THE CHANGING WORLD OF DENTISTRY
IT'S SCOPE AND FUTURE

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Dentistry and dental therapy has been completely equipment and material driven and the tremendous advancement of digital technology has made dental processes much more precise and predictable and at the same time reduced the chair side time required at various stages of therapy.

The Smylist® concept which is the creation of the principal author harnesses the digital technology and creates completely amazing and wonderful methods, techniques and modalities which widen the scope of a dental clinician to a magnitude never before imaginable. The article presents the various systemic benefits a dentist can now give the patient and also presents how complex FMR's can be achieved in a mere 4 to 5 sittings.

The last 100 years has seen a tremendous enhancement in technology and innovation. In fact, the speed at which things are changing is indeed extremely fast and at times difficult to keep pace.

These innovations at the basic science level impact almost all areas of human lives. Almost all kinds of information is either already digitized or can be digitized to make processes fast, accurate and precisely reproducible. This technology impact is on all applied sciences and services. The science of dental therapy, which inherently is so equipment and technology dependent, has naturally seen tremendous advancements in deliverable treatment for patients. The new mantra is not "Dentistry" but rather "Digital Dentistry". Within the framework of dental sciences, one of the key areas, which is deriving the maximum benefits from technological advancement, is the dental laboratory. Dental prosthesis are all now designed on a computer. A large portion of the prosthesis are also digitally milled on prefabricated blocks. If not milled they are digitally sintered In fact, a number of these processes can now be done chair side in the dental office. Such is the impact of technology.

This technological advancement has been harnessed effectively in an extremely fascinating manner by the Smylist® concept. This concept is the creation of the principal author of this article and it has made complex and extensive dental therapy simpler and faster. At the same time it has found a strong co-relation between the mandible and the rest of the body. Smylist® has defined the proper role of the mandible and how a mandible which is not in the right place, leads to an overstretching or over contraction and spasm of the muscles of the face and muscles connected with the mandible.

FIG 1: A poor posture caused due to an over rotated mandible. Change in posture seen within 30 minutes of deprogramming

This in turn leads to a number of serious disabilities in not just the entire musculo-skeletal system, but also in the gastro intestinal and respiratory system. This improperly placed mandible is what has been termed as a "rotated" mandible. The more the severity of rotation of the mandible, the more severe the negative effect on the rest of the body. Of course, it is a given that a rotated mandible also causes extensive damage to the dentition over a period of time, in the form of cervical lesions on the teeth, angular bone loss and mobility, tooth

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FIG 2: A dramatic change seen in the shape of the face of patient within a week of deprogramming and establishment of the Smylist® bite.

fractures, severe wear facets, migration and mobility.

This article will now present the changing role of the dentist from just a therapist for the teeth to a therapist for a number of whole body problems which can be corrected. The article will also present how Smylist® has harnessed digital dentistry to make it possible for dentists to provide full mouth rehabilitations in just 4 to 5 visits along with a completely dramatic and revolutionary method of deprogramming the mandible in less than 30 minutes instead of 6 months with conventional deprogrammers. The authors would suggest the readers to also look up to the article on the Negative Cascade effect[1] to get a full understanding on how a rotated mandible leads to complex full body problems mentioned in the previous paragraph.

Once adept with the Smylist® philosophy, a clinical practicing dentist will find that an entire world opens up to their offices. As a Smylist® dentist the world will change completely. It becomes a second nature in a short period of time to recognize problems in the entire body by just looking at the face and believe it or not, the feet. Smylist® has elaborately described how the entire body is interconnected with the mandible pulling the strings. The rotated mandible, creates telltale signs in the intra-oral cavity but also on the face. These signs coupled with a detailed history lets the Smylist® dentist know the effect and severity of the effects of the mandibular rotation. Once identified, a treatment plan can be created to address the mandibular rotation as well as to address the over systemic ill effects on the entire body. This treatment plan, once put into place brings about dramatic results in a very short period of time. The experience of the authors has been that all kinds of cases with severity ranging from mild to severe will reverse and benefit the patient tremendously.

The fundamental basis of this concept is that a rotated mandible causes asymmetrical movements of the muscles associated with mandible. These are the muscles of mastication, which dentists study in detail and the mimic muscles which are not usually given sufficient importance. The mandible is the only bone in the skeletal system which is bilaterally connected on both sides (in the glenoid foassae) and moves with both sides in unison. Hence the usage of the muscles on both sides of the face should be harmonious and symmetrical. There should not be any constant over stretching or contraction (leading to spasms) of any of the muscles. If a mandible is rotated, the masticatory and mimic muscle groups function asymmetrically. One of the earliest effects of such overstretched/ contracted muscles is the compensation to give relief to such muscles. This is an involuntary mechanism, almost like a reflex action.

A very good example of this is in the case of an over rotated mandible as defined and described by Smylist®. The mandible does not find a stop at the correct place because the maxillary teeth are not in proper accordance with the musculo skeletal system and hence there is an over closure of the mandible. This over closure of the mandible will cause the condyles to translate forward in the glenoid fossa and thus cause the mandible to protrude. This in turn stretches out the mandibular muscles constantly.

To compensate for this the body adjusts by pushing the neck forward which leads to a major posture problem. Yes, it is a very logical conclusion that the body posture is tremendously impacted by the position of the mandible. Over time, this protrusion of the neck, is compensated by a hunching of the back. This progression of events lead to various forms of neck aches, back aches and difficulty in walking. It is a given, that this over rotated mandible will also deleteriously harm the dentition and will also lead to changes in the glenoid fossa.

It is an amazing experience to see the dramatic change in the way people stand and walk once the mandible is deprogrammed and brought into its rightful place. Postures start correcting within 30 minutes. The deprogramming being referred to is the correction of the mandibular rotation. The deprogramming focuses on ensuring that the over stretched of contracted asymmetrical muscles are brought into a position of harmony and symmetry. Please refer to a published article on "Instant Deprogramming"[2] to get a more detailed understanding on how it is achieved. The deprogramming thus establishes the ideal position of the mandible based on the musculo skeletal system. It is at this position that the Smylist® dentist will establish the maxillary and mandibular dentition and the bite which is termed as the Smylist® bite. This will be the position at which the maxillary teeth will stop the mandibular teeth and the central incisors and the canines are the dominant teeth. This can be considered to be the conventionally called maximum intercuspation position. Identifying and establishing the Smylist® bite is the most sacrosanct and critical part in the entire Smylist® concept.

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Once grasped and mastered, the dental world will completely change and the sky is the limit in long term restoration of any mutilated dentition and a near permanent resolution of a host of systemic issues. It is indeed a very different dental world once patients are being given the Smylist® bite. Patients will be ever so thankful for having resolved so many chronic aches and pains for which the patient had resigned to suffer perpetually. Not only do these aches and pains go away, most of the time they stay away. The role of the Smylist® dentist changes completely. Now patients will not only get dental therapy, but will also come for correction of unresolved migraines, tinnitus, neck aches, back aches and knee aches. Usually these aches become chronic in nature and the patients learn to live with them and suffer constantly. Most findings in the form of Radiographs, CT Scans and MRI's lead to no conclusive finding. Another concurrent problem is the severe restriction in hand movements. This is again an outcome of a severe spasm of the neck and shoulder muscles. Neck movement to one side also gets restricted. The usual recourse for such patients is alternative therapy like yoga, exercises and physiotherapy. All these definitely help but do not eliminate the root cause of the problem, which is a "rotated" mandible.

One other very startling connection is between the rotated mandible and a reduced vital capacity. A number of individuals after the age of 35 complain of a constant problem of lack of breath and tiredness with even the slightest of exertion, the most common being climbing stairs. All kinds of tests reveal no damage to the lungs or any other related pathology. This condition is soon accepted as a part of ageing and the person just lives with the problem. Here the connection is from the rotated mandible which causes a compensatory posture where both the shoulder are rotated forward to adjust for the rotated mandible This posture becomes a default habit. In this posture it is not possible to intake a deep breath and thus the lungs work only to 60-70% of their capacity. This leads to insufficient oxygenation and thus shortness of breath. All that is needed in such cases is a natural correction of the posture. This will happen only if the rotated mandible is corrected and brought into the right place with deprogramming and establishing the Smylist® bite. Once the mandibular rotation is corrected, the posture corrects itself. Once the posture is corrected, the shoulders will no longer be rotated forward. If the shoulders are not rotated forward, the patient will be able to inhale to full capacity. Thus there will be no shortness of breath and the patient will feel good and be able to exert much more and climb stairs with far greater ease. Once again, the role of the dentist stretches way beyond the oral cavity.

Yet one more area is the dentist playing the role of a plastic surgeon, but without a blade or a filler or any surgical procedure on the face. This is done by reversing the phenomenon of "Gnatho Ageing"[3] which is yet one more revolutionary Smylist® concept. A close look at a middle aged face which looks much older than the chronological age reveals changes in the musculature, loss of skin tonicity, loss of muscle tone. All of these are factors which make the face look much older than the chorological age. The cause of all these changes is a rotated mandible. Plastic surgeons and specialized aesthetic surgeons do a lot of surgical manipulation in an attempt to correct these conditions on the face, but do not address the main cause of the problem.

Deprogramming and correcting and mandibular position brings about a classic change on the face in a matter of weeks as the signs of ageing reverse and vanish completely. Yet once again, dentistry is changing and the dentist will now be playing the role of a plastic surgeon without ever wielding a knife.

One of the most desired but also a dreaded case is a mutilated dentition requiring a full mouth rehabilitation. It is desired because to a clinician it brings in a lot of business plus the satisfaction of salvaging and restoring badly broken down dentitions. It is dreaded because it tends to take too much time and effort along with a tremendous uncertainty of the steps involved in the process especially if the patient presents classic signs of occlusal damage in the form of huge wear facets, brown down teeth and non carious cervical lesions. The complexities of laboratory work and recording of face bow transfers and multiple bites for mounting of semi adjustable articulators makes the entire job still more difficult. The advent of digital processes in dentistry has definitely eased out this task tremendously. The Smylist® approach has further eased this task by making full use of this digital technology and incorporating it in totality.

It all starts with the use of the Smylist® software which is quite easy to handle and completely master. All it requires is front face picture with the patient in an exaggerated smile pose, which is called the Cheesa A pose in Smylist® terminology. Once a picture is taken the JPG file is imported into the software and then all it takes is about 10 minutes to achieve a final plan for the maxillary teeth. This plan can be exported to the Smylist® lab software which generates 3D STL files for all the maxillary teeth. At the same time a treatment plan is drawn up for the patient. The plan may be to reconstruct all the teeth with direct composite build ups or with indirect prostheses from the dental laboratory. The restorative work could be on prepless teeth or on prepared teeth. In all scenarios the dental lab plays a very significant role.

If it is going to be a FMR with direct composite build ups the entire work can be completed in 4 or 5 sittings. The first sitting is to plan and generate the output for the maxillary teeth from the Smylist® software and export to the Smylist® lab software and generate the STL files for the maxillary teeth.

At the same sitting the mandible should be deprogrammed and the Smylist® bite recorded. At the same time a digital scan of the maxillary and mandibular teeth should be taken. If an Intra Oral Scanner is not available, then regular impressions should be made and sent to the lab. The lab will pour the models and scan them. The next step is for the lab to build up the maxillary arch with the STL files generated from the Smylist® lab software. The lab will have the Smylist® bite with which the mandibular-maxillary teeth relation will be created, in effect, creating a virtual articulator. The lab will then create a virtual design for the entire dentition which will be approved by the dentist. The next step is the beauty of digital technology. The lab can now print out 3D models of the rehabilitated upper and lower models. This has to be replicated in the mouth.

Replicating in the mouth is also precise and accurate. The lab will create two sets of models. The first pair will be with only alternate teeth built up. Then a silicone key index impression which will made with clear silicone in a clear custom acrylic tray. The teeth which are not built up, act as a stop, when the silicone key index is put in the mouth along with composite loaded in alternate teeth.

Such silicone indexes are made for both the pairs of models. The

maxillary silicone key index for the first set is loaded with composite in the built up teeth and inserted into the mouth after etching and bonding the teeth being build up. The composite is then polymerized through the transparent silicone and the key index removed. Extra flash is removed with a preliminary finishing and then the second key index is used in the same way to build up the rest of the teeth. This will complete the maxillary teeth. This will bet the second visit.

The next day, in the third visit the mandibular teeth are built up in the same way using the two silicone key indexes. Once the build up is complete a preliminary polishing and finishing is done along with removal of any occlusal interferences. This is the third visit. On the fourth visit final polishing and finishing is done and the occlusal stop is checked for dominant contact on the canine and central incisors and a balanced cusp to fossa relation on the rest of the teeth. This work has to be done diligently and with a lot of expertise. By the end of the fourth visit the FMR is complete.

In case the treatment plan is to do indirect prosthesis the lab will not print any 3D models. After confirming the digital design, the lab will fabricate the indirect crowns/veneers/onlays/table tops.

These will be directly bonded or cemented on the mutilated teeth. The sequence is the maxillary first followed by the mandibular. Indirect work requires extra work if the teeth have been prepped.

The additional work is fabrication of provisionals and placing and removing them twice during the entire process and this requires the extra sitting.

Dentistry has evolved at a very fast pace and the Smylist® school of thought has given further scope and methods take dentistry to newer heights which have never been reached before

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