A Study Unravelling the Mysteries Surrounding the Mutilated Dentition : A Look at the Cause, Diagnosis and Management

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Abstract

Aesthetic and functional restoration of the severely worn dentition represents a significant clinical challenge. Full mouth rehabilitation implies the employment of all the diagnostic, therapeutic and restorative procedures at our command for the treatment and prevention of dental disease. Considering the effect of severely worn dentition on masticatory system, a study carried out to diagnose the severity of tooth loss and its significance on the stomatognathic system among the adults of both the genders and restore the physiologic balance between all components of stomatognathic system through bioesthetic rehabilitation.

Introduction

The prevalence of tooth surface loss has increased in recent years. The tooth surface loss is not of single type. It appears in several forms- attrition, abrasion, erosion and noncarious cervical lesion (NCCL). Loss of natural teeth results in both esthetic and functional deficits in masticatory system as the age of patient advances. This leads to significant reduction in patient's quality of life.

Masticatory system is an extremely complex mechanism consists of jaw bones, muscles and teeth. When breakdown occurs in one unit of the system, it can produce damaging complications in the other component of the system.[1]

Rehabilitating a patient with tooth loss to an acceptable standard of oral health is clinically demanding and requires careful diagnosis and proper treatment planning. An understanding of the multi factorial nature of tooth wear and its risk factors is important in the patients' diagnostic protocol and management.

The success of functional and esthetic restoration in a case requiring full mouth rehabilitation is often dependent on our understanding of interdisciplinary concepts. With every patient being unique and representing a special blend of age, personality characteristics as well as expectations, knowledge of interdisciplinary concepts can open a whole range of treatment options and outcomes. In the present era, every dentist must have a thorough knowledge of the roles of these different disciplines in producing an esthetic makeover with the conservative and biologically sound interdisciplinary treatment plan.[2]

Material and Methods

The sample of the study consists of hundred adults in age group of 18-55 years which were randomly selected.

A self-administered questionnaire was designed based on the literature and experts opinions. This questionnaire consisted of items regarding signs and symptoms associated with bruxism, attrition and temporomandibular disorders.The questions required a 'Yes' or 'No' response.

An oral examination carried out in the Department of Prosthodontia. Charting of tooth wear and other oral findings were done using Smith and Knight Tooth wear index, Eccles tooth wear index, VAS score.

Clinical Evaluation

The clinical evaluation carried out on the basis of questionnaire consisting all the requirements that the prothodontists should take into consideration.

1. Does patient has teeth sensitive to cold?
2. Do any of teeth show wear?
3. Does patient has any loose/mobile teeth?
4. Are any of the teeth absent?
5. Is there H/O frequent fracture of restoration or cusp tips?
6. Are any of the teeth tender to biting or chewing?
7. Does patient shows gum recession?
8. Does patient hear a jaw pop on opening and closing of mouth?
9. Does any of the muscle is tender to touch?
10. Does patient experiences pain on opening and closing of mouth?
11. Is there any limitation to mouth opening?
12. Does patient has joint tenderness?
13. Does patient suffer from referred pain in neck,shoulder or ear?
14. Is there any H/O bruxism?
15. Is there any H/O lock jaw?

Functional harmony of the occlusion cannot be achieved if it is aligned with a disturbed temporomandibular articulation. Competence with Occlusal therapy requires the ability to differentiate the different disorders that occur with the temporo-mandibular articulation so that they can be treated before the intercuspal relationship of the teeth is determined.

Questions .8 to Question .15 are the screening question for examination, diagnosis and management of temporo-mandibular disorder.[3]

So the patient's with positive response are excluded and undergo treatment for temporomandibular disorders and patient who give positive response for Question. 1 to Question .7 included in full mouth rehabilitation treatment planning.

Patient with the complain of mobile teeth may have conditions that prevents through cleaning of any tooth surface or any portion of sulcus, traumatic occlusion which is also considered as a causative factors that can lead to loss of teeth. If gingival attachment is intact and there is a sufficient level of supporting bone remaining even severely mobile teeth can be returned to normal firmness and health by correcting occlusion.[3]

Loss of the teeth affect occlusal balance and muscle balance. If anatomic harmony is disturbed the peaceful neuromuscular system gets upsets. This affects the functional activity of the stomatognathic system.[3,4] Tooth sensitivity increases with the severity of tooth loss.[1]

Incidence of tooth fracture and restoration increases when there areocclusal-prematurities or excessive pressure on tooth due to muscle tension and increased sensitivity of tooth attrition.[2,5]

Traumatic occlusion may lead to tenderness of tooth or periapical pathology lead to tender tooth.[6] This ultimately affect the Occlusal balance , so it should be taken into consideration.

After taking into consideration the questionnaire the patient charted according to the Smith and Knight Tooth wear index[7] and Eccles tooth wear index.[8] After charting, the management of the patient carried out on the basis of Turner and Missirlian classification of tooth wear.[9]

Table 1: Smith & Knight tooth wear index[7]

Score	Criteria
0	No loss of enamel surface characteristics
1	Loss of enamel surface characteristics
2	Buccal, lingual, and occlusal loss of enamel, exposing dentine for less than 1⁄3 of the surface; incisal loss of enamel; minimal dentine exposure
3	Buccal, lingual, and occlusal loss of enamel, exposing dentine for more than 1⁄3 of the surface; incisal loss of enamel; substantial loss of dentine
4	Buccal, lingual, and occlusal complete loss of enamel, pulp exposure, or exposure of secondary dentine; incisal pulp exposure or exposure of secondary dentine

Result

The statistical analysis data is presented as follows.

Discussion

Loss of tooth structure involves biologic, functional and esthetic implications. Biological implication includes loss of tooth structure leading to irregular tooth surface resulting to increased plaque deposition, pulpal exposure and finally leading to weakening of tooth structure. Loss of tooth structure cannot always be compensated by continuous eruption. Thus there is loss of masticatory efficiency. Due to loss of tooth

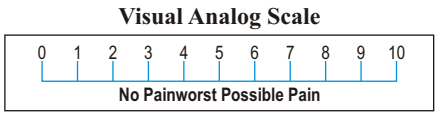

Fig. 1: Visual Analog Scale (VAS Score)

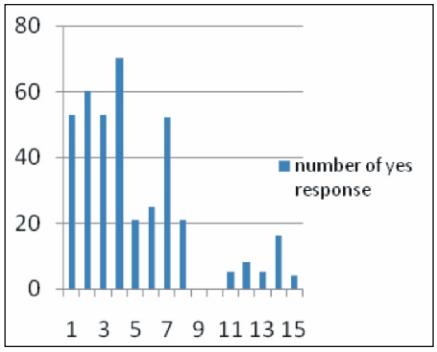

Fig. 2: Bar diagram showing results of questionnaire: 15 questions asked to 100 random patients

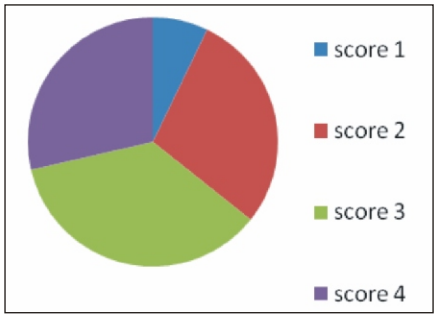

Fig. 3: Result of Smith and Knight Index (For occlusal/ incisal tooth wear) [Score-0 to 4]

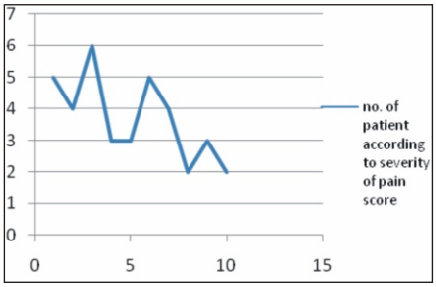

Fig. 4: Pain analysis according VAS score

structure esthetic gets compromised.

As temporomandibular joint is generally regarded as most stable component of the masticatory system, it is necessary to restore its health and prevent it from damage. Temporomandibular disorder treated with best possible treatment modalities to achieve successful occlusal treatment.

The decision on whether to restore a worn dentition or not always depend on the severity, potential for progression and most importantly patients need. The level of wear dictates the treatment.[10]

The management of full mouth rehabilitation is done taking into consideration Turner and Missirlian classification of tooth wear[9]

Category 1: Excessive wear with loss of vertical dimension.

Category 2: Excessive wear of teeth without loss of vertical dimension.

Category 3: Excessive wear of teeth without loss of vertical dimension.

Attrition can be managed with the use of splints like the soft bite guard, occlusal splint. A discrepancy between centric relation and centric occlusion most triggering factor for muscle dysfunction, bruxism and temporomandibular dysfunction. Among various treatment modalities to reduce this discrepancy Pankey Mann-Schuyler technique and Hobos twin stage technique are the most acceptable technique.[11,12,13]

Non carious tooth loss lesion demands treatment for the sensitivity, esthetic, function and loss of interocclusal space.[14] As per the prosthodontics approach this includes Occlusal reduction, surgical crown lengthening and arbitrary increase of vertical dimension, orthodontic therapy or a Dahl bite raising appliance.[15]

Abrasive lesions are restored with GIC, RMGIC, resin composite laminating RMGIC. If the tooth structure is heavily lost, it is required to be restored endodontically.

The key to success of full mouth rehabilitation is multidisciplinary approach. We have to be interdependent on different discipline in the following way:

Oral Diagnosis & Radiology: Diagnosis and radiograph.

Periodontology: Scaling and polishing, crown lengthening, flap surgery.

Orthodontics: Tooth alignment, bite plan, occlusal splint.

Conservative: Restoration, root canal treatment.

Oral Surgery: Extraction, implant.

Conclusion

Managing mutilated dentition with variable clinical finding and multifactorial etiology is a difficult challenge, the prosthodontics often face. Full mouth Rehabilitation entails the performance of all the procedure necessary to produce a healthy, esthetic, well-functioning and self-maintaining masticatory system.[16] Thus to achieve a successful full mouth rehabilitation proper diagnosis and proper execution of treatment plan is necessary.

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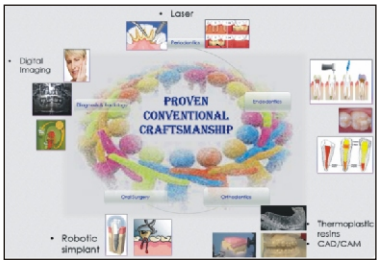

Fig. 5: An Interdisciplinary approach

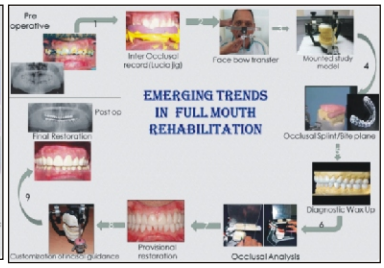

Fig. 6: Steps in Full mouth rehabilitation

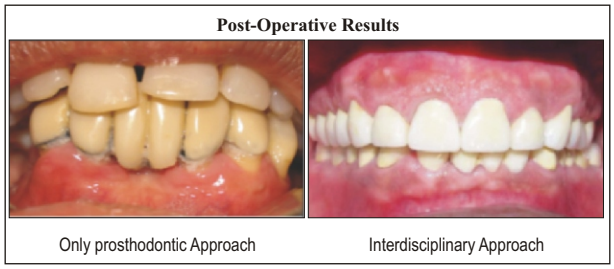

Fig. 7: Results after different approaches

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