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ORTHODONTICS AND TEMPOROMANDIBULAR DISORDERS

- MYTHS AND SCIENTIFIC EVIDENCE -

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INTRODUCTION

Temporomandibular Disorders (TMD) refer to a group of disorders that affect the temporomandibular joint (TMJ), the masticatory muscles or both[1-4]. Include symptoms such as pain, noises (clicks or grating) and/or problems with mandibular movement (asymmetric or limited)[1, 2, 5]. These symptoms self-limiting, can recur, and may fluctuate over time[2] and have an effect on health and quality of life of patients[6]. Unfortunately, many aspects of the etiology and pathophysiology of TMD are not well known and remain controversial, due to the multifactorial nature of this condition[2, 3, 5-7].

In 1987, a patient developed TMD symptoms during orthodontic treatment (OT) and the orthodontic treatment was held responsible. Evidence suggesting that orthodontics had not caused the problem was lacking and American Association of Orthodontics funded research to investigate the relationship between orthodontics and TMD[1-4, 8]. Currently the possible relationship between orthodontics and TMD is still a matter of debate[3]: Does orthodontic treatment predispose to the development or aggravation of TMD? Or, on the other hand, will treat the signs and symptoms of TMD?

PURPOSE

Review the literature to assess the scientific evidence that demonstrates whether or not a relationship between Orthodontics and Temporomandibular Disorders exists.

MATERIALS AND METHODS

A search was conducted until November 2013 on Cochrane Database of Systematic Reviews and Medline for systematic reviews, meta-analyzes, randomized clinical trials (RCT) and controlled clinical trials (CCT). The search was restricted to articles in English, Portuguese and Spanish languages and studies in humans, using the following keywords: "orthodontic treatment AND temporomandibular disorders", identifying 51 articles. After reading the respective titles and abstracts and according to the exclusion criteria (in vitro or in animal studies, studies in patients undergoing orthopedic treatment or orthognathic surgery, alone or in combination with orthodontic treatment), were obtained 6 articles. Due to the small number of selected items and their frequent citation over the articles included, were still included 4 narrative reviews found on the lists of related articles and bibliographies of them.

Thus, 10 articles were considered relevant to the topic at hand, of which 1 was meta-analyzes[2], 3 were systematic reviews[3,5,6], 1 was RCT[10] and 5 were narrative reviews[1,4,7,8,9]. A critical review of the quality of the articles included was performed by the authors, using the CASP Critical Appraisal Tools e PRISMA 2009 Checklist.

RESULTS

ORTHODONTIC TREATMENT → TMD

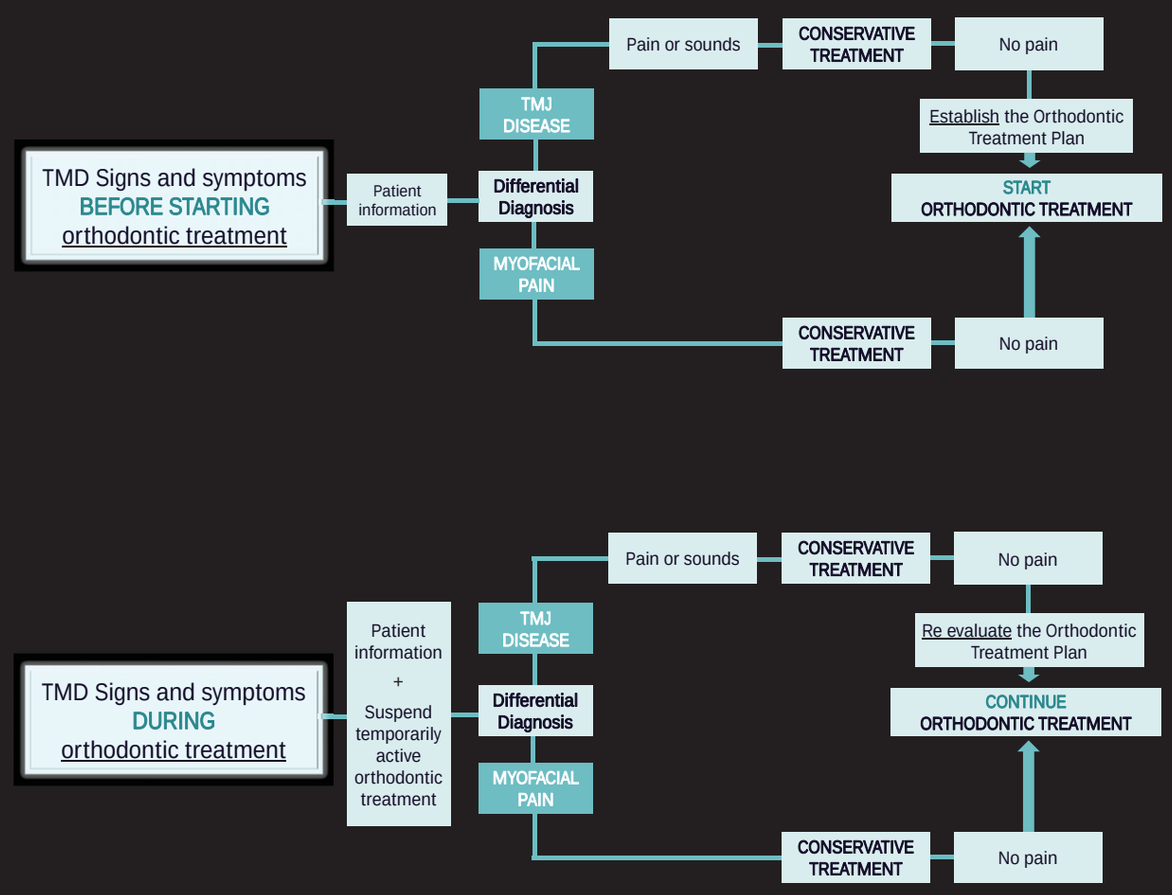
Is orthodontic treatment a predispose factor to the development or aggravation of TMD?

1) Signs and symptoms of TMD occur in **healthy individuals**[2,3,7,8];
2) Signs and symptoms of TMD **increase with age**, particularly during adolescence, until menopause. Thus, TMD that originates during orthodontic treatment may not be related to the treatment[1-5,7-9];
3) Orthodontic treatment performed during adolescence **generally does not increase or decrease the chances of developing TMD** later in life[1-5,7-9];
4) The **extraction of teeth** as part of an orthodontic treatment plan **does not increase the risk of developing TMD**[3,7-9];
5) There is no evidence of an elevated risk for TMD associated with **any particular type of orthodontic mechanics**[3,5,7,8];
6) Although a stable occlusion is a reasonable orthodontic treatment goal, **not achieving a specific gnathologically ideal occlusion does not result in TMD** signs and symptoms[3,7,8].

TMD → ORTHODONTIC TREATMENT

Does orthodontic treatment treat signs and symptoms of TMD?

1) When more severe TMD signs and symptoms are present, **simple treatments can alleviate them** in most patients[3,7].



Michelotti A, Iodice G. The role of orthodontics in temporomandibular disorders. Journal of oral rehabilitation. 2010;37(6):411-29

DISCUSSION

Current literature on the existence of a possible relationship between orthodontics and TMD is scarce and heterogeneous[2,7,8]. On the one hand, it is difficult to conduct randomized clinical trials and longitudinal studies are often made impossible due to the need for a large sample size and the information loss during the follow-up periods[2]. Moreover, because of the TMD does not represent a single entity, it has multifactorial origins[2,4] and a standard variable evolution[9],the criteria used for diagnosis vary widely among different studies, making it difficult their comparison[1,4,7]. The weak methodology, as regards the type of population selection, the criteria used for evaluation and presentation of results and not to control biases also play as important role[1,2,4,7].

However, most studies seem to suggest that orthodontic treatment does not cause or treat TMD[1-5,7-9].

CONCLUSION

Although current scientific evidence demonstrates **that orthodontic treatment is not a predisposing or etiological factor for the development or aggravation of TMD**, **neither a treatment for the signs and symptoms of this disorder**, definitive conclusions cannot be draw. Thus, based on existing information in the literature, orthodontics can not be considered the cause of TMD, or be recommended for treatment.

If future studies are planned, they should be prospective, using a reproducible and validated index, be undertaken by clinicians blind to which group the patients belong to, have patients randomly allocated to the groups and compared with appropriate controls.

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