A novel method for the treatment of cleft palate

By Dr Nejat Erverdi, Turkey

The main goals in the treatment of cleft lip and palate cases are to achieve labial, palatal and velopharyngeal closure, as well as a balanced profile, harmonious facial appearance and good occlusion. Usually, these goals can be achieved at an early age. In 20 to 25 per cent of patients, however, dentofacial skeletal deformities, and in 4 to 45 per cent oronasal fistulae occur, which require secondary surgical correction.

In severe cases with wide oronasal fistulae, the common approach is to cover the gap with buccal mucosal or tongue flaps. Unfortunately, this approach might not always yield the desired results. Another difficulty with using conventional methods to treat cleft lip and palate patients is achieving advancement in cases of severe maxillary deficiency owing to tight scar tissue resulting from prior surgical intervention and the possible presence of a pharyngeal flap. Even though advancement is achieved most of the time, there is a tendency to relapse for reasons similar to those that make surgery difficult.

Maxillary distraction, however, allows greater advancement of bone and soft tissue, promising higher stability. The latest studies have focused on the distraction of the maxillary segments for preventing velopharyngeal insufficiency. A new design has been proposed with the arch-wise distraction appliance, which allows control of the direction of the segments with higher precision. The appliance works on two parallel arches passing through double semicircular hooks and double tubes. The distraction is attached to the gingivally positioned wire and allows repeated reactivation. This ability allows for both sagittal correction and cleft space closure at the same time. In addition, it is applicable to even the most difficult cases.

Another advantage is that it is tooth borne. Unlike other distraction systems, another surgical intervention for removing the device is not required. Aesthetically, it is much more acceptable compared with other devices, which generally require extra-oral parts for anchoring. Therefore, this appliance is a successful tool for reconstructing large gaps in the cleft area and correcting the anteroposterior deficiencies in cleft lip and palate cases. It is hoped that this application will become an alternative to aggressive surgical intervention.

Minimally invasive dentistry—What is it?

By Prof. Roland Frankenberger, Germany

Nowadays, everyone seems to be talking about minimally invasive dentistry and many patients now appreciate that only as much hard tissue is removed during dental restoration as needed. However, does minimally invasive dentistry entail careful preparation only? Certainly not.

Current minimally invasive dentistry is based on four principles: excavation, defect-oriented preparation, longevity and reparability. It is a fact that the overall survival of teeth is higher when pulp vitality is preserved through gentle caries excavation instead of risking exposure of the tooth with aggressive excavation measures. When the tooth is subsequently prepared with rotary instruments, preparation can be extremely limited because adhesive dentistry requires no macro-retention.

However, the success of minimal invasive dentistry is only successful when restorations survive for a long time. What use is a small filling if it becomes insufficient after a short amount of time? Finally, why should one attempt to completely remove (partially) defective restorations? Especially with perfectly matching tooth-coloured materials this makes no sense at all. When 80 per cent of the restoration is intact, e.g. facing a chipping of the proximal ridge, there is no reason to completely remove any restoration. Moreover, the risk of iatrogenic injury to sound tooth hard tissues during removal of resin-based composites or ceramics is irresponsibly high. Modern repair strategies help to avoid these mistakes. Only through the combination of these four principles, are we able to work responsibly with almost perfect aesthetic materials. Please think about this for a second.

Prof. Roland Frankenberger is Director of the Department of Restorative Dentistry at the Philipp University of Marburg’s School of Dental Medicine in Germany. Today, he will be presenting a paper titled “How far we can go? Longevity, indication and repair” during one of the late morning sessions as part of the 2013 FDI AWDC scientific programme.
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The Dental Company
During the past decades, restorative treatments in dentistry have changed remarkably. Growing interest in aesthetic restorations in the posterior region and the alleged adverse health effects and environmental concerns regarding the release of mercury gave rise to controversial discussions about the use of amalgam in several countries. Along with the introduction of new and improved resin materials that offered adhesive properties and the principle of minimal invasive interventions, this has led to a change from the use of amalgam towards the use of composite resins in posterior teeth.

Restoring a Class II preparation with composite resin can be challenging. Open contacts, poor anatomical contour, and an inadequate marginal seal are just some of the problems that clinicians have to deal with. Initially, these issues can be linked partly to the use of amalgam matrix systems.

The ideal matrix system creates a tight interproximal, anatomically correct contact with minimal flash and a seamless marginal seal. It has been shown that composite resin provides little internal force to counteract the force from the matrix. Therefore, unlike amalgam, which has a very high resistance to deformation, composites are easily forced back into their original position by a tight circumferential matrix band, thus resulting in open contacts. This problem is the result of several factors, including that composite cannot be condensed like amalgam, which leads to an insufficient adaptation of the matrix towards the adjacent tooth, the polymerisation-shrinkage of the composite material, and the effects on tooth position owing to the elastic behaviour of the rubber dam.

Proximal contact plays an important role in the stomatognathic system. Inadequate contact may result in impacted food and lead to periodontal disease and tooth movement. Researchers have sought to overcome these problems by improving material characteristics and application techniques. The choice of matrix systems and separation techniques is an important factor. In order to improve the proximal contacts, instruments were designed to allow the tightening of contact during curing. Other techniques advocated the use of cured composite or ceramic inserts that would provide predictable contacts and proper physiological contour. Heavy-bodied composites were introduced in an attempt to mimic the handling characteristics of amalgam and create more favourable contacts. However, researchers have demonstrated that it is the matrix system and not the handling characteristics of the composite that determines a favourable contact. Composite resin is a technique-sensitive material that requires its own unique matrix system.

In response to these frustrating clinical problems, the sectional matrix and contact ring matrix retainer were developed, providing significant improvements to previous devices. In modern dentistry, traditional circumferential matrix systems are very popular, but they have shortcomings with regard to their improper proximal matrix form and establishing tight proximal contacts. The circumferential matrix systems showed significantly looser proximal contacts in studies on Class II cavities, which might be explained by the thickness of the matrix when placing a two-surface restoration. In recent in vitro and in vivo studies, sectional matrix systems in combination with separation rings were proved to generate proximal contacts with a reliable tightness in two-surface Class II cavities. The use of a sectional matrix system for restoring two-surface Class II cavities resulted in significantly tighter proximal contacts than the use of the circumferential matrix systems did.

Prof. Dilek Tağtekin is a researcher in the Department of Restorative Dentistry at Marmara University’s Faculty of Dentistry in Istanbul. Today, she will be presenting a paper titled “Reasons for failure of approximal restorations and new matrix systems” during one of the morning sessions as part of the 2013 FDI/AWDC scientific programme.