**Critically Appraised Topic (CAT)**

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| **Project Team:**  |
| **10B-2** |
| **Project Team Participants:**  |
| **Maggie Meyer, Jisoo Hong, Shuchi Patel, Kelly Herzog** |
| **Clinical Question:** |
| **What is the most successful way to treat periimplantitis?** |
| **PICO Format:** |
| **P:** |
| **Patients with infrabony bone loss around an implant** |
| **I:** |
| **Non-Surgical therapy** |
| **C:** |
| **Surgical therapy** |
| **O:** |
| **Amount of bone gained** |
| **PICO Formatted Question:** |
| In a patient with infrabony bone loss around an implant, does nonsurgical therapy have a comparable outcome to surgical therapy in terms of amount of bone gained? |
| **Clinical Bottom Line:** |
| **For infrabony bone defect, referring to a specialist for the proper surgical therapy is recommended.**  |
| **Date(s) of Search:**  |
| **October 5-14, 2020** |
| **Database(s) Used:** |
| **PubMed** |
| **Search Strategy/Keywords:** |
| **Peri-implantitis management,infrabony, alveolus bone loss** |
| **MESH terms used:** |
| **Peri-implantitis therapy, dental implants, surgical therapy, non-surgical therapy** |
| **Article(s) Cited:** |
| **Article 1:** Suárez-López Del Amo F, Yu SH, Wang HL. Non-Surgical Therapy for Peri-Implant Diseases: a Systematic Review. J Oral Maxillofac Res. 2016 Sep 9;7(3):e13. doi: 10.5037/jomr.2016.7313. PMID: 27833738; PMCID: PMC5100638.**Article 2:**Chan HL, Lin GH, Suarez F, MacEachern M, Wang HL. Surgical management of peri-implantitis: a systematic review and meta-analysis of treatment outcomes. J Periodontol. 2014 Aug;85(8):1027-41. doi: 10.1902/jop.2013.130563. Epub 2013 Nov 21. PMID: 24261909.**Article 3:**Romanos GE, Javed F, Delgado-Ruiz RA, Calvo-Guirado JL. Peri-implant diseases: a review of treatment interventions. Dent Clin North Am. 2015 Jan;59(1):157-78. doi: 10.1016/j.cden.2014.08.002. Epub 2014 Oct 7. PMID: 25434564. |
| **Study Design(s):** |
| **Article 1: Systemic Review of RCT & Cohort Studies** **Article 2: Systemic Review & Meta-analysis** **Article 3: Systemic Review of Literature** |
| **Reason for Article Selection:** |
| **Article 1: Investigated non-surgical treatment outcomes for peri-implantitis that reported clinical and/or radiographic changes.****Article 2: Evaluated radiographic bone fill (RBF) of surgically treated peri-implantitis as one of the parameters investigated.** **Article 3:** Very resourceful, comprehensive literature review about management of peri-implant disease. |
| **Article(s) Synopsis:** |
| **Article 1: Non-surgery therapy for Peri-Implant Disease****Search on MEDLINE and EMBASE from 2011 to 2016 including human studies reporting non-surgical treatment of peri-implant mucositis and peri-implantitis with more than 10 implants and at least 6 months follow up in English language were collected. 14 studies were included in the analysis ( 9 RCTs, 4 cohort, 1 case series). Various studies used different methods for non-surgical implant decontamination, such as self-performed cleaning techniques, laser therapy, photodynamic therapy, mechanical debridgement, using air-abrasive devices with adjunct therapy. Limitations include significant heterogeneity between each studies. Different definition of peri-implant disease were used throughout the studies, and different implant designs & defect characteristics are to be noted. Also, various studies used different methods for implant decontamination, such as self-performed cleaning techniques, laser therapy, photodynamic therapy, mechanical debridement, using air-abrasive devices with adjunct chemotherapy.****Article 2: Surgical Management of Peri-Implantitis****Electronic databases MEDLINE, PubMed, EMBASE, Dentistry and Oral Sciences Sources from Jan 1990 to May 2013 were used to pull 21 human clinical trials comprising of 5 RCTs, 12 case series, 1 cohort studies, 3 quasi-experiments in English language with minimum sample size of 8 surgically treated screw-shaped implants and follow-up period of minimum 6 months for this systemic review. The focus question of this systemic review was, “What are the radiographic and clinical outcomes of different surgical interventions for the treatment of peri-implantitis?” Also, four surgical treatment groups were identified, which are access flap and debridement, surgical resection, application of bone grafting materials, and guided bone regeneration. Limitations include heterogeneity in the study design, case selection, and treatment provided among studies, and one of the RCTs was shown to have a high bias.****Article 3: Systemic review of Literature on management of peri-implant disease****There is a lack of consensus on the most effective protocol on the management of peri-implantitis. Authors’ proposed guidelines for the management of peri-implantitis include the following:** **1. Elevation of a full-thickness mucoperiosteal flap** **2. MD using hand instruments, then CO2 laser** **3. GBR particular graft & resorbable membrane** **4. Closure of defect using resorbable sutures** |
| **Levels of Evidence:** (For Therapy/Prevention, Etiology/Harm) See <http://www.cebm.net/index.aspx?o=1025>[x]  **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)[ ]  **1b** – Individual RCT[x]  **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[x]  **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[x]  **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):** |
| **Article 1:** Non-surgical treatment for peri-implant mucositis appeared to be effective while for peri-implantitis, non-surgical treatment provided modest or unpredictable outcomes.Article 2: Within the limitation of this systematic review, application of grafting materials and barrier membranes resulted in greater PD reduction and average radiographic bone fill of around 2mm.**Article 3: There is a lack of consensus on the most effective treatment protocol on the management of peri-implantitis. Regardless of which therapeutic treatment protocol is adopted for the management of peri-implantitis, a proficient diagnosis, patient compliance (good OHI), control of possible risk factors, and skillful decontamination of implant surfaces influence the overall outcome of the treatment.**  |