Critically Appraised Topic (CAT)

Project Team:
2A-3
Project Team Participants:
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Clinical Question:
In periodontally stable posterior teeth, is It better to do elective endodontic treatment followed by post/ core placement and crown, or is it better to extract and place implants for an implant supported bridge?
PICO Format:
P:
Patients with periodontally stable teeth
I:
Endo post/core/crown
C:
EXT and implant bridge placement
O:
More predictable and successful long term
PICO Formatted Question:
In patients with periodontally stable teh, is endo/post/core/crown or EXT and implant bridge placement more predictable and successful long-term?
Clinical Bottom Line:
The patient wants to maintain and fix tooth #20. Research and clinical judgment/ expertise lead us to suggest and support the patient's decision to elect for endodntic treatment with post and core and crown restoration. Research supports endodontic treatment versus implant therapy due to: - **Good success/ survival rates (>90%)** - **More predictable outcomes** - **Less chance of subsequent complications** - **Less need for intervention** - **Good overall patient acceptance**
Date(s) of Search:
September 5th and 12th

Database(s) Used:
Pubmed **Journal References: Journal of Prosthetic Dentistry, Journal of Endodontics, and Journal of Dental Research**
Search Strategy/Keywords:
Studies containing information related to the predictability, success, and survival rates of implant therapy versus endontic therapy. **Keywords: dental prosthesis- implant supported, post and core, success, survival**
MESH terms used:
Tooth extraction, dental implant, dental prosthesis- implant supported, endodontic therapy, root canal therapy, crowns, post and core technique
Article(s) Cited:
Article 1: Setzer, F C, and S Kim. "Comparison of long-term survival of implants and endodontically treated teeth." *Journal of dental research* vol. 93,1 (2014): 19-26. doi:10.1177/0022034513504782 **Article 2:** Torabinejad, M. et al. "Outcomes of root canal treatment and restoration, implant-supported single crowns, fixed partial dentures, and extraction without replacement: a systematic review." *The Journal of prosthetic dentistry* 98 4 (2007): 285-311 .
Study Design(s):
Article 1: Systematic Review/ Meta Analysis **Article 2: Systematic Review/ Meta Analysis**
Reason for Article Selection:
These articles were selected based on their strength of evidence, recent publication, clinical guidance, data, and methods. Each article addresses some aspect of our PICO question and can lead to better clinical guidance for our patient.
Article(s) Synopsis:
Article 1: Article 1 tells us that when done appropriately, implant and endodontic therapy both result in significant outcome rates. However, clinical experience and expertise of the clinician, whether that be inexperienced, general, or a speacialist, greatly influenced the rate of survival. The article stated that the survival of implants placed by inexperienced clinicians was 73%, whereas 95.5% was the survival rate of implants placed by implant specialist. Similarly, survival rates of teeth treated with endodontic therapy showed rates of 98.1% for specialists and 89.7% for general clinicians. All things considered, there is no lifetime guarantee for either natural teeth or implants. A tooth should only be removed after a worthwhile and deliberate decision is made. Endodontics and implant therapy should complement each other, rather than competing with each other for the sake of financial gain of the clinician.

Article 2: Article 2 informs us that for periodontally sound teeth that have pulpal/ periapical pathosis, equivalent survival rates were reported for initial endodontic treatment and extraction and replacement of the tooth with an implant supported restoration. Higher rates of complications were reported for implant therapy. However, recent advancements in implant therapy, like torque devices and cement retained implant fixtures, may have decreased the incidence of screw loosening. Early loss rates of osseointegrated implants may be considerable higher than later loss rates. Retained teeth may be more susceptible to late failures due to coronal leakage or microbial ingress, caries, or periodontal disease. All parameters considered, endodontic therapy is more predictable with less rates of complications being reported.

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):

After eight years, survival rates of restored endodontically treated teeth and implant restored teeth were similar and showed no statistical difference. However, the rate of complications and need for intervention was significantly higher in patients receiving implants. Most survival studies determine implant success only after successful loading. However, many implants fail prior to osseointegration and most failures occur in between the placement of the implant and placement of the suprastructure. The more predictable

treatment with less rates of complication and intervention and good overall patient satisfaction rates is endodontically restoring the tooth.