Critically Appraised Topic (CAT)

Project Team:
2A5
Project Team Participants:
D4 Conner Belnap **D3 Ahmed Alsallami** **D2 Allison Dreyer** **D1 Haley Maurer**
Clinical Question:
What is the prognosis of a post placed at a non-ideal length? What are the risks involved?
PICO Format:
P:
Patient who needs post and core?
I:
Fiber post
C:
Cast metal
O:
Failure rate
PICO Formatted Question:
In patients who need post and core does using a fiber post compared to using cast metal post have a higher failure rate?
Clinical Bottom Line:
The patient has an enough ferrule so we can choose either fiber post or cast-metal post. We ended up chosing fiber post.
Date(s) of Search:
09/16/2020
Database(s) Used:
pubmed
Search Strategy/Keywords:
post and core, fiber post, cast metal post, endodontically treated teeth
MESH terms used:
((“Dental Restoration” [Mesh] AND “Tooth Fracture” [Mesh]) AND “Tooth Root” [Mesh])
Article(s) Cited:
1. Figueiredo FE, Martins-Filho PR, Faria-E-Silva AL. Do metal post-retained restorations result in more root fractures than fiber post-retained restorations? A systematic review and meta-analysis. J Endod. 2015;41(3):309-316. doi:10.1016/j.joen.2014.10.006

2. Wang X, Shu X, Zhang Y, Yang B, Jian Y, Zhao K. Evaluation of fiber posts vs metal posts for restoring severely damaged endodontically treated teeth: a systematic review and meta-analysis. Quintessence Int. 2019;50(1):8-20. doi:10.3290/j.qi.a41499

Study Design(s):

1. Systematic Review and Meta Analysis

2. Systematic Review and Meta Analysis

Reason for Article Selection:

Directly addresses the PICO question

Article(s) Synopsis:

1. "To analyze clinical trials and cohort studies that evaluated the incidence rate of root fractures in post-retained restorations." A search was made via MEDLINE for clinical studies on the incidence of root fractures of restorations retained with fiber posts or metal posts of endodontically treated teeth with a more than 5-year follow-up. 7 cohort studies and seven randomized clinical trials were included. The pooled survival rate was 90% for cast metal posts and 83.9% for fiber posts. The overall incidence rate of major failures was similar between metal and fiber posts. Compared with cast metal posts and glass fiber posts, prefabricated metal posts and carbon fiber posts were twice as likely to fail. There were no significant differences for root fracture incidence between cast metal and fiber posts.

2. In cases of severely damaged tooth restoration, do cast metal or fiber posts demonstrate the best clinical performance? Only randomized controlled trials with follow-up of at least 3 years were included. A meta-analysis compared survival, success, post debonding, and root fracture incidence of teeth restored with fiber and metal posts. Of 1,511 records, 14 full texts were obtained. Fiber posts presented significantly higher survival rates than did metal posts (RR 0.57, 95% CI: 0.33 to 0.97, P = .04). Fiber posts displayed higher overall survival rates for a term of 3 to 7 years than metal posts when used in the restoration of severely damaged endodontically treated teeth.

Levels of Evidence: (For Therapy/Prevention, Etiology/Harm)
See http://www.cebm.net/index.aspx?o=1025

☒ **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)
☐ **1b** – Individual RCT
☐ **2a** – Systematic Review of Cohort Studies
☐ **2b** – Individual Cohort Study
☐ **3** – Cross-sectional Studies, Ecologic Studies, "Outcomes" Research
☐ **4a** – Systematic Review of Case Control Studies
☐ **4b** – Individual Case Control Study
☐ **5** – Case Series, Case Reports
☐ **6** – Expert Opinion without explicit critical appraisal, Narrative Review

☐ **7** – Animal Research

☐ **8** – In Vitro Research

Strength of Recommendation Taxonomy (SORT) For Guidelines and Systematic Reviews
See article **J Evid Base Dent Pract 2007;147-150**

☐ **A** – Consistent, good quality patient oriented evidence

☒ **B** – Inconsistent or limited quality patient oriented evidence

☐ **C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Conclusion(s):

The first article showed no significant difference between failure rates in fiber posts versus cast metal posts, and the second article showed that there was a significant advantage of fiber posts over cast metal posts. In order to provide the highest quality and most predictable treatment, our patient should be informed about that advantages of using fiber posts over cast metal.