

Comparing the performance of two types of aesthetic crowns for children's primary teeth

Submission date 13/05/2025	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 27/05/2025	Overall study status Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 27/05/2025	Condition category Oral Health	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aim

This study aims to evaluate the clinical performance of different types of prefabricated crowns used to restore second primary molars after pulpotomy (a common procedure to treat infected dental pulp in children). The crowns being studied include BioFlx, Zirconia, and stainless steel crowns with silver and gold coloring. The goal is to assess how well these crowns protect the treated teeth, maintain function.

Who can participate?

Children aged 6 to 10 years who need full-coverage restoration after pulpotomy, have good oral hygiene, and are cooperative during dental treatment may be eligible to participate. Written informed consent from parents or guardians is required.

What does the study involve?

Children will receive a pulpotomy on one or more second primary molars. The treated tooth will then be restored with one of the study crowns. Follow-up appointments will take place at 1, 6, and 12 months after treatment to check the crown's fit and oral health.

What are the possible benefits and risks of participating?

Benefits:

The child will receive a high-quality, full-coverage restoration.
Regular follow-up may help detect and manage any issues early.
The findings may help improve future pediatric dental care.

Risks:

Minor discomfort during treatment or follow-up.
Possible failure of the crown, requiring further dental treatment.

Where is the study run from?

Department of Pediatric Dentistry, Faculty of Dentistry, University of Damascus, Syria

Who is funding the study?

This study is self-funded by the principal investigator and supported by the Faculty of Dentistry, University of Damascus.

Who is the main contact?

Ahmad Taleb; ahmed.taleb1195@gmail.com

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Study website

<https://damascusuniversity.edu.sy/dent/>

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Additional identifiers

EudraCT/CTIS number

Nil known

IRAS number

ClinicalTrials.gov number

Nil known

Secondary identifying numbers

UDDS-1157-30122024/SRC-1550

Study information

Scientific Title

Evaluation of the clinical performance of two types of prefabricated aesthetic crowns in the restoration of primary molars: a randomized controlled trial

Acronym

PEARP

Study objectives

This study is based on the following null hypotheses:

Marginal Adaptation: There is no difference between prefabricated aesthetic crowns (BioFlx and Zirconia) and stainless-steel crowns (silver and gold colored) in terms of marginal adaptation on primary molars.

Gingival Health: There is no difference between prefabricated aesthetic crowns (BioFlx and Zirconia) and stainless-steel crowns (silver and gold colored) regarding their impact on gingival health.

Dental Arch Length: There is no statistically significant difference between prefabricated aesthetic crowns (BioFlx and Zirconia) and stainless-steel crowns (silver and gold colored) in their influence on dental arch length maintenance.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 30/12/2024, Biomedical Research Ethics Committee of Damascus University (University Presidency Building, University Campus, Baramkeh 23J89, Damascus, 00000, Syria; +963 1133923012; president@damasuniv.edu.sy), ref: 1157

Study design

Single-center interventional randomized controlled trial

Primary study design

Interventional

Secondary study design

Randomised controlled trial

Study setting(s)

Dental clinic

Study type(s)

Efficacy

Participant information sheet

See study outputs table

Health condition(s) or problem(s) studied

Extensively decayed second primary molars requiring pulpotomy and full coronal restoration

Interventions

Participants were randomly assigned to one of four study groups using computer-generated block randomisation (block size = 8). An independent researcher generated the sequence and prepared sealed, opaque envelopes to ensure allocation concealment. Envelopes were opened only after participant eligibility was confirmed.

Following participant inclusion, baseline clinical parameters will be recorded by the examiner, including the Oral Hygiene Index-Simplified (OHIS), Gingival Index (GI), Plaque Index (PI), Bleeding on Probing (BOP), and assessment of contact points. Local anesthesia will be administered prior to tooth preparation.

Primary molars allocated to receive BioFlx (Experimental), Gold stainless steel (Experimental), and silver stainless steel (Control) will be prepared using the following protocol:

Occlusal reduction of 1–1.5 mm

Axial reduction of 20–30% using a tapered bur

Rounding of axial walls

Trial fitting to ensure occlusal accuracy

Final cementation with Fuji I glass ionomer cement

Occlusal adjustment as needed

Primary molars allocated to receive Zirconia Crowns (Experimental) will be prepared using the following protocol:

Occlusal surface reduction of 1–2 mm using a flame-shaped bur

Opening of interproximal areas

Axial reduction of 20–30% (approximately 0.5–1.25 mm), maintaining a natural tooth contour

Finishing of all tooth walls with a subgingival margin (1–2 mm)

Occlusal adjustment as needed

All procedures will be performed under rubber dam isolation when feasible and in accordance with the manufacturers' recommendations.

Intervention Type

Procedure/Surgery

Primary outcome measure

The following primary clinical and photographic evaluations are carried out at 1, 6, and 12 months:

1. Oral Hygiene Index-Simplified (OHIS), defined as 0 = No debris; 3 = Debris > 2/3 of surface.

Interpretation: 0–1 = Good, 1–2 = Fair, 2–3 = Poor

2. Plaque Index (PI), defined as 0 = absence of plaque, 1= Thin film of plaque, 2= moderate accumulation of plaque 3 = Large amount of Plaque

3. Gingival Index (GI), defined as 0 = Normal, 1= mild inflammation, 2= moderate inflammation 3

= Severe inflammation

4. Bleeding on Probing (BOP), defined as (-) = No bleeding, (+) = Bleeding after probing

5. Marginal integrity, defined as 0 = No gap, 2 = Visible gap

Secondary outcome measures

Contact points (0 = Normal, 2 = Open), Crown fracture (0 = Intact, 1 = Minor chipping, 2 = Cracks, 3 = Full fracture), measured using clinical and photographic evaluations to the United States Public Health Service (USPHS) Criteria at 1, 6, and 12 months

Overall study start date

30/12/2024

Completion date

01/10/2026

Eligibility

Key inclusion criteria

1. Age 6–10 years
2. Good/acceptable oral hygiene
3. Positive or definitely positive Frankl behavior rating
4. Indication for full-coverage restoration (endodontically treated teeth)
5. Absence of mobility or sinus tract
6. Healthy child (no systemic illness or medication-induced gingival overgrowth)
7. Normal occlusion, no bruxism
8. Presence of opposing and adjacent teeth
9. Signed informed consent and commitment to follow-ups

Participant type(s)

Healthy volunteer

Age group

Child

Lower age limit

6 Years

Upper age limit

10 Years

Sex

Both

Target number of participants

100

Key exclusion criteria

1. Poor oral hygiene or presence of uncontrolled plaque or gingivitis
2. Uncooperative behavior, defined as negative or definitely negative on the Frankl behavior rating scale

3. Children with systemic illnesses or conditions that may affect gingival health (e.g., medication-induced gingival overgrowth)

Date of first enrolment

01/05/2025

Date of final enrolment

15/07/2025

Locations

Countries of recruitment

Syria

Study participating centre

Department of Pediatric Dentistry

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Sponsor information

Organisation

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Sponsor type

University/education

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ROR

<https://ror.org/03m098d13>

Funder(s)

Funder type

Other

Funder Name

Investigator initiated and funded

Results and Publications

Publication and dissemination plan

Planned publication in a peer-reviewed journal

Intention to publish date

01/10/2027

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be available upon request from Ahmad Taleb; ahmed.taleb1195@gmail.com

Data Availability:

IPD will be made available to researchers after the study's final publication in a de-identified format to protect participant privacy.

Access:

Researchers can request access to the data by submitting a research proposal for review by the study's ethics or data access committee.

Timeline:

Data will be shared within [6 months] after the study's final publication.

Security:

Data will be anonymized and stored in secure, password-protected databases with access restricted to authorized personnel.

Ethics and Consent:

Participants have given consent for their de-identified data to be used for future research. Data sharing will comply with the study's ethical guidelines.

IPD sharing plan summary

Available on request

Study outputs

Output type

[Participant information sheet](#)

Details

Date created

Date added

27/05/2025

Peer reviewed?

No

Patient-facing?

Yes