Treatment of temporomandibular disorders (TMD) and orofacial pain

It is intriguing to see how information flows in the healthcare area. It is particularly curious to note that certain obsolete concepts and old, threadbare themes are sometimes reinstated and infect many practitioners. These treatment approaches are enough to spoil the mood of any scientifically-minded professional and—worse still—can wreak havoc with the victims of such treatments. The less lethal this condition, the more susceptible to such impropriety. An article in this issue provides a unique insight into one of the subjects most affected by what I just described: the treatment of temporomandibular disorders and orofacial pain.

Consider the following questions concerning TMD. Is your TMD treatment controversial? Is orthodontics an integral part of TMD treatment methods? Should TMJ CT's be routinely used to assess the problem? Is joint space relevant to the diagnosis and treatment goal? Is treatment aimed at adjusting the joint spaces? If you answered yes to one or more of these questions you must read the article by Carrara, Conti and Barbosa.

A close relationship between dentition and TMD was erroneously established decades ago. The mistaken conclusions stemmed from an interpretation of retrospective case series studies. This study design is most often performed by practitioners in the office setting, simply because that is where patients go for treatment. Thus, after a few years, material is collected from a series of cases on a given subject. To better understand why this study design is inefficient in pinpointing solutions to the problems that confront us, let us consider the following line of reasoning.

A hypothetical professional analyzes the results of orthodontic treatment of 41 patients in her office. All complained of pain and were diagnosed with TMD at the beginning of follow-up. To simplify my reasoning, let us consider that we have two possible treatment outcomes: improvement and no improvement. If the final results indicate that 35 patients improved, treatment as a whole was a success, right? The correct answer is: wrong. We cannot conclude anything other than that this treatment might work.

Some conditions are cyclical or transitory, and it might be that the patients who improved with this TMD therapy would eventually get better anyway. Therefore, a control group should be included, provided that the researcher finds it ethically acceptable to deprive these people of treatment. Thus, if the control group was included in the study and only 20 patients improved without treatment (Table 1), we would have a statistically significant difference between treatment and control groups ($p<0.001$), with the latter group showing more improvement than the former. Can we now conclude that this treatment is effective? No. At least not yet.

Furthermore, it is perfectly conceivable that a portion of those treated improved as a result of the placebo effect. It would be all but impossible to include a placebo effect per se in a non-drug therapy such as TMD. To achieve such effect, one could implement false treatments such as, for example, brackets bonded to teeth without de-

TABLE 1 - Results of a hypothetical study that proposes an orthodontic treatment plan for TMD.

	TREATMENT	CONTROL	FAKE TREATMENT
IMPROVEMENT	35	20	33
NO IMPROVEMENT	6	19	8
TOTAL	41	39	40

livering any actual forces, or an acrylic plate that does not cover the occlusal surfaces of the teeth.

In our hypothetical study, a Fake Treatment was evaluated. The results showed that 33 patients improved with the fake treatment and no difference was found between Treatment and Fake Treatment groups ($p = 0.63$). Thus the new therapy—or old therapy, if it happens to be the new edition of an old concept—is not more effective than the fake treatment.

The table showing the clinical trials with the three groups, described above, gives an overview of the process of assembling information for clinical decision making. However, the mere creation of the three groups is still a relatively incomplete action and therefore insufficient. Important issues regarding the randomness of patient selection for treatment, the fact that it is a prospective study, the analysis of intention to treat, among other items relevant to the design of a clinical trial, were not even mentioned. Mainly because it would require many pages to elaborate on these details.

Additionally, the sketch depicts a common shortcoming, namely, many well-intentioned professionals take advantage of conferences and other channels as a platform to disseminate findings from a series of cases treated in their offices, without realizing the complexity that lies behind the formulation of clinical studies.

It was in an attempt to help these people, who are part of the dental and medical communities, and also the people who suffer from TMD and orofacial pain, that Carrara, Conti and Barbosa wrote the Statement of the 1st Consensus on Temporomandibular Disorders and Orofacial Pain. This article is unique because it not only reflects the authors' opinion, but also that of today's leading Brazilian professionals. They endorsed the article and proved that the subject is not controversial.

Furthermore, the article shows that the available evidence can suggest many things: that orthodontics is not an integral part of routine TMD treatment methods, that TMJ CT's should not be used routinely, that joint space analysis is not relevant to the diagnosis and that adjusting the joint spaces is not a treatment goal, among other conclusions. The article is a landmark in the area and I strongly recommend that all read it in full.

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