Precongress

Precongress-1

Total arch distal movement by using Micro Implant Anchorage (MIA)

Seong-Min BAE

Microimplant has been used for orthodontic treatment, and it has become possible for tooth movement that is impossible with conventional treatment methods. The application range of non-extraction treatment is expanded by moving the whole tooth backward with Micro-Implant Anchorage(MIA)

Because of the ease of treatment, a microimplant with a diameter of 1.3 mm is placed between the roots of tooth and the whole teeth is moved backward. At this time, it is not difficult to get a tooth movement about 2mm backward. To obtain the amount of posterior tooth movement of more than about 2mm, transplantation procedure is needed to transfer the microimplant.

Biomechanical understanding and additional efforts are needed to obtain the posterior movement of the entire dentition without a side effect with only a single force system obtained mechanically from two microimplants.

Since 1999, I will present clinical experiences and treatment outcomes of using microimplant in non-extraction treatment in this way.

Lecture contents are

1. Biomechanical consideration about total arch distal movement
2. Total arch distal movement for Class II
3. Total arch distal movement for Class III
4. Total arch distal movement for anterior crowding cases

Precongress-2

The Biomechanical limitations of TAD and how to overcome them

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Abstract
Of many factors that contributed to broadening to scope of contemporary orthodontics, one of the most important is the advent of TAD. TAD readily removes the reciprocal force on the anchorage unit which is the only one source of many other side effects in the orthodontic force system. Therefore, TAD is not an "all-time solution" and still has many limitations in clinical applications. By redirecting the line of action, adding more forces for convenience, and making the force system consistent in the application of TAD, one can reduce the adverse side effects and overcome the biomechanics limitations of TAD.

Precongress-3

Transverse Correction of Maxillary Dentition Using Palatal Miniscrews

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Abstract

There have been several orthodontic modalities for maxillary dentition transverse control with most addressing symmetric control. The most typical and popular appliance might be TPA. The asymmetric transverse control of maxillary dentition is challenging to orthodontists due to the lack of certain modalities and possible dental side-effects. Even clinicians intended symmetric transverse correction of maxillary dentition, asymmetric transverse movement occurs frequently. Skeletal anchorages provide biomechanics without orthodontic side-effects, but reports of their utilization for transverse control of maxillary dentition is scarce. The purpose of this presentation is to introduce a novel method utilizing two midpalatal orthodontic miniscrews and a connecting wire system for the asymmetric transverse control of maxillary dentition. Records of patients consecutively treated with this system are presented and the related biomechanical considerations are presented.

Precongress-4

Midpalatal Absolute Anchorage System (MAAS) for Three-dimensional Tooth Movement in Lingual Orthodontic Treatment: SMS Micro-implant

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Major anatomical factors usually considered during micro-implant insertion include: the thickness and density of cortical bone; the nature and thickness of overlying soft tissues; and the positions of roots, nerves, and blood vessels.
The median and paramedian areas of the posterior palate consist of cortical bone, which is thick and dense enough to support screw implants and can sustain heavy orthodontic forces. These areas have no anatomical structures such as nerves, blood vessels, or roots that can impede the placement of micro-implants. Furthermore, most of the soft tissue is keratinized and thinner than 1 mm. Therefore, the posterior region of the mid-palatal suture is safe and solid for inserting micro-implants.
A safe, multifunctional and solid (SMS) micro-implant (BioMaterials Korea Inc, Seoul, Korea) has been recently developed, which has a hexagonal head with two cross-shaped 0.032×0.032-inch slots. Its diameter is 2 mm and the available lengths are 4 and 5 mm depending on the thickness of the mucosa in the insertion area. Using the SMS micro-implant, a skeletal anchorage system known as the mid-palatal absolute anchorage system (MAAS) was designed.
The center of resistance (CR) of the unit to be moved is the basic point around which a force system is arranged. From the viewpoint of the center of resistance, this lecture describes lingual orthodontic methods using MAAS as adjunct to tooth movement in the various spatial planes, along with illustrative clinical cases.

Precongress-5

How to optimize mini-implant stability in our clinic: Application of implant guide system

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Stability must be ensured when using orthodontic mini-implants as anchorage in orthodontic treatment. However, the success rate of mini-implants is reported to be 80-90%, and the clinician may be uncomfortable when unexpected failure is encountered during orthodontic treatment. Mini-implant's design factors such as length, diameter, thread shape, and surface treatment method can improve the success rate of implants to a certain extent, but they seem limited to have a significant impact on clinical results. The most important factor for stability is to place mini-implants accurately in anatomically safe areas where success can be predicted. Anatomically stable sites may be areas with sufficient cortical bone, but alveolar bone characteristics should be evaluated in conditions of various root proximity and soft tissues thickness. Simple 2D evaluation of distance from the root to the site of implantation has its limitations and does not include the variety of tooth inclination and root curvature of individual teeth. Therefore, 3D image obtained through dental CBCT is the most accurate method to determine the placement position of mini-implants.
If a digital model using an intraoral scanner is used, mini-implants can be placed on the planned site using surgical guided technology. The digital model can also be used for digital setup to perform goal-oriented orthodontic treatment. Therefore, the accuracy of mini-implant placement can be ensured with a surgical guided system as well as improving the predictability of treatment results by considering the limit of tooth movement in surrounding tooth structures before placement.
This lecture introduces the clinical efficacy of goal-oriented treatment plan and implant guide placement method using a 3D printer, digital model and CAD / CAM technology.

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