ISRCTN18179115 https://doi.org/10.1186/ISRCTN18179115

Comparison of two different matrix band systems in restoring two surface cavities in posterior teeth done by senior undergraduate students at Qassim University, Saudi Arabia

Submission date
19/09/2016

Recruitment status
No longer recruiting

Registration date
28/09/2016

Overall study status
Completed

Last Edited
10/10/2016

Condition category
Oral Health

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Cavity restoration refers to the dental treatment used to treat a hole in the tooth (for example, caries or injury). Matrix band systems are made up of a piece of metal or other material and are used to support and give form to the cavity restoration being used (for example, a dental filling) both when its being applied and then when its hardening in the tooth. Matrices are used to try and ensure the end result is similar in shape to that of the original tooth. The aim of this study was to compare two different types of matrix band system (circumferential matrix system and sectional matrix system) to see which is the best at duplicating the natural structure of the tooth.

Who can participate?
Adults (aged over 18) that need cavity restoration treatment.

What does the study involve?
Participants are randomly allocated to one of two groups. Those in group 1 have cavity restoration treatment using the circumference matrix band system. This is the oldest established matrix band system used in dentistry and it still widely used. Participants in group 2 have cavity restoration treatment using the much newer sectional matrix system. Both systems were assessed in terms of their ability to duplicate the natural shape and structure of the teeth immediately after treatment.

What are the possible benefits and risks of participating?
Benefits include the participants having dental treatment and having their cavities restored using one of the two were receiving restorations using one of the above mentioned matrix band system technique. There were no risks involved in this study.

Where is the study run from?
College of Dentistry, Qassim University (Saudi Arabia)

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

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
1. Dr Durre Sadaf (public)
2. Dr Muhammad Zubair Ahmad (scientific)
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Contact information

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Public

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Additional identifiers

Protocol serial number
16031979

Study information

Scientific Title

Comparison of two different matrix band systems in restoring two surface cavities in posterior teeth done by senior undergraduate students at Qassim University, Saudi Arabia: a randomized controlled clinical trial

Study objectives
There is no difference between two matrix band systems when restoring class 2 cavities in posterior teeth

Ethics approval required
Old ethics approval format

Ethics approval(s)
Dental Research Centre (DRC), College of Dentistry, Qassim University, Saudi Arabia, 11/12 /2014, ref: EA/76/2014

Study design
Randomised controlled clinical trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Class 2 cavities in posterior teeth

Interventions
Matrix band systems are used to restore cavities with missing proximal walls. This helps in adequate condensation and placement of restorative material which duplicates natural tooth structure, contacts and contours. A good placement of matrix band system eliminates the risk of food impaction, dental caries and gingival and periodontal diseases.

Adult participants requiring cavity restoration work were recruited into this study and treated by senior undergraduate students. They are randomly allcoated to one of two groups:

Group 1: Participants in this group underwent cavity restoration treatment using the circumference matrix band system (control group). Circumferential matrix band system, as name indicates is a matrix band system that wraps around the tooth. Also known as Tofflemire matrix band system, it is still widely used in dentistry, taught and practiced in preclinical and clinical years of all dental schools. The key advantage of working with this system is ease of use in restoring large surface defects in teeth. Matrix bands can be placed ahead of time so it becomes very easy to place this system on a prepared tooth and then to place final restoration. This band is available in various heights and thicknesses.
Group 2: Participants in this group underwent cavity restoration treatment using the sectional matrix band system (intervention). Sectional matrix band systems are relatively new and can be used as an alternative to circumferential matrix band system. Combined with the additional force provided by separating rings, this system produces reliable proximal contacts even if there are spaces present between teeth.

For all participants in both groups teeth were restored using either the composite using multilayered technique or amalgam. Contact points were then evaluated using dental floss. Presence or absence of proximal overhangs were assessed with digital bitewing radiographs. Since the outcome variables were assessed immediately after this cavity restorations, no follow up visits were required for this study.

Intervention Type
Other

Primary outcome(s)
Contact points, measured using dental floss, assessed immediately after cavity restoration (dental fillings)

Key secondary outcome(s))
Proximal overhanging margins, measured using intra-oral digital bitewing radiographs and categorized as positive overhangs, negative overhangs and absent overhangs. Assessed immediately after cavity restoration (dental fillings)

Completion date
02/06/2016

Eligibility

Key inclusion criteria
1. Patients with good general health
2. Minimum age of 18
3. Fully erupted occluding premolars and molars teeth

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria
1. Severe periodontal diseases
2. Diastema between posterior teeth
3. Third molar teeth
4. Presence of fixed partial dentures and tooth mobility more than score 1

Date of first enrolment

20/12/2014

Date of final enrolment
02/06/2016

Locations

Countries of recruitment
Saudi Arabia

Study participating centre
College of Dentistry, Qassim University
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Sponsor information

Organisation
Qassim University

ROR
https://ror.org/01wsfe280

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan
The current data sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary

Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Basic results		28/09/2016	10/10/2016	No	No