2020 AAO Annual Session Oral Research Presentations

The Oral Research presentation will be held on Sunday, May 3 in the Georgia World Congress Center B310 from 8:00am-3:30pm with a break from Noon to 12:30pm. Oral Research presentations are 10 minutes long with 5 minutes for questions from the audience.

*- Denotes financial interest or visual enhancement

Moderator: Dr. Dina Stappert - 8:00am-10:00am

CLINICAL ORTHODONTICS: EFFECTIVENESS AND EFFICIENCY OF TREATMENT MODALITIES

8:00am-8:15am
Lower incisor inclination changes with skeletally anchored fixed functional appliance
Osama Eissa, et al.
Toronto, ON, Canada

Lecture Description

Class II malocclusion is one of the most commonly seen orthodontic problems in daily orthodontic practice. Forsus FRD has been used to correct class II malocclusion. However, like other fixed functional appliances, proclination of the mandibular anteriors is an unfavorable effect of Forsus which could limit the skeletal correction. This presentation will address the effectiveness of using miniscrew-anchored Forsus on lower incisor inclination changes

Learning Objectives

• Evaluate the lower incisor inclination changes following treatment with miniscrew-anchored Forsus FRD patients with Class II malocclusion
• Recognize the effectiveness of miniscrews as a means of anchorage with fixed functional appliance on skeletal, dental and soft tissue changes

8:15am-8:30am
Outcomes of miniscrew anchored maxillary protraction: a randomized clinical trial
Felicia Miranda, et al.
Bauru, Brazil

Lecture Description

Class III treatment in growing Class III malocclusion is challenging. The dentoskeletal effects of a miniscrew anchored maxillary protraction (MAMP) in growing Class III patients will be described. In MAMP therapy, a hybrid hyrax and two mandibular miniscrews were used. Class III elastics were oriented full time until the anterior crossbite correction. A sample of 18 patients treated with MAMP therapy was compared with a control group treated with conventional hyrax in a similar protocol. Both groups produced favorable dentoskeletal effects. MAMP seems to represent a treatment alternative for Class III growing patients.

Learning Objectives

• To manage a miniscrew anchored maxillary protraction therapy
• To discuss the dentoskeletal effects of a miniscrew anchored maxillary protraction
• To perform a new treatment option for growing Class III malocclusion patients
Comparison of in-vivo failure of biomimetically precipitation coated hydroxyapatite temporary anchorage devices with that of un-coated temporary anchorage devices over an 18 month period: a split mouth randomized clinical control trial

Owais Durrani
Islamabad, Pakistan

Lecture Description

TADs have become quite common in clinical orthodontics because of the reduction in the cost, easy placement in the oral cavity along with removal and the provision of almost unlimited anchorage without requiring patient compliance in most cases. The success of the orthodontic treatment with TADs is dependent on the stability of the TAD. This presentation will answer if the stability of TADs can be increased by surface coating of hydroxyapatite and will also look into future prospects of using the mentioned coating in orthodontics.

Learning Objectives

- Compare the effects of hydroxyapatite coating on TADs
- Define a randomized control split mouth trial comparing TADs
- Describe biomimetic coating of titanium implants

Effect of laser and CPP-ACP on prevention of enamel demineralization

Samar Adel, et al.
Alexandria, Egypt

Lecture Description

Patients usually seek orthodontic treatment to improve esthetics, However the development of WSLs due to fixed appliances will be disappointing to both Dr and patient. Despite the use of prophylactic measures, it was reported that 60% of patients developed one or more lesion at the end. So this presentation will discuss the various preventive measures to prevent WSLs, also it will discuss in details the mechanism of action of laser and CPP-ACP to prevent WSLs and whether they are effective or not in the prevention of WSLs.

Learning Objectives

- To recognize how WSs develop and identify the different preventive measures
- To analyze the mechanism of action of lasers and CPP-ACP in the prevention of WSLs
- To compare the effectiveness of the use of laser alone, CPP-ACP alone and their combined effect on WSL prevention

Effects of Twinblock, skeletally anchored and conventional Forsus FRD appliances in post-peak growth patient

Bekir Lale, et al.
Konya, Turkey

Lecture Description

One of the side effects of functional treatment in class II malocclusion due to mandibular retrognathia is protrusion of lower incisors. Skeletally anchored Forsus FRD, which is a fixed functional treatment method described in the literature recently, eliminates this side effect This presentation will answer the
following questions: How the skeletal, dentoalveolar, and soft tissue are effected in post-peak growth patients treated with Twinblock, skeletally anchored Forsus and conventional Forsus FRD appliances?

Learning Objectives

- To show that evaluate the amount of mandibular incision protrusion in post-peak patient groups treated with different appliances
- To compare that Twinblock, skeletally anchored Forsus and conventional Forsus FRD appliances skeletal effects in post-peak growth patients

9:15am-9:30am
Comparison of piezocision and laser (LLLT) assisted orthodontic tooth movement – split mouth RCT
Roopak Mathew David, et al.
Bangalore, India

Lecture Description

Although it has been well established that Low Level Laser Therapy (LLLT) & Piezocision are effective methods of accelerating orthodontic tooth movement but to the best of our knowledge, no study has been done to compare Piezocision (invasive) and Laser (non-invasive) method of accelerating tooth movement, on the same patient, in a split mouth design. The aim of this study was to evaluate the effectiveness of using Piezocision and Laser in accelerating orthodontic tooth movement. This presentation will answer the following questions: Which of these two methods turned out to faster than the other? Whether there is any difference between an invasive and a non-invasive method of acceleration?

Learning Objectives

- To evaluate the effectiveness of Piezocision (invasive) and Laser (non-invasive) on accelerating orthodontic tooth movement
- To evaluate whether there is any difference between an invasive and a non-invasive method of acceleration
- To make scientific based decisions for clinical application

9:30am-9:45am
Orthodontic correction of anterior open bite using skeletal anchorage; systematic review and meta-analysis
Mohammed Elnagar, et al.
Chicago, IL, USA

Lecture Description

Correction of an anterior open bite (AOB) is one of the most challenging conditions to manage with conventional orthodontic treatment. Skeletal anchorage (SA) has been used increasingly more for various dentofacial deformities, including AOB clinical scenarios. This study aims to investigate the scientific evidence regarding the short- and long-term effects of orthodontic correction of AOB using SA. A comprehensive systematic review and a meta-analysis were performed on published literature reporting major skeletal and dental outcome measures pertinent to AOB correction.

Learning Objectives

- To describe different techniques of using SA in open biter correction
- To address this gap in the literature, and statistically evaluate the scientific evidence on the short- and long-term outcomes of SA in the correction of AOB
Lecture Description

Clear aligners have been an increasing trend for correction of various malocclusions along with fixed appliances. There have been various strategies used to correct dental Class II malocclusions using clear aligners, one of them being Class II elastics. This presentation will assess the pretreatment to posttreatment dentoskeletal changes produced by clear aligners in treating dental Class II non growing patients as compared to fixed appliances using Class II elastics.

Learning Objectives

- Distinguish that there is significantly less lower incisor extrusion in clear aligners
- Recognize that there is no significant change in mandibular plane angle in either group
- Identify that there is no change in lower incisor proclination in both the groups

Moderator: Dr. Steven Marshall - 10:00am-Noon

ORTHODONTIC TOOTH MOVEMENT – BONE BIOLOGY

10:00am-10:15am
Molecular mechanism of vascular endothelial growth factor in the regulation of osteoclastogenesis
Shariq Khan, et al.
Stony Brook, NY, USA

Lecture Description

Orthodontic tooth movement relies on effective bone remodeling of periodontal ligament and the alveolar bone. Vascular endothelial growth factor (VEGF) is an angiogenic factor and have reported be able to accelerate tooth movement by enhancing osteoclast formation through the osteoblastic cells. There are two types of VEGF receptors, VEGFR-1 and -2 in osteoblastic cells. In our in vitro studies, we aimed to study which receptor(s) in the osteoblastic cells are responsible for VEGF-induced osteoclast formation.

Learning Objectives

- To elucidate the biological mechanisms of VEGF and its role in orthodontic tooth movement
- To examine the specific agonists and antagonists to VEGFR-1 or VEGFR-2 induced osteoclast formation

10:15am-10:30am
Effects of Anti-RANKL monoclonal antibody and clodronate on orthodontic tooth movement: rat model
Farnaz Younessian, et al.
Fort Lauderdale, FL, USA

Lecture Description

There is a growing interest among orthodontists in adopting adjunctive procedures to inhibit tooth movement during and after orthodontic treatment. Anti-RANKL monoclonal antibody and Bisphosphonates are amongst the most viable antiresorptive agents to decrease the rate of orthodontic tooth movement. The proposed study explored the clinical, histological and also immunohistological
changes that occur when two antiresorptive agents were administered locally and describe how they
inhibit orthodontic tooth movement, if at all.

**Learning Objectives**

- To compare, clinically and histologically, the effectiveness of local administration of two-antiresorptive
  agents including Anti RANKL Monoclonal Antibody and Clodronate (Bisphosphonate) to decrease
  orthodontic tooth movement
- To assess the cytokine levels in two different time points, comparing the two agents to each other and
  to the control group
- To compare the bone volume/tissue volume and bone mineral density alteration
- To compare, clinically and histologically, the effectiveness of topical administration of two-
  antiresorptive agents including Anti RANKL Monoclonal Antibody and Clodronate (Bisphosphonate)

10:30am-10:45am
Gingival crevicular fluid analysis during orthodontic treatment using vibrational spectroscopies
Fabrizia d'Apuzzo, et al.
Naples, Italy

**Lecture Description**

Biochemical assay analysis of the gingival crevicular fluid (GCF) has been largely used to evaluate its
changes after orthodontic tooth movement. However, these techniques are time-consuming and labor-
intensive, whereas vibrational spectroscopy require simple or no preparation of the samples and provide
a highly sensitive report of subtle biochemical and structural changes. This presentation will answer the
following questions: What are the main contributions to Raman and Infrared spectra of GCF? How the
analysis of GCF with vibrational spectroscopies can help the monitoring of orthodontic treatment?

**Learning Objectives**

- To show the main contributions to Raman and Infrared spectra represented by the chemical bonds of
  some molecular structure expressed in gingival crevicular fluid
- To assess the differences at the wavenumbers related to Amide I and CH2/CH3 regions at different
time points during orthodontic treatment with fixed appliances
- To highlight the potentiality of vibrational spectroscopies for monitoring the individual response to
  orthodontic tooth movement

10:45am-11:00am
Evaluation of systemic Omega-3 PUFAs on post-orthodontic relapse in a rabbit model
Asser Gad, et al.
Alexandria, Egypt

**Lecture Description**

Long term stability is the major goal of orthodontic treatment. Nowadays, retention strategies are aimed at
increasing alveolar bone density after cessation of orthodontic tooth movement or control of alveolar bone
remodeling around tooth roots by influencing osteoblasts and/or osteoclasts activity to prevent tooth
relapse. This presentation will show the benefits and effects of omega-3 on bone and relapse in
comparison with other pharmacological agents.

**Learning Objectives**

- Recognize the different pharmacological agents used for retention with their applicability in humans
• Evaluation of omega 3 effect on bone and relapse

3-D IMAGING AND ANALYSIS

11:00am-11:15am
Tridimensional assessment of skeletal and sental asymmetries on patients with Class II subdivision malocclusion
Konstantinos Apostolopoulos, et al.
Cleveland, OH, USA

Lecture Description

Although it is known that the orthodontic patients with Class II subdivision malocclusion present various kind of asymmetries, it is not clear if those asymmetries are more skeletal or dental. The purpose of this study is to assess asymmetries in patients with Class II subdivision malocclusion by using 3D analysis and colormap quantification. More specifically to assess if the asymmetries are dental, skeletal or combination of both.

Learning Objectives

• To assess the skeletal and dental asymmetries in Class II subdivision malocclusion patients
• To demonstrate how open source software can be valuable in assessing asymmetries in orthodontic patients

11:15am-11:30am
Comparing different software packages for measuring the upper airway volume and maximum constriction area
Tarek Elshebiny, et al.
Cleveland, OH, USA

Lecture Description

Several software packages report ability to perform different procedures, but results are sometimes inconsistent among software, making it difficult for a practitioner to communicate and compare values. This presentation will answer the following questions: Are different software packages can deliver the same outcome when measuring the airway volume and maximum constriction area? Are there any technical differences between different software packages in the procedure of performing the airway volume measurements?

Learning Objectives

• To show that airway and maximum constriction area measurements using different programs is similar
• To demonstrate the methods of upper airway volume measurements using different programs
• To identify any technical differences of different software programs

11:30am-11:45am
Center of resistance of maxillary first molar: a 3-dimensional finite element analysis
Vaibhav Gandhi, et al.
Farmington, CT, USA

Lecture Description
Most of the studies located the CRES by projecting the complicated 3-dimensional structure of the maxillary molar as a 2-dimensional entity in a certain direction. Furthermore, most evaluations of CRES have been carried out on idealized models. Also, when performed on actual teeth, most studies have focused on the anterior maxillary teeth. Besides, small sample sizes have also been a matter of concern. This presentation will focus on the 3-dimensional evaluation of the CRES of maxillary molars on FEM models generated from multiple patients’ CBCT. Also, study the correlation between the location of CRES and anatomical variability.

Learning Objectives

- To determine the 3-dimensional location of the CRES of the maxillary first molar
- To examine the variability of CRES amongst individual patients
- To investigate the CRES reported in literature

11:45am-Noon
Effects on airway in patients with bone anchored maxillary expansion, tooth anchored maxillary expansion and controls by using cone beam computed tomography analysis
Shivam Mehta, et al.
Farmington, CT, USA

Lecture Description

The effects of maxillary expansion on airway have not been well established. This presentation will answer the following questions: What are the effects of tooth borne and bone borne expansion on the airway? Does the tooth borne expansion and bone borne expansion affect the airway in a different manner? Is there any correlation between the amount of expansion and the changes in the airway? Are there any significant short term and long term changes with maxillary expansion on airway when compared with controls?

Learning Objectives

- To show that airway changes with tooth anchored and bone anchored expansion are different
- To demonstrate that there is no significant correlation between amount of maxillary expansion and the changes in airway
- To assess that there are no significant differences in the airway volume and minimal cross-sectional area between the expansion and control subjects on long term evaluation

Moderator: Dr. Michael Duryea - 12:30pm-2:00pm

CLINICAL ORTHODONTICS: TREATMENT OUTCOMES

12:30pm-12:45pm
The influence of the vertical facial pattern on molar and incisor movement in extraction cases
Burcu Aydin, et al.
Amsterdam, Netherlands

Lecture Description

Molar and incisor movement during orthodontic extraction therapy could differ between hyperdivergent and hypodivergent patients. Pre- and post-treatment cephalograms and dental casts of 296 Class II/1 patients (13.3 ± 3.0 years) with crowding in both arches, treated with 4 bicuspids extraction and Class II elastics were studied. Decrease of divergence was related to more anchorage loss in both jaws. Short face subjects showed more anchorage loss in both jaws. Increase in LFH was related to maxillary
anchorage loss. Negative ALD reduced molar and incisor movement. The large variation in changes disturbs prediction of individual treatment effects.

Learning Objectives

- Explain the relation between vertical skeletal pattern and anchorage loss in Class II/1 cases with crowding treated with 4 bicuspid extraction
- Compare the effect of lower face height and divergence on incisor and molar movement
- Analyze the interaction between ALD and vertical skeletal pattern and anchorage loss

12:45pm-1:00pm
Cephalometric and soft tissue evaluation of maxillomandibular advancement for obstructive sleep apnea
Tim Yu, et al.
San Francisco, CA, USA

Lecture Description

Maxillomandibular advancement (MMA) is considered to be the most effective craniofacial surgical technique for the treatment of obstructive sleep apnea (OSA) in adults. There are a variety of approaches in which MMA can be used to obtain surgical correction for sleep apnea. This presentation characterizes the cephalometric and soft tissue changes of the MMA technique employed at the Stanford Sleep Center, distinct for a counterclockwise rotation and advancement of the maxillomandibular complex. Additionally, a short term (6 month) follow up will be evaluated to determine stability of hard and soft tissues.

Learning Objectives

- To evaluate the hard and soft tissue changes that occur from a maxillomandibular advancement surgery
- To determine the degree of improvement of sleep apnea as a result of MMA
- To analyze associations between cephalometric measurements and indicators for sleep apnea

1:00pm-1:15pm
Pharyngeal airway dimensional changes after orthopedic treatment: a systematic review with meta-analysis
Noha Orabi, et al.
Cleveland, OH, USA

Lecture Description

Orthopedic and functional appliances are well established as one of the treatment modalities adopted during orthodontic treatment of skeletal class II and class III malocclusion. However, the benefits of functional appliances on the pharyngeal airway have been long debated. Therefore, this presentation will answer the following question: Do orthopedic functional appliances have an effect on the pharyngeal airway dimensions?

Learning Objectives

- Assess the effect of orthopedic appliances on the pharyngeal airway dimensions
- Recognize the importance of the CBCT in assessing the pharyngeal airway
- Identify the limitations present in the literature regarding this topic
1:15pm-1:30pm
Longitudinal behavior of orthodontic extraction spaces
Marcelo Valerio, et al.
Bauru, Brazil

Lecture Description

Extraction space closure is one of the orthodontic treatment goals which can be achieved during the in-office part of treatment without the need for patient compliance. Thus, it should be achieved. However, orthodontic extraction remaining spaces continue to be mentioned as occasionally found at the end of treatment. Moreover, in studies about closure stability, extraction spaces are sometimes found as persistent or reopened in the long-term. The long-term behavior of these spaces has never been quantitatively and qualitatively studied simultaneously. Additionally, the real mean prevalence of completely closed spaces at the end of treatment is unknown.

Learning Objectives

• To determine the real prevalence of open and closed extraction spaces at the end of orthodontic treatment
• To demonstrate that despite the late space closure tendency, several spaces may remain open at the long-term, and closed ones can reopen
• To establish the behavior tendency per quadrants, per patients, and spaces dimensional variation

GENETICS AND CRANIOFACIAL PATTERN

1:30pm-1:45pm
Genetic polymorphisms in FGFR2 underlie skeletal malocclusion
Huang Li
Nanjing, China

Lecture Description

FGFR2 in craniofacial bones mediates osteoprogenitor proliferation, differentiation, and apoptosis. Here, we investigated the association between variations in FGFR2 and skeletal malocclusions. Five SNPs were found to be associated with skeletal malocclusions. Among them, the common genotypes of rs2981578 and rs10736303 contained the binding sites of RUNX2 and SMAD4. Compared with the common genotypes, the minor genotypes at these 2 SNPs decreased the binding affinity and enhancer effect of RUNX2 and SMAD4, as well the levels of FGFR2 expression. In addition, FGFR2 expression contributed positively to osteogenic differentiation in vitro.

Learning Objectives

• To show the association between variations in FGFR2 and skeletal malocclusions
• To show rs2981578 and rs10736303 might be the functional SNPs in FGFR2
• To demonstrate that the FGFR2 expression level regulates osteogenic differentiation

1:45pm-2:00pm
Requirement of Wnt modulator R-spondin3 in craniofacial morphogenesis, dental development
Nora Alhazmi, et al.
Boston, MA, USA

Lecture Description
Understanding the genetic etiology of dentofacial anomalies is fundamental for treatment innovations. We found that R-spondin3 (Rspo3) is an important secreted protein that potentiate Wnt signaling. We analyzed the gene expression and function of Rspo3 in mouse and zebrafish models. We discovered that Rspo3 is expressed in perichondrial progenitors and odontoblasts, and required for osteogenesis, tooth mineralization and bone homeostasis. This work highlights the importance of Wnt signaling in craniofacial and dental health, and identifies a molecular target for pharmacologic intervention.

Learning Objectives

- To explain the role of Wnt modulator Rspo3 in craniofacial bone biology
- To identify the Rspo3 effect on maxilla-mandibular relationship
- To describe the importance of Rspo3 in dental development

Moderator: Dr. James Mah - 2:00pm-3:30pm

2:00pm-2:15pm
Genetics of tooth angulation and inclination in patients with Class I malocclusion
Andrew Daabous, et al.
Detroit, MI, USA

Lecture Description

The multifactorial etiology of malocclusion is a familiar concept to members of the orthodontic community. Occlusion results from an interaction between the dentition, facial skeleton, orofacial musculature and temporomandibular joints; furthermore, the development of these components is influenced by genetic, behavioral and environmental factors. Rarely do most orthodontists consider the contributions of particular genetic polymorphisms to malocclusion at the dentoalveolar level. The purpose of this presentation is to discuss efforts being made to correlate our patients’ genotypes with the three-dimensional inclinations and angulations of their teeth.

Learning Objectives

- Demonstrate correlations between single nucleotide polymorphisms and class I malocclusion
- Recognize the importance of genetics to an evolving orthodontic specialty

POTPOURRI – ORTHODONTICS AND QUALITY OF LIFE, BONE REGENERATION, WOUND HEALING, TONGUE RE-EDUCATION, DENTAL AGE IN CLP PATIENTS

2:15pm-2:30pm
Malocclusion related quality of life questionnaire: development and validation of a new scale
Elbe Peter, et al.
Kottayam, India

Lecture Description

Patient reported outcome measures are regarded as an important aspect of health care worldwide. This research aimed to develop and validate a new psychometric tool with special focus on socioeconomic domain. A 20-item scale with one global question was developed, validated and field tested for this purpose. This presentation will outline the methods for developing a psychometric scale and impact of malocclusion among general population. It will elucidate the cultural differences in OHRQoL status among adolescents.

Learning Objectives
To highlight the need for OHRQoL assessment among subjects with malocclusion
To demonstrate the methods of developing and validating a new Psychometric scale
To highlight the reliability and validity of the newly developed malocclusion Related Quality of Life Questionnaire (MRQoLQ)

2:30pm-2:45pm
Fibromodulin promotes myofibroblast apoptosis in high-tension induced postoperative hypertrophic scars
Wenlu Jiang, et al.
Los Angeles, CA, USA

Lecture Description
Excessive tension across wounds, such as in the cleft lip and palatal repair, often result in severe dysfunction and disfigurement of patients. Unfortunately, current therapies to treat pre-existing hypertrophic scars are minimally effective or have undesirable side effects. Meanwhile, hypertrophic scarring is characterized by persistence of myofibroblasts after wound closure. This presentation will identify how fibromodulin (FMOD), a small leucine-rich proteoglycan (SLRP), targets myofibroblast clearance.

Learning Objectives
• To identify the nature of myofibroblast clearance
• To distinguish the effect of fibromodulin (FMOD) on myofibroblast clearance

2:45pm-3:00pm
Evaluation of the effectiveness of a new way of swallowing reeducation through a neuromuscular rehabilitation device in 10 weeks
Patrick Fellus
Paris, France

Lecture Description
Presentation of an uncommon approach of swallowing re-education through a passive bottom-up device, 15 minutes per day during a few weeks reveals a high success rate. The pilot study should be continued to evaluate the long-term effects on a larger sample and maybe add a T3 to see if result improves

Learning Objectives
• Discover a new unconscious reeducation in order to restore nasal breathing and myofunctional balance
• Understand the physiological & biochemical modifications happening in the brain
• Evaluation of the results & be able to use this method with your patients

3:00pm-3:15pm
Dental and skeletal ages in patients with cleft, Class I and III
Basak Erdem, Elcin Esenlik
Balikesir, Turkey

Lecture Description
Patients with cleft lip and palate was compared to Class I and Class III patients based on dental and skeletal ages. Demirjian method was used to evaluate the dental age and all patients were grouped
based on their growth period as prepubertal, pubertal and postpubertal. Dental ages in these three growth periods were compared among malocclusion groups. It was also investigated whether there was any difference among cleft types regarding dental age or not.

Learning Objectives

- To compare the relationship between dental age and skeletal age in patients with cleft lip and palate and difference from Class I and Class III malocclusions
- To recognize that dental age was significantly lower in group with cleft in prepubertal, pubertal and postpubertal growth periods

3:15pm-3:30pm
Novel anabolic bone drug complexes with a bioresorbable synthetic biomaterial for enhanced bone regeneration
Mohamed-Nur Abdallah, et al.
Toronto, ON, Canada

Lecture Description

Several graft materials have been investigated and used for treating alveolar bone defects including those in cleft lip and palate patients. Monetite (dicalcium phosphate anhydrous) can be used for bone grafting procedures including alveolar bone augmentation; however, it lacks osteoinduction. We developed two novel bone anabolic conjugated drugs, known as C3 and C6, consisting of a potent bone activating EP4 receptor agonist and an inactive bisphosphonate. Incorporating these anabolic conjugates within the degradable matrix of monetite present a promising bone graft alternative for alveolar bone defects.

Learning Objectives

- Describe the different graft materials used for treating bone defects in oral and maxillofacial surgery
- Explain some of the molecules incorporated within the synthetic bone grafts to enhance their bone regeneration ability
- Learn about the in vivo results of using the two novel bone anabolic conjugated drugs (C3 and C6) in a rat mandibular bone defect model