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Occlusion and deprogramming the mandible - Existing methods and the revolutionary Smylist® technique

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Abstract : The literature has multiple schools of thought regarding occlusion and the critical impact it has on the dentition. The occlusion is considered to be stable and fine if there are no associated dental complaints. In case the dentition shows damage and/or there is associated TMJ disorders and facial muscular pain, it is suggested that the occlusion should be corrected. The Smylist® philosophy explains how the impact of occlusion goes way beyond just the dentition and facial muscles. Conventionally major importance has been laid on the aspect of deprogramming of the mandible for the correction of occlusal related problems. All the suggested methods of deprogramming of the mandible are based on the relaxation of the mandible by disengaging the posterior teeth. The recommended technique is to fabricate an acrylic appliance known as a "deprogrammer" or an "occlusal splint" to be worn by the patient. This appliance has to be adjusted over a period of weeks or even months to slowly and gradually guide the mandible and train the muscles to move into a particular position. How the appliance can achieve this is quite questionable. In contrast, the Smylist® technique is a completely innovative and original method, which achieves this three dimensional "deprogramming" in a matter of minutes and achieves dramatic results in the patient instantaneously in a conscious manner. This article presents an overview of the conventional methods and a broad outline of the Smylist® method.

Keywords: Smile design, Smylist®, Occlusion, G space, deprogramming, muscles, TMJ, mandible, gnatho manipulation, face analysis, parameters, negative cascade, condyle, palpation

Introduction

"Occlusion" is an area of dentistry that has been deliberated, discussed and spoken about all along the 100 years of the documented history of dentistry. In spite of the enormous literature published over the years, most of the findings have not been very conclusive. In very simplistic terms, Occlusion has been defined as a contact between the maxillary and mandibular teeth. Even though partially correct, this definition is hardly complete and does not do justice to this extremely complex phenomenon which is actually a dynamic and constantly changing entity. More technically, it is the relationship between the maxillary and mandibular teeth when they approach each other during mastication or even in a state of rest.

The maxillary teeth are fixed in the skeletal system while the mandible is a unique bilateral mobile joint with its condyles sitting in the glenoid fossa on either side. It is held in place with muscles. Most of the literature focuses only on the four muscles of mastication which

are attached to the mandible. The Smylist® concept also incorporates the mimic muscles along with the four masticatory muscles. There is sufficient evidence to demonstrate that the mimic muscles also play a very important role and are impacted or themselves impact the occlusion of the maxillary/mandibular teeth. In fact the major Smylist® benefit is that all the involved muscles are brought into a state of relaxation and the condyles get placed in the most favourable place in the glenoid fossa,

There are a few academic institutions around the world, which have used complex diagnostic machinery like the electro myograph to measure muscle activity during mandibular movement and when occlusal forces are being exerted. It is difficult to accurately do these measurements because most of the associated muscles lie deep within the fascia. Most of conventional approaches to understanding of the occlusion and methods to deprogram the mandible have not suggested any techniques which can assess this muscle status, either during diagnosis or during therapy. Smylist® is the only system so far which has not only given a scientific and rational explanation but has also given a complete technique to actually deprogram the mandible and to ascertain the benefits of this deprogramming and achieve muscle relaxation.

Current approaches to Occlusion

Existing approaches to this subject of occlusion in the literature can be divided into three groups based on their philosophy or approach to "Occlusion". These are as follows

The centric occlusion approach : Consisting of a number of different explanations and approaches but all start with the existent centric occlusion and then attempt to correct and balance the occlusal in this position. This group is also the majority of occlusion based approaches to therapy.

The neuro-muscular approach : Mainly restricted to academic institutions, the approach relies completely on neuromuscular activity and an electromyogram to measure activity of the muscles of mastication and muscular lengths. The underlying philosophy is that if muscles are in physiologic harmony, the patient is not coping with pathologic muscle forces and the occlusion will remain stable.

The joint based approach : Here the position of the condyles in the glenoid fossa is considered to be of paramount importance. This school of thought attempts to determine the position of the condyle with complex means of magnetic resonance imaging of the TMJ and considers the centric occlusion to be stable only if the condylar placement is as defined by this school of thought. There is still a lot of variation and disagreement into what are the effects of Occlusion and how they can be treated.

Over the past decade or so, the approach has become a bit less dogmatic and most people seem to be accepting that no single methodology seems to explain it all. The commonality in all schools of thought seem to be that Occlusion is important in dental therapy and that only a small group of dentists are really adept and learned in this subject to be able to incorporate it into their practices. One concurrence that is arising is that the subject of Occlusion should not be just limited to the tooth contacts but should also encompass the dynamic and functional relationships of the neuromuscular system, the TMJ and the skeletal system.

The Smylist® philosophy has done exactly this and not just incorporated these components, but has presented a very unique and rational approach in not only understanding this interplay but also explained the far reaching harmful potential consequences of this interplay, when it is not stable and balanced. Furthermore, since the approach is so rational and logical, the Smylist® philosophy has been able to create a predictable therapeutic sequence of events which beneficially impact patients.

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Unfortunately, the subject of Occlusion is hardly touched upon even in dental schools world over. The topic is just skimmed and a few suppositions and assumptions are laid out without any underlying explanations. One major reason is that the subject is still so fraught with variability and uncertainity making it very difficult to be a part of a curriculum.

Controversies with approaches to Occlusion

The major hurdle in replication of success and predictability in Occlusal therapeutic concepts seems to be the availability of a baseline starting reference point. It is natural to assume that if the teeth do not occlude well, it cannot and should not be used as the reference. Essentially attempting to create and balance occlusion should not be initiated from an improper centric occlusion. In fact, the philosophy of the joint based and neuromuscular activity based grew out of this inadequacy and lack of clarity in the centric occlusion based philosophy. Simultaneous technological advances in TMJ radiology and myographs also pushed the impetus to measure muscle activity and visualize condylar positions to try to figure out the occlusion problem. More confusion within the centric occlusion philosophy camp was the controversy of where is the centric relation position of the mandible to the maxilla.

One of the major occlusal related problems in many patients is the para functional habit of bruxism. The etiology of bruxism is also mired in controversy. One school of thought believes that the para functional habit is a resultant of an unbalanced occlusion, and that adjustment of the occlusion with selective grinding will resolve the issue of the parafunctional habit. Even though there are documented cases of resolution the method is still not predictable and totally reliable. The other school of thought firmly believes that the problem is related to a central nervous system disturbance and that these patients will grind the teeth irrespective of the occlusal status.

The Smylist® explanation

The Smylist® philosophy addresses these issues by looking at the fundamental premises of all the associated and involved structures. It is safe, rational and logical to accept the basic fundamental nature of the mandible. It is a bilateral connected joint. This means that the joint has to work in unison and either side cannot work independent of each other. This leads to the fact that the involved muscles will work bilaterally and should function in harmony with each other. Another basic premise which is not taken into account by the other theories is that the mandible, TMJ and involved neuro muscular components are not isolated. They are connected to the entire body. Also this group of components are on top of the human body and any unilateral movement will lead to an over stretching and a contra lateral spasm in the muscles on both the sides.

The next premise is that it is not just the four muscles of mastication which have to be considered, but rather all the muscles which include the mimic muscles. This is a very critical premise and if ignored the rational explanation will not hold ground. The last premise is that the mandible can be and will be in an ideal state only if all the involved muscles are bilaterally relaxed and the condyles are seated comfortably and symmetrically in the glenoid fossa. It is in this position that the mandible should be stabilised and the maxillary teeth should hold the mandible it its G space. This should be the situation as the maximum intercuspation takes place. Smylist® refers to this space in which the mandible should ideally be placed as the G space.

With all these premises the logical flow of events would mean that if things are normal and stable, the occlusion will also be stable. Unfortunately it is the Smylist® observation that over 90% individuals are not in this comfort zone and the mandible is not in the G space. (A full and detailed explanation of the G

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space and other necessary terminology is available in the text book on Occlusion, Aesthetics and Function written by Dr. Maria Csillag)

An improper position of the maxillary teeth is the reason a mandible moves away from the G space. The Smylist® philosophy firmly believes, and has clinically demonstrated, that the maxillary teeth act as the fence or the stop for the mandible due to the proprioceptive abilitiy of the mandible to sense the position of the maxillary teeth. When in the right place the mandible comfortably sits in the G space and there are no signs and symptoms of Occlusal related damage to the dentition or the musculo skeletal system.

When the maxillary incisors are not in the proper position the mandible cannot stay in the G space because the lower mandibular incisors do not get a proprioceptive feedback. This causes the mandible to immediately move and thus is taken out of the G space. This cause the mandible to rotate to either the left or the right, or just over rotate symmetrically or a combination of the two in varying degrees of severity.

This rotation creates an imbalanced stretching and spasms of the muscles around the mandible and this is what leads to a cascade of problems in the entire body from within the dentition, to the facial muscles, the head, the neck, shoulder, arm, back, legs and even other issues with the GI system and the respiratory system. These are far reaching implications and can be easily demonstrated but are beyond the scope of this article. These issues are what is called as the negative cascade effect by the Smylist® philosophy.

Addressing Occlusion related issues - Conventional Mandibular Deprogramming

There are about 15 to 20 approaches in trying to resolve occlusal related problems. The initial step is to try to deprogram the muscles of the mandible. Unfortunately almost all the methods are made without full consideration being given to the complex interplay of occlusion, TMJ, the musculo skeletal system and the neurological systems.

The purpose of this muscle deprogramming is generally to reduce or relax muscle activity levels to eliminate muscle pain, tension or discomfort. This deprogramming is conventionally done with a custom appliance fabricated and seated on the maxillary teeth. A few examples of these devices are the Lucia jig, the leaf guage, Occlusal Splint, Kois Device and the Bite plate. The device is fabricated in the lab using acrylic. Most of these devices usually only allow anterior tooth contact. In reality when the front contact is used, the bite on reflex is activated which will get the condyle to move out of the fossa which is not desired at all. This will cause muscles to overstretch and defeat the very purpose of the deprogramming.

This lack of posterior occlusal contact is supposed to allow the lateral pterygoid to release, since it no longer has to hold the mandible in an anterior or lateral position to avoid posterior tooth contacts. In addition, the contraction of the elevator muscles should aid in the stretching of the lateral pterygoids, as the elevator muscles want to seat the condyles when they contract. These devices invariably hold the mandible in a protruded position and the devices also activate a bite on reflex which is not what is a desired. It is almost a dead end. The conventional technique then advises the patient to wear this appliance, also called the Occlusal Splint, for extended periods of times which can be for multiple weeks and even months. The Smylist® concept provides a different approach with a very logical basis by looking at the mandible as one component of the entire body. Then the patient is recalled to the dental office and the splint is adjusted to achieve a balanced load. The protocol of adjustment varies among the various appliances. There are multiple adjustments required at periodic intervals. Almost all these deprogramming methods run from weeks to

Figure 1 : A mandible which is rotated laterally but in maximum intercuspation. Any occlusal adjustment in this position will not be of any benefit

months with a very slow gradual resolution of symptoms in cases which respond. This is in brief the conventional deprogramming of the mandible.

One major conceptual issue is that the frontal stop disappears which makes the mandible shift forward which makes it lean on the appliance leading to an over rotation of the mandible and also overstretching of the muscles. The approach should ideally be to get the condyles into the fossa and then try to relax the muscles. There is no purpose served if the condyle is not properly seated in the fossa and also if the muscles are not relaxed. This brings the therapy back to square one. The Smylist® approach to mandibular muscle deprogramming is very different and revolutionary.

The Smylist® mandibular deprogramming

The Smylist® approach is completely different than all of the existent literature. Smylist® looks at Occlusion and its related aspects not from the point of view of how the teeth meet, but rather the position of the mandible when the teeth meet. The mandibular position is ascertained by the examination of the associated masticatory and mimic muscles and palpation of the condyles in the glenoid fossa. Since the mandible is a bilateral joint, Smylist® philosophy propounds that the muscles should always work in bilateral harmony and the condyles should be placed in the fossae without impinging on any tissue and without being deviated or rotated away from a bilateral even and stable position. In fact Smylist® makes the bold statement "Occlusion is an Illusion".

This statement is based on the fact hat a mandible which is not in the G space is costantly searching for a stable position which does not happen due to the improper positioning of the maxillary teeth and the lack of the fence or border and also the lack of the proprioception. All this should be ideally provided by the maxillary teeth. The occlusal pattern in maximum intercuspation is thus a dynamic entity and keeps on changing constantly when the mandible is not in the G space. Occlusal patterns do not stay constant and are not static.

Hence, "Occlusion" is an Illusion.

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Figure 2 : The correct relation of the mandible and the maxilla after instant deprogramming with the Smylist® technique

This raises an important and pertinent question. How can it be clinically determined if the mandible is stable and in the G space? Smylist® has a number of diagnostic indicators which are obtained from a detailed history and then an examination. These indicators determine not only that the mandible is not in the G space but also point out the rotation of the mandible. The objective of Smylist® deprogramming is to get the condyles into the fossa and the mandible should sit in the G space, which means that all the muscles will be relaxed and once the deprogramming is done, the true relation of the upper and lower jaw, irrespective of the position of the teeth. This is the only way a proper diagnosis and subsequent treatment plan can be designed for the patient so that the teeth can be rebuilt in concurrence with this mandibular position. In the Smylist® technique deprogramming is carried out and completed in a single sitting. All it takes is a maximum of 30 minutes to deprogram the mandible and record the new deprogrammed position.

This is the Smylist® bite. This is the only known technique in which deprogramming is done in less than 30 minutes compared to all other techniques which take weeks and months. The condyles are immediately brought into the fossa and the relaxed position can be recorded.

The steps in Smylist® deprogramming are

1) The condylar palpation test
2) The lateral wall test
3) The forced opening test
4) Three dimensional muscle stretching and relaxation
5) Smylist® gnatho-manipulation
6) Recording the Smylist® bite

Condylar palpation is a skill that is unfortunately not really taught in dental school. Even though not very difficult, it requires a bit of practice to learn the fine nuances of detecting condylar movement. Once learnt, this is a most valuable tool to determine condylar positions during movement and co-relate them with the clinical findings and diagnosis. All movements have typical patterns, which once practiced, helps in arriving at a diagnosis right away. The lateral wall test is done to check if the mandible

is laterally rotated. The forced opening test helps the clinician in determining if the mandible is over rotated. Once these confirmation are made, the next step is to manipulate the mandible so that the condyles are brought into the fossa and muscle balancing is done in three dimensions. The muscles are transiently overstretched so as to allow the muscle to find its most relaxed position. Of course, the dentist can also aid and guide the mandible to the relaxed muscular position. All of this will bring the mandible within the G space. Once manipulated the record of this mandibular-maxillary relationship is made and this bite is called the Smylist® bite. Full details of the above steps are available from the text book "Occlusion, Function and Aesthetics" on the Smylist® concepts written by Dr. Maria Csillag.

Thus deprogramming is achieved inside one sitting of 30 mintues. Once the Smylist® bite is recorded, the Smylist® Aesthetic Design Software is used to create a functional and aesthetic smile in minutes. (More of this in the second part of this article in a subsequent issue)

Conclusion

The Smylist® concept not only addresses and explains the reasons due to which the other conventional theories of occlusion do not work consistently, but also provides a simplistic technique devoid of any expensive equipment, to deprogram the mandible consistently and predictably based on muscle movement. Smylist® focuses on each and every muscle and aims to relax all of them. It also is the only technique which makes deprogramming a single sitting, less than 30 minute procedure by immediately bringing the condyles into its realized position in the fossa and also eliminates any clicking instantly. The Smylist® deprogramming immediately presents the ideal relation between the maxilla and the mandible and thus makes it possible to get a proper diagnosis and create a reliable and successful treatment. This concept also provides an explanation for the controversies which are prevalent in the conventional philosophies of Occlusion.

References

1. Neiburger E. The evolution of human occlusion: ancient clinical tips for modern dentists. Chairside. Winter 2008. www.glidewelldental.com/dentist/chairside/issues/winter0809/clinicaltechniques3.aspx. Accessed July 10, 2013.
2. Christensen GJ. Abnormal occlusal conditions: a forgotten part of dentistry. J Am Dent Assoc. 1995;126:1667-1668.
3. Dawson PE. A classification system for occlusions that relate maximal intercuspation to the position and condition of the temporomandibular joints. J Prosthet Dent 75(1):60-66, 1996.
4. Long JH. Locating centric relation with a leaf gauge. J Prosthet Dent 29(6):608610, 1973.
5. Weinberg LA. Optimum temporo mandibular joint condyle position in clinical practice. Int J Periodont Rest Dent 5(1):10-27, 1985
6. Jayne, D.: A deprogrammer for occlusal analysis and simplified accurate case mounting, J. Cosmet. Dent. 21:96-102, 2006.
7. Dawson, P.E.: Optimum TMJ condyle in clinical practice, Int. J. Period. Restor. Dent. 5:10-31, 1985.
8. Ramford S, Ash M. Occlusion. 3rd ed. Philadelphia, Pa:WB Saunders Co. 1983.
9. Okeson JP. The effects of hard and soft occlusal splints on nocturnal bruxism. J Am Dent Assoc. 1987; 114: 788-791.
10. Kois JC, Phillips K.M. Occlusal vertical dimension : alteration concerns. Comp of Continuing Dental Education 1997 ; Dec 18 (12): 1169-74, 1176-7;
11. Rudolf Slavicek, Relationship between occlusion and temporomandibular disorders: Implications for the gnathologist, American Journal of Orthodontics and Dentofacial Orthopedics, Volume 139, Issue 1, January 2011, Pages 10-16

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