Critically Appraised Topic (CAT)

Project Team:
8B-1
Project Team Participants:
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Clinical Question:
▪ **What is the most favorable way to restore a partially edentulous esthetic zone?**
PICO Format:
P:
Patients with excessive gingival display
I:
Implant fixed prosthesis
C:
Fixed partial denture
O:
More predictable esthetic outcome
PICO Formatted Question:
▪ In a patient with excessive gingival display, does rehabilitation with a fixed partial denture or implant fixed prosthesis result in a more predictable esthetic outcome?
Clinical Bottom Line:
There are various treatment options for restoring partially edentulous arches. Patients are presented with many choices, which may include implant and tooth supported fixed prostheses. It is the responsibility of us as the providers to be able to give our patients supported recommendations.
Date(s) of Search:
▪ **9/15/20, 9/18/20, 9/19/20**
Database(s) Used:
▪ **PubMed, NCBI, Elsevier**
Search Strategy/Keywords:
▪ **Esthetic** ▪ **Implant** ▪ **FPD** ▪ **Fixed prosthesis** ▪ **Gingival display** ▪ **Maxillary**
MESH terms used:
▪ **Dental implants** ▪ **Dental prosthesis, implant-supported**

- **Esthetic, dental**
- **Maxillary**

Article(s) Cited:

- **Wittneben, J. G., Wismeijer, D., Brägger, U., Joda, T., & Abou-Ayash, S. (2018). Patient-reported outcome measures focusing on aesthetics of implant- and tooth-supported fixed dental prostheses: A systematic review and meta-analysis. *Clinical oral implants research*, *29 Suppl 16*, 224–240. https://doi.org/10.1111/clr.13295**
- **Wöhrle P. S. (2014). Predictably replacing maxillary incisors with implants using 3-D planning and guided implant surgery. *Compendium of continuing education in dentistry (Jamesburg, N.J. : 1995)*, *35*(10), 758–768.**
- **Bidra, A. S., Agar, J. R., & Parel, S. M. (2012). Management of patients with excessive gingival display for maxillary complete arch fixed implant-supported prostheses. *The Journal of prosthetic dentistry*, *108*(5), 324–331. https://doi.org/10.1016/S0022-3913(12)60186-3**

Study Design(s):

- **Systematic Review**
- **Case Report**
- **Narrative Review**

Reason for Article Selection:

- This article addresses the esthetics of rehabilitation with implant supported (and tooth supported) fixed prostheses. The research indicates that the implant-supported FPD could give our patient satisfactory esthetics in her maxillary anterior region. This study addresses treatment outcomes from the perspective of the patient, which is important to think about in a case with esthetic concern. This study shows that implant-supported FPDs do yield high patient satisfaction. This is an esthetic option for patients seeking rehabilitation of teeth in the esthetic zone.
- This article contains information regarding how to achieve an esthetic outcome for implant-fixed anterior restorations. Like our patient, the patient who was evaluated in this study is was missing maxillary anterior teeth and also exhibits a high smile line. Due to the similarity between our patient and the one in this case report, this article was very applicable to our case and treatment options. Using three-dimensional planning and guided surgery for implant supported restorations yields a more predictable outcome, which is particularly useful in cases where esthetics are a concern.
- Although this article focuses on complete arch fixed implant-supported prostheses, it was selected because of the useful information in contains regarding management of excessive gingival display. Our patient received an immediate RPD, which did not meet her esthetic demands. The flange of the prosthesis is not well adapted to the gingiva or transitioned smoothly. This

article helps address how to manage such problems. Patients with excessive gingival display can present in various ways and have various treatment goals and expectations. This article notes that successful communication with the patient is critical before proceeding with treatment.

Article(s) Synopsis:

- A systematic search was conducted to find patient-reported outcomes for implants and tooth supported fixed prostheses. 2,675 titles were screened, 50 full articles were analyzed based on the determined eligibility criteria, and 16 publications were finally included. The selected studies included patient reported outcome measures (PROMs) and a visual analog scale (VAS), which were used to quantify visual experience. The esthetic evaluation based on patients' visual analogue scale (VAS) rating was overall high in implant-supported FPDs and the surrounding mucosa. Individual implant materials, implant neck design, and the use of a fixed provisional did not have an effect on patients' ratings of the definitive implant-supported FPDs. A limitation of this article is that no study reporting on tooth supported FPDs would be included in systematic review based on the inclusion and exclusion guidelines. Therefore, it was not possible to perform a meta-analysis for the primary outcome comparing tooth vs. implant supported FPDs, according to PROMs (patient-reported outcome measures). More PROM based data needs to be collected on tooth supported FPDs.
- 20 year old female presents with most of the root structure of the maxillary incisors lost. Oral hygiene was excellent with no other pertinent medical or dental history. Treatment plan was created to replace maxillary incisors with a fixed implant-supported partial denture. Extraoral digital scans of the altered master cast and the diagnostic wax-up were taken and imported, along with DICOM CBCT files, into a virtual diagnostic treatment planning and patient communications program. Radiographic data aligned with clinical data in the program so that implants could be planned relative to final tooth position. The central papilla was maintained. However the papilla between the central and lateral incisors had a slight decrease in height. A two year post-insertion radiograph was taken showing that the interproximal bone height above the platform of the implant was not fully maintained. Overall, the treatment yielded a esthetically pleasing result. During the treatment the patient always had a non-removable, esthetically pleasing teeth. The outcome exceeded the expectations of the patient. This study addresses that several factors must be taken into account when planning such a clinically challenging rehabilitation in the esthetic zone. In addition to considering restorative options, such as implant or tooth retained fixed prostheses, there are other factors that influence the outcome of treatment. For example, biological factors must also be given adequate consideration in order to achieve a desired result. The

author notes that this is a limitation and that diagnostic skills are imperative to achieving success.

- This article is a narrative review of various research done regarding the etiology, diagnosis, treatment planning, and options for management of patients with excessive gingival display. Management options such as ostectomy procedures, Lefort I osteotomy, pre-posthetic orthodontic intrusions, and plastic surgery procedures were reviewed. All of these procedures can be useful in managing patients with excessive gingival display with various presentations and treatment plans. This article addressed management of patients with excessive gingival display with a full arch implant prosthesis, rather than single units.

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):

- Patient satisfaction was high for implant-supported FPDs and esthetics of the surrounding mucosa.
- Three-dimensional planning is a highly predictable way to deliver implants when precision is required (i.e. proper spacing).
- Patients present in various ways, so it is particularly important to successfully communicate with your patient before embarking on an expensive and potentially invasive treatment.