Special Lecture

Special Lecture-I

Orthodontists Doing Class II and Class III Orthopedics – What Are the Possibilities?

Peter Buschang

Orthodontists have long believed that mandibular orthopedics are not possible. It will be shown that orthopedics are possible – the untreated literature demonstrates that both jaws are able to adapt, especially the mandible. For skeletal Class II's, it was thought that treatments need to displace the mandible forward and grow the condyles backwards in order to project the chin. This is a myth that disregards our understanding of normal growth. Orthodontics need to appreciate how and why Class IIs develop, and how to differentiate between patients with favorable and unfavorable growth potential. Those with favorable potential respond well to various forms of treatment. Hyperdivergent Class IIs have unfavorable patterns. Their treatment depends on controlling vertical tooth position to produce the rotational changes necessary to correct the AP position of the chin, change condylar growth direction, decrease gonial and mandibular plane angulation, and decrease lower facial heights. Necessary background information will also be provided for orthodontists to better understand how and why Class III skeletal malocclusions develop. The excessive overall mandibular growth that characterizes Class IIIs is not genetically determined, and is therefore modifiable. Four different treatment approaches for Class IIIs will be introduced that can be used to orthopedically correct skeletal problems in both jaws.

Special Lecture-II

Clinical Applications of 3D CBCT and TADs in Contemporary Orthodontics

Jae Hyun Park

Lecture description:
The introduction of cone-beam computed tomography (CBCT) and computer software in orthodontics has allowed orthodontists to provide more accurate diagnosis and treatment. Temporary anchorage devices (TADs) offer a practical way to provide anchorage for various types of tooth movement, especially when used in concert with CBCT to aid in orthodontic diagnosis and treatment planning, treatment simulation, proper placement of TADs, and assessment of skeletal and dental changes. In addition, superimposition of CBCT images can be done to assess craniofacial changes that may occur due to growth and/or treatment. In this lecture, various clinical applications of CBCT will be discussed, then various challenging cases will be presented where TADs were used, and treatment outcomes will be discussed utilizing pre- and post-treatment superimposed CBCT scans.

Three learning objectives:
To identify clinical situations in which CBCT imaging is beneficial;
To understand clinical applications and biomechanical considerations of TADs in challenging cases;
To learn about the new ABO Scenario-based Oral Clinical Examination

Special Lecture III

Revolution & evolution in my orthodontic treatment during the last 4 decades

Hee-Moon Kyung
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It has passed almost 4 decades since I made the first step into the field of orthodontics. The contemporary orthodontics was driven by Dr. Angle, who invented Ribbonwise bracket and Edgewise bracket, and advocated non-extraction treatment modality. Ironically, unlike most of Dr. Angle's followers, Tweed and Begg, his outstanding two disciples, supported extraction treatment modality. Tweed succeeded to Edgewise techniques, while Begg developed Begg technique inherited Ribbonarch appliance in his home country, Australia. These two treatment mechanics have been mainstreams through orthodontic treatment history. Edgewise appliances, however, have become a general trend until now.

Recent major advances in contemporary orthodontics are including direct bonding system which made lingual techniques possible, invisible aligner technique, microimplants, and digital technique including CBCT. Esthetic bracket, straight wire appliance, self-ligation bracket, customized bracket and indirect bonding technique are also evolving as new approaches. Further, development of resilient archwires such as Nitinol, TMA, and Niti definitely contributed to successful orthodontic treatment.

Heat induction typodont system (HITS) invented by the speaker might be one of evolutionary tools for educating orthodontics. Orthodontic treatment takes from several months to few years. Understanding biomechanics ahead of actual practice, HITS would be very useful device for clinical judgement in simulation alternatives or new ideas.

Today I'd like to share my experiences in orthodontic education and treatment during the last 4 decades, and discuss the future of the orthodontics.

Special Session

Special Session-1

Clear Aligners: An empty promise or wishful thinking

Ki Beom Kim
Associate Professor and Program Director of Orthodontic Department, Center for Advanced Dental Education, Saint Louis University

The Invisalign appliance was first introduced to the public in the late 1990s by Align Technology, as a novel method of straightening teeth without braces. Since then, Invisalign has made great progress in terms of treatment planning methods, materials and manufacturing. The
company's powerful marketing has helped increase the public's demand for clear aligners to the point where Invisalign is an essential part of any orthodontic practice today. There haven't been many studies in terms of the capabilities and limitations of clear aligners.
This presentation will discuss the current scientific evidences regarding clinical effectiveness of the Invisalign system.

Special Session-2

Orthodontics, An Artful Science

John Grubb

Successful orthodontic treatment is a combination of appreciation of art, application of scientific methods, and deductive reasoning. This presentation introduces six basic practice tenets as follows

1. A **careful** examination clinically of the patient is of the utmost importance.
2. There is no substitute for having the **highest quality** diagnostic records.
3. A thorough clinical diagnostic process is derived from a **consistent pathway** for each examination.
4. It is vitally important to include a **VTO and/or an STO** for those patients that require additional diagnostic tools to complete a successful treatment plan
5. Not all patients require a **diagnostic set-up** but your clinical acumen must know when to prescribe such an additional diagnostic regimen.
6. The utilization of proven **mechanical techniques** should be used when treating patients

Special Session-3

TADs: From Enthusiasm, to frustration or back to the future!

Björn Ludwig

TADS were one of the most discussed topics of the last decade. It started in the 90th and experienced in the last 10 years an extreme hype. Practitioners were enthusiastic about the possibility to counteract newton's third law. Now, more than ten years later quite a lot of clinicians a frustrated about high loss rates and non-working biomechanics. Currently, the alveolar process still is the most preferred insertion site. However, due to the varying bone quality and the risk of root contact, the survival rate of implants inserted in the alveolar ridge , especially interradicular, still needs improvement. Other regions, such as the anterior palate for miniscrews and implants or the mental region for miniplates, provide much better conditions for mini-implant insertion, since the amount and quality of the available bone is far superior. Implants with different types of abutments and connectors allow the construction of versatile and cost efficient appliances for a large variety of orthopedic and orthodontic applications. Utilizing TAD´s in the anterior palate and the mental region eliminates the risk of root injury and takes the implants out of the path of tooth movement. This lecture will show an overview of the up to date literature, current developments of appliance designs, main indications, placement techniques, and risk factors during placement and orthodontic treatment. It will especially focus on the success rate of mini-implants, palatal implants and miniplates and the biomechanics of the connected orthodontic appliance. The lecture will show scientific and clinical perspectives on how mini-screws can become a safe and reliable standard device.

Learning objectives:
Following the lecture the attendances should know the current success rates of palatal TADs
Following the lecture the attendances should know the different diagnostic procedures to evaluate the palate as an insertion site
Following the lecture the attendances should know the most common biomechanics used in combination with palatal TADs

Symposium

Symposium-1

Various Anchorage Preparation for Whole Dentition Distalization

Ju Young Lee, DDS, MSD, PHD.

Whole dentition distalization is an effective treatment modality to avoid or reduce extraction for patients who are in borderline between extraction and non-extraction treatment. It is also useful for compromised treatment of skeletal Class II or Class III malocclusion.

Although many techniques have been introduced for whole dentition distalization, it was considered as difficult to provide adequate anchorage for a long time. Nowadays, it becomes possible by using mini-screw implant (TAD) anchorage. Whole dentition distalization basically involves distal movement of the molars. Because mini-screw implants (TAD) placed in the inter-radicular spaces may interfere with molar movement, various designs of application to avoid this interference have been introduced.

In addition to these applications, I will present about vertical installation of mini-screw implant (TAD).If a mini-screw implant (TAD) is installed vertically, it will not interfere with the distal movement of the roots, which will allow molar movement without root damage. This presentation includes my know-hows for vertically installed mini-screws (TADs), with several clinical cases treated of whole dentition distalization using vertically installed mini-screws.

Symposium-2

Nonextraction treatment of severe crowding: Is it possible?

Min-Ho Jung, DDS, MSD, PhD

Although extractions have been used for a long time in orthodontic treatment, the extraction decision is still the most critical decision made by orthodontists when planning treatment. If the amount of crowidng is severe, premolar extraction is often considered. Because of their location, premolar extractions would seem to allow for the most straightforward relief of crowding and the improvement of soft tissue profile. But patients and their parents often prefer nonextraction approach if possible and such a preference gives us serious question about the boundary of nonextraction treatment.

Because Orthodontic Mini-Implant (OMI) become popular these days, distalization of posterior teeth can be obtained easily without patient's compliance. For this reason, many orthodontists are trying to treat crowding patient with nonextraction than before. But sometime, unexpected side effects are observed including unesthetic profile, impaction of second molar and long treatment time.

In this lecture, tools for space gaining will be shown with their limitations and indications. Advantages and considerations of arch expansion, molar distalization and interproximal enamel reduction will be presented with treated cases and possible side effects or problems will be discussed with published articles. The factors we should consider to get a maximum space also will be shown.

Diagnosis and treatment planning are the key to successful treatment. To make a more precise diagnosis, orthodontist should know the possible side effects and limitation of certain treatment. Although Korean patients usually require extraction more often than US or European patients, more knowledge about the tools for space gaining would help us to decrease the rate of extraction and the problems during treatment of crowding patients.

Symposium-3

TAD-driven whole dentition distalization with special consideration for incisal/gingival display and correction of occlusal canting

Cheol-Ho Paik, DDS, MSD, PhD

Many orthodontists face difficulties in aligning incisors in an esthetically critical position, because the individual perception of beauty fluctuates with time and trend. Temporary anchorage device (TAD) can aid in attaining this critical incisor position, which determines an attractive smile, the amount of incisor display, and lip contour. Borderline cases can be treated without extraction and the capricious minds of patients can be satisfied with regard to the incisor position through whole dentition distalization using TAD. Mild to moderate bimaxillary protrusion cases can be treated with TAD-driven en masse retraction without premolar extraction. Patients with Angle's Class III malocclusion can be the biggest beneficiaries because both sufficient maxillary incisal display, through intrusion of mandibular incisors, and distalization of the mandibular dentition are successfully achieved. In addition, TAD can be used to correct various other malocclusions, such as canting of the occlusal plane and dental/alveolus asymmetry.

Symposium-4

Is the whole dentition distalization with TADs stable?

Hyung Seog Yu, D.D.S.,M.S.,Ph.D.

Molar distalization is a non-extraction treatment modality used to correct Class II or Class III molar relationships and to relieve crowding without adverse arch expansion and interdental reduction(stripping), which can jeopardize both esthetics and stability. There have been many attempts to distalize molars with intraoral distalizing appliances. The side effects of these appliances are anchorage loss at the reactive part, flaring of the incisors, distal tipping, and rotation of the distalized molars.

To reduce these consequences, use of skeletal anchorage systems has become a new orthodontic treatment strategy over the past decade. Skeletal orthodontic anchorage systems provide stationary anchorage for various tooth movements without the need for active patient compliance and with no undesirable side effects. The nature of absolute anchorage allows for retraction of the anterior teeth with simultaneous distal movement of the posterior teeth.

Several clinical case reports showed the efficacy of miniscrews and the efficiency of the treatment mechanics in distalization of the whole dentition. However, there are few studies with adequate numbers of subjects evaluating the treatment effects of these mechanics with cephalometric analysis and no study evaluated post-treatment changes of the distalized dentition. It is believed that post-treatment stability is not a separate problem in orthodontics but one to be considered in diagnosis and treatment planning, thus it is as important to investigate the post-treatment stability of total arch distalization as it is to demonstrate the overall effectiveness of this procedure. Hence, the purpose of this presentation is to quantify the treatment effects and post-treatment stability of total arch distalization by analyzing cephalometric radiographs and three-dimensional (3D) virtual models.

Young Investigator Award (신인학술상)

An increase of biological activity of orthodontic biomaterials by increasing surface hydrophilicity

Sung Hwan Choi

I have focused on improving surface hydrophilicity to increase the biological activity of various orthodontic biomaterials. First, ultraviolet light (UV) or non-thermal atmospheric pressure plasma (NTAPP) was irradiated on the titanium surface for about 15 minutes to improve the biomechanical stability of the orthodontic titanium miniscrew or miniplate. Both treatments resulted in changes from negatively charged hydrophobic (bioinert) to positively charged hydrophilic (bioactive) surfaces, allowing enhancement of bovine serum albumin adsorption, MC3TC-E1 cell attachment and cytoskeleton development. Second, I attempted to synthesize light-curable fluoride varnish (LCFV) containing zwitterionic materials such as 2-methacryloyloxyethyl phosphorylcholine (MPC) with the aim to combine the anti-biofouling activity of MPC with the important feature of LCFV in terms of prevention of enamel demineralization. When LCFV with MPC exposed to a protein solution, the unique structure of MPC would allow a large amount of free water to be present around the phosphorylcholine group, whereas there would be no bound water in the hydrated MPC. Addition of 3 wt% MPC significantly reduced the amount of proteins adsorbed from brain heart infusion medium compared to the control. *Streptococcus mutans* adhesion and surface microhardness loss were substantially lower on bovine tooth enamel surface coated with LCFV containing 3 wt% of MPC than in the control treatment (0 wt% of MPC). In this lecture, I will discuss how UV and NTAPP irradiation and the use of Zwitterionic materials increase surface hydrophilicity and the biological activity of orthodontic biomaterials and discuss whether they can be applied to clinical applications.

2017 KAO
Academic Research Project

Malocclusion monitoring indexes
through comprehensive review of previous epidemiologic researches

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Epidemiology is useful for measuring the distribution of specific diseases in population, and planning and evaluating health care services such as professional education and doctor to patient ratio. The purpose of this study was to investigate and assess available epidemiologic resources regarding malocclusion within the framework of need analysis or demand analysis for orthodontic treatment.

Comprehensive literature reviews were performed regarding malocclusion assessment indexes, domestic epidemiologic studies, which are either community-based or hospital-based, on distribution of malocclusion or orthodontic treatment service utilization by malocclusion classification, through electronic searching. The two ongoing national epidemiologic surveillance systems, Korea National Health and Nutrition Examination Survey (KNHANES) and Annual Health Assessment for Students by Ministry of Education of Korea (AHA), were investigated and their longitudinal data for monitoring malocclusion prevalence from 2010 to 2017 and orthodontic treatment experiences from 2010 to 2015 were analysed.

Ryu's Lecture Award

Orthodontic treatment for occlusal cant and facial asymmetry

Eric Liou

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Improvement of an occlusal cant together with lip cant and chin deviation is considered not possible merely through orthodontic treatment. Orthognathic surgery combined with surgical orthodontics, therefore, has been considered as the only treatment modality for improving the occlusal cant, skeletal, and soft tissue asymmetry. For the improvement of an occlusal cant, orthodontic approaches such as the temporary anchorage devices, auxiliary intrusion arches, cantilever-typed springs, high-pull headgear, posterior bite blocks, or active magnetic vertical correctors have been applying nonsurgically. However, the improvement for chin deviation has not been possible through orthodontic treatment of occlusal cant and "repositioning of mandible". The purpose of this presentation is to illustrate a possible new field in orthodontics for a non-invasive improvement (but not correction) of occlusal cant and facial asymmetry through combination applications of bite raiser/slope and an innovative orthodontic archwire called Yin-Yang archwire. The development and mechanics of the Yin-Yang archwire and the improvement of occlusal cant, lip cant, and facial asymmetry will be explored.

Lecture on Ethics

Professionalism in orthodontics: Maketing treatment and Code of Ethics

Chung Ju Hwang

최근 의료시장 여건 악화와 변화하는 의료환경 속에서 전문직의 사회적 위기 위식이 높아지고 있다.

특히 치과간 과다 경쟁, 과잉진료와 과장되고 불법적인 내용을 담고 있는 의료 광고가 늘어나고 있으며 이로 인한 저가의 치료비 경쟁으로 인한 치료의사에 대한 불신이 야기 되고 있다. 불법 치과의료 광고 중 가장 많은 내용이 치과교정과 관련된 사항이며 전문직의 윤리의식에 대한 재고가 필요한 시기이다. 대한치과교정학회에서는 윤리위원회를 중심으로 우리 학회회원의 권익보호와 치과교정치료에 대한 대국민 이미지 실추 및 신뢰 저하를 막기 위해 불법 의료 광고에 의한 치과교정 진료 질서를 문란하게 하는 과장, 허위 행위를 적발하고 시정하고 있다. 의료질서를 문란시키는 행위에 대해서는 단호하게 대처하기 위하여 학회회원의 품위 손상에 대한 경고 및 징계를 할 수 있는 학회 차원의 근거를 마련하였고 비윤리적인 행위로 인한 학회의 명예 손상과 학회회원에 대한 불이익을 적발하고 이에 대해 조치를 취하고 있다

최근 의료 광고 사전 심의 제도가 강화되면서 광고를 어떻게 해야 할지에 대한 가이드라인이 필요하게 되었다.

교정학회 회원으로서 홈페이지를 운영하거나 광고 시 주의사항에 대해 안내하여 광고를 할 때 선의의 피해를 입지 않도록 하고자 한다.