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The Viazis Appliance

Anchorage Control in the Use of the Twin Block and Other Functional Appliances

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Initial

After 6 months of use

The Viazis Appliance

This presentation covers a "state of the art" appliance and treatment system that can revolutionize your practice of orthodontics. The technique utilizes light, biological forces through super elastic arch wires and a unique new bracket design to shorten treatment time, reduce patient discomfort and potential risk of root resorption.

Super Elastic Arch Wires

The recent introduction of super elastic arch wires has led to clinical applications that were never before feasible in patient care. These new arch wires are very different from stainless arch wires and from the first generation work-hardened Niti wires. Regardless of the extent of activation, these new arch wires provide a light constant force at body temperature. Prior to inserting the arch wire into the brackets, the clinician may chill the wire. This drop in temperature allows the arch wires to change into their "plastic phase" (martensitic) where they can be easily placed into the bracket slots. At body temperature, they resume their original arch form and shape (austensitic).

This combination of shape memory and super elasticity makes these wires very comfortable for the patient, even when the rectangular form is utilized as the initial arch wire. The non-linear unloading of these arch wires has an initial rapid drop in the force level applied to the teeth which means that less force is applied upon greater activation. The wire stiffness increases and the wire becomes more effective in the beginning of movement. This allows the clinician to usually use only one set of .020 x .020 arch wires and to see the patient on a two to three month appointment interval. Super elastic rectangular arch wires are preferable over round wires as they allow for initial full bracket engagement and in turn simultaneous correction of rotations, angulations, alignment, and torque.

Since these arch wires are temperature sensitive (heat activated), the clinician may choose to advise the patient to alternate a hot meal with a cold drink on a daily basis. Theoretically, the cold drink will change the arch wires into their "plastic, martensitic" phase and thus allow them to self adjust in the bracket slots as the teeth move. The hot meal will quickly bring the mouth temperature back to normal and thus re-activate the wires. If nothing else, this procedure involves the patient in their own treatment as they feel that they have activated or "energized" their appliance.

The Viazis Bracket

The Viazis bracket is designed to maximize the effect of the super elastic arch wires from the onset of therapy. This is accomplished by incorporating a number of unique features within the pre-adjusted bracket:

1. The inter-slot distance is increased to insure maximum arch wire flexibility.
2. Friction between the bracket and the arch wire is dramatically reduced by using a single slot type contact with the slot elevated off of the horizontal member.
3. Elbow side extensions are employed to prevent loss of tip control. As tooth movement begins the arch wire contacts the elbows and the narrow single slot momentarily becomes a wide twin slot. This results in root movement befor any further crown

movement can occur. The net effect is a "walking" of the tooth into the desired relationship in a "zig-zag" manner.

4. Maximum rotational control is obtained by using an elongated thin configuration. This allows the twin wings to be extended to the mesial-distal surface of the tooth.

5. The brackets are pretorqued. By using a .020 x .020 starting arch wire, torque is obtained in the early phase of treatment.

Bracket Placement & Ligation

The new bracket design makes it extremely easy to properly position the bracket. All one has to do is aim the ball indicator towards the center point in the curvature of the gingiva The vertical member of the bracket should be along the long axis of the crown of the tooth. This relationship can easily he checked with a perio probe.

The horizontal member of the bracket will be parallel with the incisal edge of the tooth. The slot point of the bracket is positioned in the center of the anatomical crown of the tooth.

The brackets are ligated with the standard . 120 ligature elastic. They are easy to place and remove using a notched mosquito hemostat and a ligature removing instrument. The ligature elastics are replaced every eight to ten weeks.

Research Findings

I. *The Viazis System™ has up to tell times less friction than other systems studied*. University of Southern California, IonImplantation: Effect on Frictional Resistance to Movement, by Michael Robert LaFerla, supervised by Dr. Peter Sinclair. University of Southern California, Los Angeles, CA. University of Santiago de Compostela, Spain, an experimental comparison of three new low-friction brackets, by David Suarez Quintanilla, Professor of Orthodontics, Kady Kounta, Master of Orthodontics. Carolina Mendez Garrido. Master of Orthodontics, and M. Teresa Abeleira Pazos, Master of Orthodontics.

2. *"The Viazis SystemTM presented statistically significant less root resorption than the other groups".* University of Sao Paulo, Faculty of Orthodontics at Baum, Sao Paulo, Brazil, supervised by Dr. Guilherme Janson, Assoc. Prof.

3. "*The results indicate that the use of the Viazis SystemTM causes less pain/discomfort than conventional therapy as the orthodontic treatment progresses." "Statistical significant difference in tooth movement was found between the two systems giving the leading edge to the Viazis Bio-Efficient Therapy system making it faster than the conventional system."* University of Kuopio. Institute of Oral and Dental Diseases, Kuopio, Finland, supervised by Dr. M. Dalili, DDS, MC and Docent M. Narhi, DDS, PhD both of the University of Kuopio, and Professor Maija T. Laine-Alava, DDS, PhD, of the Department of Orthodontics, Faculty of Dentistry, University of Kentucky, USA. These findings have already been presented to the International Association of Dental Research, the largest dental research meeting in the world.

4. *"We have been using your bracket system and treatment philosophy for a year and 5 months and we are very impressed. As a result the professors and the graduate students are very excited about the results obtained until now. Additionally, since the forces generated by the wires are light and biologically compatible, root resorption has been negligible. Therefore, we are very satisfied with the results obtained so far with the system because it has greatly improved the orthodontic mechanics as well as patient comfort, and we do believe that this is a great improvement in orthodontic therapy. Congratulations for this great contribution to the orthodontic specialty."* Dr. Jose Fernando Castanha Henriques Head-Dept of Orthodontics. Dr. Guilherme Janson, Prof., Dept of Orthodontics, Dr. Decio Rodrigues Martins, Full-Prof. Dept of Orthodontics, Univ/Sao Paulo, Bauru-Brazil. Summary

By using the new Viazis .022 slot bracket in conjunction with the .020 x
.020 super elastic arch wires, treatment time can be greatly reduced. This can be accomplished without compromising patient comfort or treatment quality The clinician can easily incorporate this new appliance system into his or her orthodontic practice.

For more information on the new Viazis bracket and super elastic arch wires, contact Bobby Middle at NAOL (1-800-521-2351).

Ian Walters

I.P. Walters B.D.S., F.R.A.C.D.S. Dr. Walters is the immediate past president of the Australian Association of Orthopedics and Orthodontics. He is actively engaged in the practice of Maxilofacial Orthopedics in Sydney, Australia.

Figs. 7 & 8 Twin Block appliance incorporating all required anchorage features including labial bow on upper appliance, lower incisal cap, and all lower posterior teeth incorporated into the anchor system.

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Other Design Considerations -

Need for incisal cap Apart from anchorage loss, another disadvantage of the customary Twin Block appliance is the loss of anterior seal due to the lack of the lower incisal cap. When the incisors are separated several mm by the posterior blocks, this impairs speech production and encourages an adaptive tongue posture to seal off the open bite. The addition of an incisal cap greatly facilitates speech.

Furthermore it is highly desirable, and should be mandatory, to eat with the appliances in place (see below for reasons). The incisal cap is necessary for efficient incising of various foods, notably sandwiches and snack foods (hamburgers) and fruit. When provided with duplicate lower appliances with and without the cap all patients trialed selected the appliance with the incisal cap as markedly preferable.

The ability to masticate and therefore the willingness to use the appliances for eating is further enhanced by cutting deep sluiceways into the upper blocks creating stylized and efficient tooth forms.

This capability to eat with Clark's appliance is extremely beneficial. Eating with the appliances in place, accelerates the physiological response.

The delta clasp introduced by Clark proved to be more retentive and highly resistant to fracture and thus withstands the stresses of mastication. It is a significant advance in the field of removable appliances.

In Class II cases with a skeletal deep bite where it is intended to increase lower face height, and in some other cases, a posterior open bite is automatically produced when the mandible is advanced. Therefore, if the patient chews without the appliances, there is no posterior support for the occlusion or for the joints. Not only is mastication highly inefficient, but the condyles are forced back into the reorganizing posterior joint tissues which may cause discomfort and even lead to pain and dysfunction. This is particularly significant where dysfunction has been present prior to instituting treatment.

Conclusions -

A study of the literature and over 12 years of careful observation and cephalometric analysis of the use of functional appliances in the management of Class II skeletal malocclusions leads to the following conclusions:

1. Functional appliances have the capacity to resolve a Class II malocclusion either by dentoalveolar change or by true skeletal correction.
2. For optimum skeletal correction a knowledge of the anchorage features which must be incorporated into the appliances is essential.
3. The influence of vertical changes on sagittal must be understood.
4. The Twin Block appliance of Clark with appropriate modification is, when properly managed, by far the most

effective and "user friendly" appliance system available and represents a breakthrough of considerable significance.

5. A recent innovation by the author is the incorporation of denture teeth as a component of the Twin Block appliance for ready acceptance by adult patients being treated for craniomandibular dysfunction. The use of teeth enhances aesthetics, phonics and ability to eat with the appliances in place.

6. Maintaining 24 hour wear including eating with the appliances enhances the skeletal response and reduces treatment time. Further information from Dr Ian Walters, 2 Phillip St. SYDNEY, N.S.W. 2000 or iwalters@ozemail.com.