

## **Applied valorization of contemporary gnathologic methodology in craniomandibular disorders**

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### **Summary**

**In the beginning of the article, according to the Glossary of Terms of the Prosthetic American Academy (1999), the authors underscore such concepts as craniomandibular disorders, TMJ dysfunctional syndrome and internal derangements. We subsequently highlight the fact that the stomatognathic system dysfunction can be triggered not only by intracapsular or neuromuscular pathology, but also by systemic diseases. They cause dyshomeostasis in other biosystems of the human organism, through the intervention of etiological risk factors, of which intimate action mechanisms are not fully revealed. Therefore, the attention of dentists and other medical specialists must be drawn to certain aspects evidenced in this article.**

**Keywords: gnathology, prevalence of craniomandibular disorders, traumatic occlusion.**

### **Introduction**

#### *Note 1*

#### **Reasons for drawing the attention of dentists and specialists in other fields to craniomandibular disorders**

In the framework of alteration of the hard and soft components of the stomatognathic system, priority is set on the early detecting of complex TMJ pathology in adolescents, adults and the elderly. It generates dysfunctional implications in discal-condylar dynamics and is known as “craniomandibular disorders”, corresponding to “Temporomandibular disorders” – TMD.

According to the glossary of terms of the American Prosthetic Academy (1999), this concept signifies the abnormal reduction of TMJ functionality, characterized by a group of symptoms in various combinations, causing the well-known dysfunctional TMJ syndrome (“temporomandibular dys-

function syndrome”).

It is also called “internal derangement of the temporomandibular joint” and expresses a deviation in the position and shape of the interior tissues of the articular capsule, together with altered relations between the disc, condyle, fossa and/or temporal eminence.

According to De Boever et al. (1998) and C. S. Greene (1998) the term “temporomandibular disorders” encompasses several clinical problems affecting the masticatory muscles, the TMJ and associated structures. They form an aggregate of orofacial symptoms and signs, where myofascial pain can often be mistaken for other painful syndromes.

According to L. Ieremia et al. (2000), this stomatognathic system dysfunction can be induced not only by TMJ or neuromuscular pathology, but also by general diseases, causing dyshomeostasis in other biosystems of the organism. Dyshomeostasis is generat-

ed by etiological risk factors of which intimate action mechanisms are not yet fully revealed.

Taking into account the medical vision of contemporary Gnathology, craniomandibular disorders will not be looked upon as an all-embracing syndrome, but as distinct affections of the TMJ, which are conditioned by certain predisposing, initiating and perpetual factors (Okeson et al., 1998).

The interest for this topic draws the attention of other medical specialists due to the following aspects:

**1. Validation of the very high frequency (over 75%) of one/more craniomandibular symptoms against the background of controversial etiopathogeny with plurifactorial specificity** (Carlsson et al., 1999).

Over the last years, the etiological concepts, the classification of TMJ pathology as well as treatment methods have changed dramatically, due to certain aspects seized by researchers. It was often noticed that the dysfunctional systems of this articulation are not always the expression of structural alterations and the morphological lesions are not mandatorily correlated with the complaints.

The lack of anatomoclinical coincidence was confirmed (Fildan Floarea et al., 1996; Bratu et al., 2001 b).

Until recently, the role of certain occlusal factors in the etiology of TMJ disorders has been overestimated, conducting to errors of diagnosis and even treatment, that proved to be harmful (Coman Lia et al., 2001). For instance, malocclusion, occluso-articular impacts in certain forms of partial edentation, the loss of posterior interdental chocking are factors which, according to literature (Pullinger et al., 1993; Witter, 1993; Kayser, 1998; Grummons, 1997) may have reduced influence in the initiation and development of signs and symptoms of TMJ dysfunction in sound constitutional structure. This body structure is capable of adapt-

ing itself to genetic and epigenetic events. This does not mean that dental occlusion is not important; as it is part of the stomatognathic system, it deserves to be minutely examined. In the above-mentioned context, the remaking of optimal interarch reports must be considered (from a therapeutic viewpoint) an objective of improvement of the main functions of the stomatognathic system and not as a method of preventing TMJ dysfunction.

Prosthetic rehabilitation through stable occlusion might be a solution for patients with dysfunctional articular disorders, with complex interarch morphofunctional imbalance and recurring symptoms. That kind of rehabilitation must be avoided in the so-called "ghost occlusion syndrome", which sometimes occurs in patients with psychogenic TMJ dysfunction, even if they insist that occlusion is the main problem.

**2. The clinical highlights of the craniomandibular dysfunction are polymorphic** (Jeremia et al., 1987, 1999, 2000; Levy et al., 1998; Dahlstrom, 1998; Ferrari et al., 1999; Sano et al., 1999; Yamada et al., 2001; Bakke Merete et al., 2001; Yang et al., 2001)

**3. The incidence, intensity and appearance of complaints vary with the evolutionary stage of the morbid entity**, sometimes they disappear, at other times they reemerge (Molin et al., 1976; De Laat, 1997). According to de Bont et al. (1997), the prevalence of TMJ disorders differs from one study to the other, due to errors in applying certain methodology or due to confusions of terminology.

**4. Patient symptoms may not always coincide with the results of clinical examination (Kopp, 1997) and the topographical characteristics of pain differ.**

Thus, during a survey made by J. G. Luz et al. (1997) on 894 patients with TMJ dysfunction, the most frequent pain site was the TMJ (82.1%), followed by the ear (10.8%), cephalic extremity (2.3%), mandible (1.0%), neck (0.9%), temporal area (0.4%)

and frontal area (0.1%).

**5. The difficulty of detecting the disorders and alterations present in subjects with TMJ dysfunction is due to the fact that, among the signs and symptoms of discal-condylar kinematics disturbances, pain plays a secondary part, its intensity being hard to assess, as it varies with individuals** (Bratu et al., 2001 a).

That is why 5% of patients ask for treatment in other medical specialties (ORL, internal medicine, ophthalmology, neurology, even psychiatry).

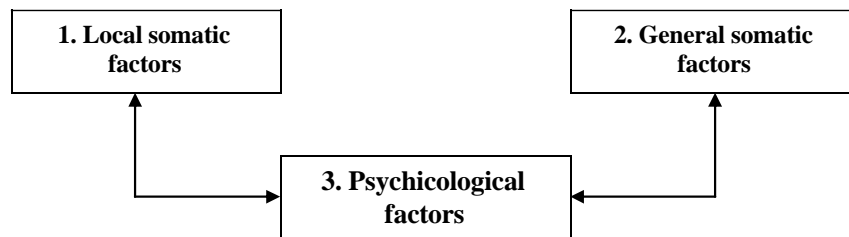
**6. Sometimes pain in the face takes the form of neuralgia or recurrent diffuse cephalgia and making the positive and differential diagnosis with morbid TMJ entities difficult** (Okeson, 1996).

**7. Pain is often preauricular and appears during mastication of hard food-stuffs; in complicated caries, the diagnosis**

**between myalgia, articular pain or odontogenic pain claims a minute examination of each patient** (Burlui et al. 2000).

**8. In clinical cases of systemical diseases superposed on TMJ dysfunction** (rheumatic, non-rheumatic, traumatic, acute infectious, psoriatic, gouty or non-gouty arthritis) **interdisciplinary approach is mandatory** (Ieremia et al., 2002).

**9. Somatic local, general and psychological etiological risk factors responsible for craniomandibular dyshomeostasis are extremely diverse, (frequently associating and conditioning themselves – see schema below) and create difficulties in the interpretation of intimate mechanisms of diseases characterized by TMJ dysfunction and in formulating correct etiopathogenic diagnosis** (Gola et al., 1995).



According to L. Ieremia et al. (2002), certain opinions on the etiopathogeny of TMJ disorders should be reassessed. These disorders are characterized by polymorphic clinical manifestations (occlusal, muscular and articular), some remote (craniofacial and cervical algia), on the background of craniomandibular painful dysfunctional syndrome. The opinions mentioned are conflicting and take into account peculiarities mostly evidenced in dentomaxillary anomalies. For instance, **occlusal disorders** (due to partial edentation, class II-1, 2 angle malocclusions, orthodontic and prosthetic therapeutic iatrogeny, dental impacts – premature contacts and occlusal interferences) should be detected clinically and on articulatory

cast models and wiped out by adjustment.

The parafunctional signs of bruxism are revealed by the degree of dental abrasion, myolysis, structural alterations such as McCall roll and Stillmann fissures, periodontal bony pockets, thickening of periodontal space (confirmed on radiographs); all these are considered as consequences of traumatic occlusion (TO) (Ieremia et al., 1987, 1999, 2000, 2001 a, b).

**Muscular manifestations** – commonly myalgia – limit mouth opening (due to masticatory muscle spasm, with or without hypertrophy).

Sometimes pain is reduced (discomfort, tension or permanent fatigue); other times it is amplified by mandibular movements; it

predominantly affects the rising and lateral pterygoid muscles, bilaterally. Not least, algia can be projected at distance from the affected muscular organ.

The implications of TMJ dysfunction constitute the basic signs of craniomandibular disorders, characterized by:

- noises (cracking or crepitations);
- pain in the temporal region corresponding to the affected articulation or in the ear;
- reduction of the maximal amplitude of mouth opening.

These signs can also be caused by:

- an inflammatory affection of the synovia, or retrodiscal (retrodiscitis) or periarticular (capsulitis, tendonitis);
- ligamental macrotraumatism;
- structure anomalies of the synovia (posttraumatic or postsurgery adherence) or of the articular disc (mucoïd degenerescence or perforations);
- dislocations of the articular disc with or without reduction possibility as against the condyle head;
- TMJ subluxation or luxation;
- anomalies of the hard osseous elements (TMJ arthrosis).

***Painful craniofacial or cervical manifestations, with or without implications on column posture, accompanied by uni- or bilateral chronic cephalgia, otalgia, tinnitus and the feeling of stuffed ear, associated to TMJ dysfunctional syndrome*** rise difficulties in diagnosis (Dupas, 2000).

***Cephalic algia of the temporal region*** is often interdependent with the TMJ dysfunction syndrome, because the temporal

muscle fascicles become hyperextended through complex stretching mechanisms. This phenomenon takes place each time the lateral pterygoid muscle is subjected to prolonged contraction. This suffering is intense and the abolition of muscle contraction after removing the TO stimulus is accompanied by spectacular improvement.

Within the above mentioned context, L. Ieremia et al. (2000) obtained the same result by help of occlusal inhibition trays and intraoral infiltration with 2% xylin without adrenalin, thus confirming the diagnosis of TMJ dysfunction with myogen specificity, caused by TO. The removing of premature dental contacts and occlusal interferences through selective polishing followed.

***Occipital cephalgia*** is frequently associated with occlusal disorders, whereby contraction occurs in posterior cervical muscles. Their tension is correlated with the head forward position, common in patients with TMJ pain. Such position diminishes the resistance to lateral pterygoid contraction but induces the extension of posterior neck muscles through hypertension.

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The lack of anatomoclinical coincidence was confirmed also by our studies.

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