

Unilateral mastication - Silent messenger of periodontal status

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Abstract

Unilateral mastication is commonly encountered on daily routine by all dentist. Various causes for unilateral mastication can be enumerated, but it's seldom the reason for dental visit by the patient. Such negligence's can be avoided by generating awareness as to how early treatment of a single diseased tooth might save half of the dentition from being severely compromised with the help of this case series.

Keywords: Atrophy, Dental calculus, Dental caries, Periodontal diseases, Periodontitis.

Introduction

Atrophy or wasting is defined as a decrease in size of an organ or tissue. It may result from death and resorption of cells, diminished cellular proliferation, pressure, ischemia, malnutrition, decreased activity, or hormonal changes.

Periodontal atrophy is defined as the quantitative degenerative changes that occur in the periodontium of a tooth as a result of disease or disuse. When a tooth loses its antagonist, osteoporotic changes in the supporting bone occurs, leading to an afunctional change in the direction of periodontal fibers, and a narrowing of the periodontal ligament.

The periodontal ligament adapt to functional changes by increase in the width with increasing functional demand and vice versa. Modifications of the periodontal ligament to functional changes are observed with corresponding adaptive changes in the cementum and alveolar bone.¹

Unilateral mastication (UM) is a common dental finding encountered by dental professionals on daily routine. Although, this is generally never the reason for which patients approach to seek treatment, pain is the principle reason mostly. Various causes can be enumerated like deep carious lesions, gingival overgrowths covering occlusal surface, pericoronal and periodontal abscess, food lodgment, missing antagonist teeth, habitual usage of only one side, improperly fabricated prosthesis, etc.

Thus, what so ever may be the cause, unilateral mastication leads to hypofunction of the attachment apparatus on the neglected or unused side. Insufficient occlusal forces are injurious to the attachment apparatus of the tooth. Prolonged effect of reduced functional loads differentially affect morphology and mechanical properties, and mineral variations of the local load-bearing sites in a bone-PDL-cementum complex.² The effects of nonfunction on periodontium have been studied on humans and animals,²⁻⁶ indicating narrowing of the periodontal membrane, loss of functional orientation of the principle fibers, osteoporosis of

alveolar bone, and reduction of bone height.³ Radiographically, as thinning of the periodontal ligament space.

Howsoever beneficial the above observations may be, in terms of destruction to the attachment apparatus related to calculus deposition, gingivitis & pocket depths due to UM, have been seldom viewed appropriately, especially in the light of duration of UM.

On intraoral examination, the non masticatory side shows heavy calculus deposits sometimes covering the occlusal surfaces, mobile teeth and severely compromised periodontal conditions of almost the entire half of the dentition, whereas the masticatory side is calculus free and has relatively good periodontal status. Severely decayed tooth and its related consequences is mostly the culprit for worsening of periodontal status due to UM, depriving almost entire half of the jaw from the benefits of mastication, and its stimulation on periodontium of the remaining healthy teeth of the affected side.

Case Series

Case 1: A 35 year old female reported to the department with the chief complain of bleeding gums from past 3 months.



Fig. 1

Case 2: A 28 year old male reported to the department with the chief complain of pain in left upper back tooth from past 10 days.



Fig. 2

Case 3: A 30 year old female reported to the department with the chief complain of bleeding gums from past 15 to 20 days.



Fig. 3

Case 4: A 25 year old female reported to the department with the chief complain of pain in right upper back tooth from past 2 weeks.



Fig. 4

Case 5: A 28 year old male reported to the department with the chief complain of pain in left upper back tooth from past 15 days.



Fig. 5

Case 6: A 32 year old female reported to the department with the chief complain of swelling gums in right upper back region from past 2 months.



Fig. 6

With the help of 6 cases reported to the Department of Periodontology, Government College of Dentistry, Indore, the effect of UM on the health of underlying periodontium is explained using Modified oral hygiene index (OHI-M) proposed by Garg S. It comprises of two parts debris index-modified (DI-M) and calculus index-modified (CI-M).⁷

Modified calculus index is recorded surface wise, posterior tooth is divided into 3 surfaces.

Criteria for scoring-present on Bu or Li surfaces – same as described by Green & Vermillion in original Oral Hygiene Index.

Scoring calculus on posterior teeth- 4 scores possible:

0. No calculus present on Oc surface of the tooth,
1. Calculus covering not more than 1/3rd of Oc surface of tooth or calculus present only on pits & fissures present on Oc surface of tooth,
2. Calculus covering more than 1/3rd but less than 2/3rd of Oc surface of tooth,
3. Calculus covering more than 2/3rd of Oc surface of the tooth.

Method of calculating score: after scores for calculus are recorded, index values are calculated separately on masticatory side and non-masticatory side. For each side, calculus scores are totaled & divided by number of surfaces scored. Index of one surface - score may vary

from 0 to 3 for anterior as well as posterior teeth. Index of tooth - total score of all surfaces / no. of surfaces scored. For posterior teeth- 3 surfaces & anterior teeth- 2 surfaces are scored. Index of one tooth may vary from 0 to 6 for anterior tooth, 0 to 9 for posterior tooth. Index of all teeth- total score of all teeth's / no. of teeth scored

Modified debris index

Criteria for scoring debris index:

0. No debris or stain present on Oc surface of a tooth,
1. Soft debris covering not more than 1/3rd of Oc surface of a tooth being examined or soft debris present on pit & fissure areas or the presence of extrinsic stains without debris regardless of surface area covered,
2. Soft debris covering more than 1/3rd but not more than 2/3rd of Oc surface of the tooth,
3. Soft debris covering more than 2/3rd of Oc surface of the tooth

Results

Modified oral hygiene index (OHI-M) for 6 patients is tabulated on masticatory and non masticatory sides by dividing it into anterior and posterior regions and average of each side (Table 1).

Table 1

Case No.	Masticatory side			Non-masticatory side		
	Posterior	Anterior	Average	Posterior	Anterior	Average
1	0.6	0.8	0.66	2.23	1.00	1.88
2	0.7	1.17	0.83	2.56	1.42	2.24
3	0.1	0.66	0.93	2.40	1.16	2.04
4	0.2	0.4	1.51	2.02	1.10	1.76
5	1.1	1.4	0.57	2.93	2.33	2.76
6	0.67	2.16	1.09	1.73	2.33	1.91

Interpretation

1. Oral hygiene score of non-masticatory side is greater than that of masticatory side.
2. As we move from non masticatory posterior to non masticatory anterior, masticatory anterior & to masticatory posterior, oral hygiene score of patient improves.

Discussion

It is observed that carious and its related lesions are the major cause of avoiding chewing from the affected side. In 20% cases of UM has shown gingival & periodontal lesions as causative factor. It was observed that the negligence or carelessness to get the proper dental treatment at initial stage is an important factor to develop the habit of UM. It has also come to notice that fear of pain is another aspect of avoiding chewing from the affected side. Lack of awareness regarding consequences of a small lesion is also one of the

important aspects to create a condition of disuse atrophy or UM.

Calculus deposition, gingival inflammation and pocket depth increases with the duration of unilateral mastication. It proves that the destruction of attachment apparatus is directly proportional to the duration of UM. It is also observed that females are suffering more with this problem compared to males.

In substance, clinicians should pay more attention towards the obturation of primary carious lesion and for the treatment of initial gingival and periodontal problems; at the same time patients should be motivated to accept the treatment of the dental problems at their initial stage.

Conclusion

Such negligence's can be avoided by generating awareness as to how early treatment of a single diseased tooth might save half of the dentition from

being severely compromised with the help of this case series.

Conflict of interest: None to declare

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