THE SYNDROME OF THE DISTAL MOLAR TOOTH

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Abstract

The paper aims at focusing, in the context of the complications occurring in partial edentation, of a special pathology, manifested in lateral intercalated edentation of the arch, namely the distal molar tooth syndrome of the potentially prosthetic space, which shows an interesting behaviour, with several pathological consequences.

The syndrome of the distal molar tooth, more frequently occurring on the mandible than on the maxilla, is a result of teeth natural displacement, as well as of their tendency to mezialization.

Installation of the distal molar tooth syndrome is evident in the molar and neighbouring teeth displacement towards the edentulous space, by extrusion of the antagonistic molar tooth, modifications of the marginal and supporting periodontium, as well as by axis and occlusal side disorders, accompanied by installation of occlusal trauma, and of disfunctional symptoms of articular, muscular, mandible-skull relations, mandibular dynamics, etc.

The present study establishes several correlations between the displacement of the distal molar tooth axis and its dental mobility, depth of the mezial pockets and gingival inflammation, on an experimental group made up of 239 patients, out of which 187 showed lateral reduced intercalated partial edentations on the mandible and 52 on the maxilla. There was also evidenced the presence, within the distal molar tooth syndrome, of symptoms accompanying partial edentation at muscular and articular level, centric and posture relations, mandibular dynamics, etc.

The results obtained lead to the conclusion that the more marked displacement of the distal molar tooth axis is accompanied by its increased mobility, by a higher depth of the mezial periodontal pockets and by more intense gingival inflammation.

The complexity of the clinical manifestations, together with the occurrence of the distal molar tooth syndrome requires therapeutical solutions to be found immediately, in post-edentation initial stages. Immediate prosthetic application, be it conjunct or adjunct, may restore the continuity of the damaged arch, thus preventing the complications of partial edentation.

If such a moment is lost and the distal molar tooth syndrome is already installed, the treatment will be conducted towards the recovery of the morpho-functional integrity of the stomatognate system, by taking care of the muscle-articular complex, mandible-skull repositioning, recovery of the distal molar tooth through orthodontic procedures in young patients, followed by long-term gnato-prosthetic treatments.

Keywords: distal molar tooth, syndrome, partial intercalated reduced edentation, complications, treatment

Local, local-regional and general complications of the reduced partial intercalated edentation have a negative effect on the quality of human life. Usually, they begin with odonto-periodontal over-stress (abrasion and tooth mobilization), migrations of the neighbouring and antagonistic teeth, loss of the central occlusal stops, up to articular and muscular disorders, impairment of mandibular dynamics and deficient mandible-skull relations (1, 2).

The pathological picture of partial edentation complications is characterized by a series of symptoms which support the idea that the clinical signs manifested demonstrate the installation of a distal molar tooth syndrome, much more frequently distally to the potentially prosthetic space (1,3) - Fig.1.

Reduced partial intercalated edentation may evolve in two directions: towards compensation and re-establishment of the stomatognatic system homeostasis or towards immediate or delayed installation of its dishomeostasis. In this way, all components of the prosthetic field and of other elements at a distance (temporal-mandible articulation, the muscles mobilizing the mandible) are modified, to a lower or higher extent.

At tooth level, slow mechanical wear off occurs, as a result of over-stress, thickening of the cement layer deposited on the roots of the over-used teeth, in taking over the functions of the missing teeth. The number of periodontal fibers increases, thus granting a better tooth implantation, while the tough lamina of the remaining teeth and from the neighbouring area becomes...
thicker. Marginal gingiva becomes also thicker and tougher. At the level of the edentated ridge, the compensating stage appears as a bone trabecular area, organized according to the direction of the stressing forces (usually, parallel to the edge of the crest, towards the adjacent teeth).

When local disequilibrium is ample manifested, its effects go beyond the very local area, occurring as dishomeostasis of the whole system, and leading, slowly but irreversibly, towards significant complications of partial (local-regional or general) edentation.

Local complications are represented by abrasion of the remaining teeth, overstretch, peridontopathy, abnormal tooth mobility, manifestation of dental migrations (bascular modifications, involving modification of the dental axis, parallel to the dental axis, axial migrations with migration of the alveolar bone or not, etc. (2) – Fig.2).

Local-regional complications result from mandibular-skull malposition, following partial edentation, which will affect the normal posture, the centric and occlusion relations.

Severe alteration of such parameters will lead to dishomeostasis, manifestation of the disfunctional syndrome of the stomatognate system affecting ATM (pain, deterioration of elements, articular blocking, substidences), mandibular muscles (spasm, hypertrophies, hyper- or hypotonies, pain), mandibular dynamics (malocclusions), occurrence of parafunctions (bruxism).

In an initial stage, all these complications are reduced while, in time, and in the presence of some favourizing factors, the situation becomes more serious, especially for the distal molar tooth of the edentulous space. That is why, the prosthetic treatment is is considered to be compulsory, even in the absence of a single lateral tooth (1).

The present paper discusses a pathology, individualized among the complications induced by partial edentation, manifested as lateral
intercalated edentation of the arch, namely: the
distal molar tooth of the potentially prosthetic
space, whose unusual behaviour induces nu-
umerous pathological consequences.

The syndrome of the distal molar tooth,
more frequently occurring distally, on the
mandible rather than on the maxillary, results
from teeth natural displacement – Fig.3, as well
as from their tendency towards mezialization (3).

![Fig.3 Cone of dental axes converging towards Crista galli](image)

The central and lateral mandibular incisors
are almost vertical, displacement being more
and more marked distally.

The displacement degree of tooth occlusal
sides is reflected in the sagital curve of Spee
(concave at the mandible, convex to the maxilla):
the teeth from the posterior half of the curve will
be displaced more in anterior direction – Fig.4.

The transversal curve of Monson and Villain
reflects displacement of the mandibulary lateral
teeth towards the lingual area – Fig.5. By
prolonging the axes of the mandibulary and
maxillary teeth, one may observe that they get
united at the level of the apophysis. Crista galli
of the frontal bone forms a cone defined by
Villain as a supporting cone. The posible spatial

![Fig.4 Spee curve and formation of the occlusion plane](image)

![Fig.5 Displacement of dental axes - Villain supporting cone](image)
obtention of the supporting cone results from the sum of the dental degrees of displacement towards the vertical line, each tooth having a natural displacement of its own, in meio-distal and vestibulo-oral position. Such an individual displacement represents another morphological adaptation to the occlusal forces, periodontal protection being achieved through dispersion of the resultant forces.

Installation of the **distal molar syndrome** is evident in molar displacement, displacement of the neighbouring teeth towards the edented space, extrusion of the antagonistic molar tooth, modification of the marginal and supporting periodontium, as well as through axis and occlusal side disorders.

1. Displacement of the distal molar tooth occurs in the case of older edentations, in younger subjects, in whom bony plasticity allows its facile and more rapid migration (Fig.6).

2. Displacement of the neighbouring teeth and extrusion of the antagonistic molar tooth appears as an immediate consequence of the limitrophe tooth migration towards the edentated prosthetic space and of the antagonistic tooth towards the establishment of new occlusal contacts.

3. The complications occurring at the level of marginal periodontium result from the modifications induced at proximal contact level, which are quite usual in the etiology of periodontal diseases. The point of distal contact dissapears, as a result of distal molar tooth displacement, while the neighbouring molar tooth may be engaged in the distal convexity, blocking the interdental contact in a pathological manner, which does not protect gingival papilla any more, producing instead retention and food setting (4).

Twisting of the mandibulary molar teeth and extrusion of the maxillary ones modify the interproximal contacts of these teeth. The distal cuspides of the second inferior molar tooth are over-high, thus depositing food in the interproximal space between the first upper molar tooth in extrusion and the second superior molar tooth (5,6).

Towards mezial position, coronary displacement creates retention zones for the plaque (the tooth is laid down horizontally on the gum), which cannot be removed by the usual methods of oral hygiene. Consequently, a periodontal pocket results, causing destruction of the mezial *lamina dura*, followed by persistence of the periodontal pocket, through the inflammation caused by bacterial plaque accumulation.

At the level of the supporting periodontium, bone aposition in the distal zone and bone resorption in the mezial zone occur, while the alveolar margin is destroyed towards the edentated zone (7).

4. Disorders of axis and of occlusal side – occlusal trauma

The occlusal forces increase tooth displacement. When they exceed the physiological limits, causing tissular problems, the “occlusal trauma” occurs - Fig.7. Displacement of the cuspidian planes also occurs, causing severe occlusal disorders. The insufficient transmission of the occlusal forces, induced by the absence of teeth,
produces pathological atrophic modifications defined as “periadontal atrophies due to hypofunction” (8,9).

Mezial drifting of the distal molar tooth from the edentated space causes loosening of the mezial contacts with the antagonistic units and intensifies the distal contacts while, at the level of antagonistic ones, extrusion of cuspides contacting the mezial cuspides of the distal molar tooth and intrusion of the other half occur. In the absence of the mandibular first molar tooth, one modification involves shifting and twisting of molar teeth 2 and 3, as well as extrusion of the corresponding upper molar tooth - Fig.8.

The malocclusion thus installed may increase the para-functional vicious habits – such as contraction of the raising muscles, and teeth stretching and blocking. As a function of their intensity and durations, such parafuncions release forces which exceed the adaptation capacity of the periodontium, leading to occlusal trauma (10).

The syndrome of the distal molar tooth is also accompanied by symptoms of partial edentation, such as: the tongue increases in volume and enters the potentially prosthetic space (Fig. 9), the print of the teeth appears on the lateral sides (Fig.10), over which the cup effect of the cheek mucous membrane which creates a prolapse towards the edentulous space (diapnesis) occurs.