**Critically Appraised Topic (CAT)**

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| **Project Team:**  |
| **1A-3** |
| **Project Team Participants:**  |
| **Josephine Tokarev****Amin Akeeb****Josephine Hayes-Birchler****Tristan Rostagno** |
| **Clinical Question:** |
| What is the effectiveness of occlusal guards in patients with myofascial pain?  |
| **PICO Format:** |
| **P:** |
| **Patients with myofascial pain** |
| **I:** |
| **Splinting therapy** |
| **C:** |
| **Non splinting therapy** |
| **O:** |
| **Success rate**  |
| **PICO Formatted Question:** |
| In patients with myofascial pain, does splinting therapy compared to nonsplinting therapy result in a better prognosis? |
| **Clinical Bottom Line:** |
| **Splinting therapy has a higher success rate** |
| **Date(s) of Search:**  |
| **10/5/20** |
| **Database(s) Used:** |
| **Pubmed**  |
| **Search Strategy/Keywords:** |
| **Searching for RCT’s, Systematic Reviews, Meta-analysis, Articles no older than 2000** |
| **MESH terms used:** |
| **Myofascial pain, splinting, temporomandibular joint disorders, occlusal splints** |
| **Article(s) Cited:** |
| Al-Ani Z, Gray RJ, Davies SJ, Sloan P, Glenny AM. Stabilization splint therapy for the treatment of temporomandibular myofascial pain: a systematic review. J Dent Educ. 2005 Nov;69(11):1242-50. PMID: 16275687.Al-Moraissi EA, Farea R, Qasem KA, Al-Wadeai MS, Al-Sabahi ME, Al-Iryani GM. Effectiveness of occlusal splint therapy in the management of temporomandibular disorders: network meta-analysis of randomized controlled trials. Int J Oral Maxillofac Surg. 2020 Aug;49(8):1042-1056. doi: 10.1016/j.ijom.2020.01.004. Epub 2020 Jan 22. PMID: 31982236.Kuzmanovic Pficer J, Dodic S, Lazic V, Trajkovic G, Milic N, Milicic B. Occlusal stabilization splint for patients with temporomandibular disorders: Meta-analysis of short and long term effects. *PLoS One*. 2017;12(2):e0171296. Published 2017 Feb 6. doi:10.1371/journal.pone.0171296 |
| **Study Design(s):** |
| **Systematic Review, Meta Analysis** |
| **Reason for Article Selection:** |
| **Level of Evidence** **Prior citations****Journal of publication** **Lacking conflicts of interest** **Mostly recent reviews** **Large sample sizes**  |
| **Article(s) Synopsis:** |
| **Article 1:** * **Method**
	+ **Clinical questions established**
		- **“Does occlusal splint therapy treat TMDS?”**
		- **“What is the most effective oral occlusal splint for reducing pain intensity and TMJ clicking, and improving mouth opening for patients with arthrogenous and myogenous TMDs?”**
		- **“Does the pattern of hard stabilization splint wearing time have an impact on its efficacy in the treatment of TMDs”**
	+ **The search complied with PICOTS criteria, and articles published between 1977 and 2019 were evaluated for inclusion.**
	+ **Interventions were anterior repositioning splints, partial coverage splints, prefabricated splints, non-occluding splints, full coverage soft or resilience stabilization splint, counseling therapy & self management, counseling therapy and hard stabilization splint**
	+ **Control was no treatment**
	+ **Comparison was flat stabilization splint like a Tanner, Fox, or centric relation appliance**
	+ **The GRADE system was used to evaluate the RCTs**
		- **Even though an RCT is a high level of evidence, the researchers downgraded any that had limitations/biases**
* **Results**
	+ **Of 600 RCTs evaluated, only 48 were included in the study**
		- **Bias risk**
			* **25 = unclear , 13 = low risk, 10 = high risk**
			* **Follow up time ranged from 1-12 months**
	+ **Pain reduction**
		- **Arthrogenous origin**
			* **Dichotomous data (top 3)**
				+ **Anterior repositioning splint (86.5%)**
				+ **Counseling therapy + self-management plus hard stabilization splint (76.5%)**
				+ **Mini anterior splints (NTI-tss) (58%)**
				+ **All low quality of evidence**
			* **Continous data**
				+ **Anterior repositioning splint (92%)**
				+ **NTI-tss (76.99%)**
				+ **Counselling + hard stabilization splint (67.33%)**
				+ **All low quality of evidence**
		- **Myogenous**
			* **Dichotomous**
				+ **NTI-tss (81.3%)**
				+ **Pre-fabricated splint (74.4%)**
				+ **Hard stabilization splint (71.8%)**
			* **Continous**
				+ **NTI-tss (86.8%)**
				+ **Soft stabilization splint (61.9%)**
				+ **Counselling therapy + hard stabilization splint (612%)**
		- **Meta regression anaylsis: For both types of TMD wearing a hard stabilization splint at night reduced pain more effectively than 24 hour wear.**
		- **Sensitivity analysis: No actual difference in pain reduction during or post Tx**

**Conclusions****All occlusal splits are more effective in managing pain than no treatment** **Hard stabilization splints make little difference than soft for arthrogenous origin TMD and do make a difference for myogenous origin** **Post Tx moderate quality evidence is more likely to reduce pain for arthrogenous but very little for myogenous** **Duration of wear does in fact affect pain reduction with night-time wear being most effective** **Evidence is mostly moderate to low quality** **Limitations****Although most did, not all RCTS used the same diagnostic tool****Blinding was not possible because of the use of occlusal splints** **Pain is based on patient’s perception** **Article 2:** * **Method**
	+ **Reviews consist of RCTs. The main intervention considered was splint therapy and treatments that were considered as non-splinting therapy include physiotherapy, relaxing appliances, pharmacological interventions, other occlusal appliances.**
	+ **Patients on all sides of the myofascial pain spectrum were included from mild to severe. Patients who exhibit myofascial pain that is not mostly of muscular origin were excluded.**
	+ **Databases**
		- **Cochrane Central Register of Controlled Trials from 1966 to 2001 using Cochrane Sensitive Search Strategy for RCTs**
		- **MEDLINE**
	+ **Pain measure with VAS scale (visual analogue scale), PSS (Pain Severity Scale), Muscle palpation Index (PPI) & a pain diary**
	+ **Results**
	+ **12 RCTs were included**
		- **Range of patients = 20-80**
	+ **Pain reduction greatest with SS compared to all groups**
	+ **No statistically significant difference between improvement of pain intensity at rest between SS and control group**
	+ **Both SS and acupuncture showed post Tx improvement gains over no Tx group**
		- **Depression improved in this group as well but not the actual “Profile of Mood States”**
	+ **No difference between SS and non-occluding splints on palpation or pain diary scores**
* **Conclusions**
	+ **Low quality evidence showing SS efficacy is higher compared to no Tx**
	+ **No evidence that SS has better efficacy than other conventional treatments**
* **Limitations**
	+ **Small number of patients**
	+ **Increased risk of selection bias**

**Article 3:** * **Method**
	+ **RCTs were found in MEDLINE, Web of Science, and EMBASE**
	+ **Treatment modalities**
		- **Occluding splint, occlusal oral appliances, physiotherapy, behavioral therapy, counseling, no treatment**
	+ **Patients with mild to severe levels of TMD**
	+ **GRADE was used to evaluate evidence along with the use of meta-regression analysis**
	+ **Short = (≤ 3 months), Long = (> 3 months)**
	+ **Pain reduction = categorical & Pain intensity = VAS ( visual analogue scale)**
* **Results**
	+ **33 RCTS**
	+ **10 studies = non-occluding splints, 9 = SS vs. occlusal appliances, 5 = control group with physical therapy, 4 studies = SS vs. behavioral Tx, 3 studies = minimal treatment (exercise & counseling, 1 study = counseling was control**
	+ **Stabilization splints**
		- **Positive effects on pain reduction and intensity for those of myogenous origin vs. control groups**
		- **Decrease of muscle tenderness**
		- **Improved mouth opening**
		- **No difference between stabilization splints and other oral appliances**
	+ **Continued use of stabilization splints throughout the day affects prognosis**
	+ **Long term results = no difference between any treatment modality**
	+ **Depression for long term use was better for the control group**
	+ **Effect of SS better in patients if splint was worn 24 hours**
	+ **Conclusions**
	+ **For short-term effects, SS = benefits**
	+ **For long term, SS = same as any other therapy**
	+ **SS better than non-occluding splint patients with myofascial pain of myogenous origin**
	+ **Limitations**
	+ **80% of studies = high risk for performance bias of author’s judgments**
	+ **But none for pain reduction or pain intensity**
	+ **Low quality studies because of the comparison to control groups**
	+ **Not all studies used the same time frame when comparing effects**
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| **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[ ]  **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**[x]  **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):** |
| **While low quality to moderate evidence, the research suggests that splinting therapy provides better prognosis than other conventional forms of treatment, but stabilization splints provide no significant long term relief when compared to other occlusal splints.**  |