen, Germany) will be used for these intraoral measurements
12. No periodontal disease (except for chronic severe cases with grade 2–3 mobility), fibromyalgia nor neuropathic pains are exclusion criteria

Previous exclusion criteria:
Main exclusion criterion is the requirement of excessive enamel removal to equilibrate the dental articulation (occlusion)

Date of first enrolment
11/08/2014

Date of final enrolment
30/06/2017

Locations

Countries of recruitment
Spain

Study participating centre
Universidad de Santiago de Compostela
Faculty of Medicine and Dentistry
Santiago de Compostela
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15782

Study participating centre
The University Hospital Complex of A Coruña
Service of Oral and Maxillofacial Surgery
A Coruña
Spain
15006

Sponsor information

Organisation
University of Santiago de Compostela (Universidad de Santiago de Compostela) (Spain)

ROR
https://ror.org/030eybx10

Funder(s)

Funder type
Government

Funder Name
Ministerio de Ciencia e Innovación (Grant no. PI11/02507)

Alternative Name(s)
CienciaGob, Ministerio de Ciencia e Innovación de España, Ministry of Science and Innovation, Spanish Ministry of Science and Innovation, Ministry of Science and Innovation of Spain, Spain, Ministry for Science and Innovation, Ministeri de Ciència i Innovació, MCIN, MICINN

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Spain

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	08/04/2013		Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes