VISCOSUPPLEMENTATION OF THE UPPER AND LOWER COMPARTMENTS OF TEMPORO-MANDIBULAR ARTICULATION (TMJ) – OSTEOARTHRITIS AND OSTEOARTHROSIS CONTROL

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Objectives: The Objective of the present study was to describe the effects observed after conservative treatment of TMJ osteoarthritis and osteoarthrosis. The procedure consisted of stabilization(1) using occlusal appliance and physiotherapy(2-4) for functional recovery and restoration of joint biomechanics. These interventions were associated with minimally invasive treatment injecting hyaluronic acid (5-9), (AH) into the upper and lower joint space and the results evaluated by cone beam computed tomography (CBCT).

Materials and methods: 60 year old man, diagnosed using DC/TMD with myofascial pain, osteoarthritis, osteoarthrosis, and presumption of diagnosis of disc displacement without reduction, of the two temporo-mandibular joints associated with primary or idiopathic(9-12) wake and sleep bruxism, was submitted to a sequential protocol of injection of medium molecular weight HA(13) (Osteonil plus-TRB pharma) in the posterosuperior compartment and low molecular weight HA (Hylart-Bagó pharma) interspersed with Osteonil plus-TRB pharma for the anteroinferior compartment of both TMJs, monthly for 4 months (13,14) .

Evaluation with CBCT was performed before treatment and six months after the last infiltration. The patient underwent physiotherapy after each viscosupplementation session and the following week, home oriented exercises(2,15) and monthly clinical evaluation with measurement of oral opening amplitude (ROM) with therabite and pain using the visual analogue scale (VAS)(16). The patient was instructed to use applications for mobile phone to control bruxism while awake and occlusal split to control sleep bruxism (17,18).

Results: Significant structural gain seen in shape and volume of the mandible head in both TMJs, functional joint improvement, with increased amplitude of oral opening, The initial opening was 30 mm and after the end of treatment 44 mm, absence of pain at the end of treatment with obvious improvement in activities of daily living such as eating or speaking.

Conclusions: Sequential viscosupplementation with AH of the two joint compartments associated with conservative treatment and control of awake and sleep bruxism, were effective in the treatment of osteoarthritis and osteoarthrosis of patient TMJs.

Keywords:
Viscossuplementation, Hialuronic Acid, Temporomandibular Joint, Osteoarthritis, Osteoartrosis

Figura 1: anesthesia syringe with skin disinfection

Figura 3: access to the lower compartment

Figura 2: medium molecular weight hyaluronic acid

Figura 4: Final opening - 44mm

Fig. 5: Left TMJ

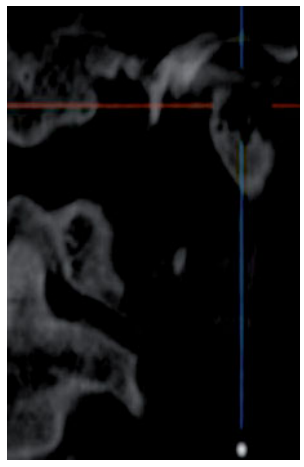


Fig. 6: Left TMJ final

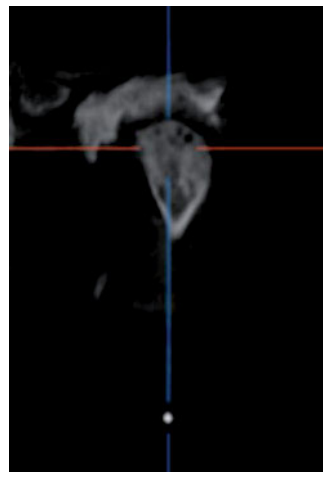


Fig. 7: Left TMJ 1st appointment

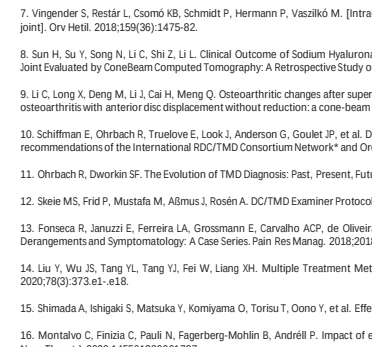


Fig. 8: LefT TMJ distal closure

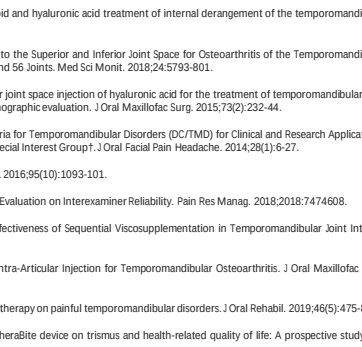


Fig. 9: subchondral pseudocyst

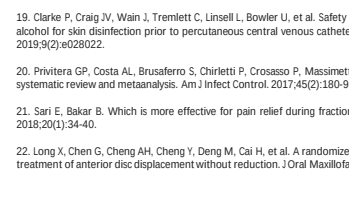


Fig. 10: closed cortical

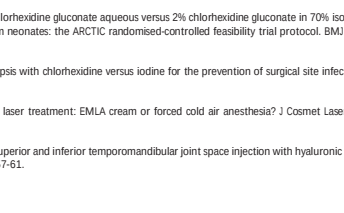


Fig. 11: Right TMJ 1st appointment

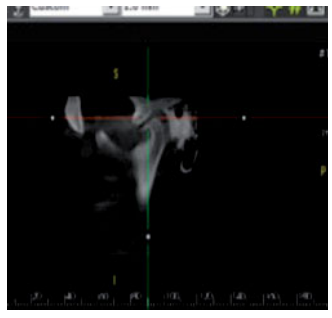
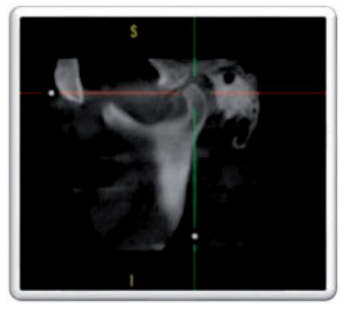


Fig. 17: Right TMJ last appointment



Bibliography:

1. 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.

2. Armijo-Olivo S, Pitance L, Singh V, Neto F, Thie N, Michelotti A. Effectiveness of Manual Therapy and Therapeutic Exercise for Temporomandibular Disorders: Systematic Review and Meta-Analysis. Phys Ther. 2016;96(1):9-25.

3. Paço M, Peleteiro B, Duarte J, Pinho T. The Effectiveness of Physiotherapy in the Management of Temporomandibular Disorders: A Systematic Review and Meta-analysis. J Oral Facial Pain Headache. 2016;30(3):210-20.

4. Cuenca-Martínez F, Herranz-Gómez A, Madroñero-Miguel B, Reina-Varona Á, La Touche R, AnguloDíaz-Parreño S, et al. Craniocervical and Cervical Spine Features of Patients with Temporomandibular Disorders: A Systematic Review and Meta-Analysis of Observational Studies. J Clin Med. 2020;9(9).

5. Ferreira N, Masterson D, Lopes de Lima R, de Souza Moura B, Oliveira AT, Kelly da Silva Fidalgo T, et al. Efficacy of viscosupplementation with hyaluronic acid in temporomandibular disorders: A systematic review. J Craniomaxillofac Surg. 2018;46(11):1943-52.

6. Iturriaga V, Bornhardt T, Manterola C, Brebi P. Effect of hyaluronic acid on the regulation of inflammatory mediators in osteoarthritis of the temporomandibular joint: a systematic review. Int J Oral Maxillofac Surg. 2017;46(5):590-5.

7. Vingender S, Restár L, Csomó KB, Schmidt P, Hermann P, Vaszilkó M. [Intra-articular steroid and hyaluronic acid treatment of internal derangement of the temporomandibular joint]. Orv Hetil. 2018;159(36):1475-82.

8. Sun H, Su Y, Song N, Li C, Shi Z, Li L. Clinical Outcome of Sodium Hyaluronate Injection into the Superior and Inferior Joint Space for Osteoarthritis of the Temporomandibular Joint Evaluated by ConeBeam Computed Tomography: A Retrospective Study of 51 Patients and 56 Joints. Med Sci Monit. 2018;24:5793-801.

9. Li C, Long X, Deng M, Li J, Cai H, Meng Q. Osteoarthritic changes after superior and inferior joint space injection of hyaluronic acid for the treatment of temporomandibular joint osteoarthritis with anterior disc displacement without reduction: a cone-beam computed tomographic evaluation. J Oral Maxillofac Surg. 2015;73(2):232-44.

10. Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Group†. J Oral Facial Pain Headache. 2014;28(1):6-27.

11. Ohrbach R, Dworkin SF. The Evolution of TMD Diagnosis: Past, Present, Future. J Dent Res. 2016;95(10):1093-101.

12. Skeie MS, Frid P, Mustafa M, Aßmus J, Rosén A. DC/TMD Examiner Protocol: Longitudinal Evaluation on Interexaminer Reliability. Pain Res Manag. 2018;2018:7474608.

13. Fonseca R, Januzzi E, Ferreira LA, Grossmann E, Carvalho ACP, de Oliveira PG, et al. Effectiveness of Sequential Viscosupplementation in Temporomandibular Joint Internal Derangements and Symptomatology: A Case Series. Pain Res Manag. 2018;2018:5392538.

14. Liu Y, Wu JS, Tang YL, Tang YJ, Fei W, Liang XH. Multiple Treatment Meta-Analysis of Intra-Articular Injection for Temporomandibular Osteoarthritis. J Oral Maxillofac Surg. 2020;78(3):373.e1-.e18.

15. Shimada A, Ishigaki S, Matsuka Y, Komiyama O, Torisu T, Oono Y, et al. Effects of exercise therapy on painful temporomandibular disorders. J Oral Rehabil. 2019;46(5):475-81.

16. Montalvo C, Finizia C, Pauli N, Fagerberg-Mohlin B, Andréll P. Impact of exercise with TheraBite device on trismus and health-related quality of life: A prospective study. Ear Nose Throat J. 2020:145561320961727.

17. Manfredini D, Bracci A, Djukic G. BruxApp: the ecological momentary assessment of awake bruxism. Minerva Stomatol. 2016;65(4):252-5.

18. Guaita M, Högl B. Current Treatments of Bruxism. Curr Treat Options Neurol. 2016;18(2):10.

19. Clarke P, Craig JV, Wain J, Tremlett C, Linsell L, Bowler U, et al. Safety and efficacy of 2% chlorhexidine gluconate aqueous versus 2% chlorhexidine gluconate in 70% isopropyl alcohol for skin disinfection prior to percutaneous central venous catheter insertion in preterm neonates: the ARCTIC randomised-controlled feasibility trial protocol. BMJ Open. 2019;9(2):e028022.

20. Privitera GP, Costa AL, Brusaferro S, Chirletti P, Crosasso P, Massimetti G, et al. Skin antisepsis with chlorhexidine versus iodine for the prevention of surgical site infection: A systematic review and metaanalysis. Am J Infect Control. 2017;45(2):180-9.

21. Sari E, Bakar B. Which is more effective for pain relief during fractionated carbon dioxide laser treatment: EMLA cream or forced cold air anesthesia? J Cosmet Laser Ther. 2018;20(1):34-40.

22. Long X, Chen G, Cheng AH, Cheng Y, Deng M, Cai H, et al. A randomized controlled trial of superior and inferior temporomandibular joint space injection with hyaluronic acid in treatment of anterior disc displacement without reduction. J Oral Maxillofac Surg. 2009;67(2):357-61.