Shiraz E-Medical Journal
Volume 26 · Issue 5 · e155558

OPEN PEER REVIEW

Fracture Resistance of Bulk Fill Composite Restorations of Anterior Primary Teeth with Four Different Reinforcement Methods

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SUBMITTED	REVISED	ACCEPTED	DOI
18 Sep 2024	4 Feb 2025	18 Feb 2025	10.5812/semj-155558

About this report

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Contents

1 **Original submission** Referee 1, Associate Editor, Editor-in-Chief 2
2 **Revision 1** Associate Editor, Editor-in-Chief 3
Authors' reply to reviewers 4
Reviewer and editor comments 6

1 Original submission

3 comments · 6 Oct 2024 – 6 Jan 2025

Referee 1 Reviewer

MINOR REVISION 6 Oct 2024

Dear AE,
There are some comments that need to be checked and applied by the authors:

1. Please report the mean ± SD in the abstract.
2. How about the method and process of random allocation?
3. The following is not a result of this study: "To compare the fracture resistance of the groups pairwise, the Tukey HSD method was employed." Remove it from the results section.

Kind Regards

Associate Editor

MAJOR REVISION 6 Jan 2025

Dear EIC,
Based on the reviewers' comments, this manuscript needs major revision.

In the discussion section, is there any other related Iranian study?
Please explain more about the clinical significance.
Kind Regards
AE

Editor-in-Chief

MAJOR REVISION 6 Jan 2025

Dear Author,
We have reviewed your manuscript carefully. This is to inform you that this manuscript needs major revision.
Kind Regards
EIC

2

Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewers' Comments:

Reviewer 1:
1. Please report the mean± SD in the abstract.

We appreciate your accurate comments that help us improve our manuscript.

The standard deviation is added:

The mean fracture resistance in the four groups were 825.61±74.54, 540.10 51.61±, 758.03±60.94, and 498.88±54.59 N respectively.

2. How about the method and process of random allocation?

As this was an in-vitro study, simple randomization was performed using a Computer-generated randomization tool.

The prepared samples were numbered from 1 to 48 and then were randomly assigned to four study groups using simple randomization method by a Computer-generated randomization tool (https://randomizer.org/#randomize).

3. The following is not result of this study: To compare the fracture resistance of the groups pairwise, the Tukey HSD method was employed. Remove it from the results section.

The sentence is removed.

The results indicated that the fracture resistance of the CCP group had no significant difference with FGP (P=0.862) and with PCP (P=0.070). However, the fracture resistance of the CCP group was significantly different from the DP group. (P=0.022). So, CCP exhibited a significantly higher mean fracture resistance than the DP group.

Associate Editor's Comments:

Associate Editor 1:
In the discussion section, is there any other related Iranian study?

The following section is added to the discussion. One related Iranian study is added to the discussion as following:

In another study by Mosharrafian et al. (24), the fracture resistance of a bulk-fill and a conventional composite for restoration of severely damaged primary anterior teeth were assessed. Unlike the current study, Mosharrafian et al. (24) had compared the fracture resistance of a bulk-fill composite and a conventional composite as a restorative material, while the current study evaluated the fracture resistance of a bulk-fill composite reinforced with conventional composite. Mosharrafian et al. (24) concluded that the fracture resistance of bulk-fill composite was similar as the conventional composite and suggested to use bulk-fill composite in the restoration of severely damaged primary anterior teeth as bulk-file composites take less time. The results of the current study found that the fracture resistance of bulk-fill composites reinforced with conventional composite posts were higher than other reinforcement methods. Therefore, it can be concluded that in children, whose cooperation is not predictable during a dental session and fast performance of the dentist can be advantageous, bulk-fill composites can be recommended as an option. And if the primary teeth are severely damaged and, reinforcing the bulk-fill composites with the conventional composite posts can be beneficial.

Please explain more about the clinical significance.

The clinical significance are added as following:

The clinical significance of our study lies in its direct implications for pediatric dentistry, particularly in restoring severely damaged primary anterior teeth. The findings highlight that FGP and CCP provide significantly higher fracture resistance compared to other reinforcement methods such as PCP and dentinal pin DP. This demonstrates their suitability for clinical scenarios requiring durable restorations in primary teeth, especially in children, where maintaining dental integrity is crucial for aesthetics, speech, and mastication. This study emphasizes the advantage of using bulk-fill composites reinforced with fiberglass or composite posts, as this approach reduces chair time and improves efficiency, a key factor when treating uncooperative pediatric patients. Furthermore, the use of fiberglass posts offers the additional benefits of being tooth-colored, biocompatible, and aesthetically pleasing, meeting the demands of both patients and their parents. Composite posts, while cost-effective, still deliver adequate fracture resistance, making them a practical alternative. On the other hand, the results discourage the use of dentinal pins due to their significantly lower fracture resistance and potential for inducing microcracks, which can compromise the integrity of the restoration. This aligns with modern dental practices favoring minimally invasive and durable solutions. Overall, this study supports the adoption of advanced materials and methods in pediatric dental restoration to enhance outcomes for both patients and practitioners.

2 Revision 1

2 comments · 16 Feb 2025 – 18 Feb 2025

Associate Editor

ACCEPT 16 Feb 2025

Dear AE,
All of the comments have been carefully addressed by the authors, and this manuscript is now recommended for publication.
Kind Regards

Editor-in-Chief

ACCEPT 18 Feb 2025

Dear Authors,
This is to inform you that your manuscript has been accepted for publication.
Kind Regards
EIC