

5th World Congress on

Dentistry and Maxillofacial Surgery

September 18-19, 2023 | Rome, Italy

DAY-1 POSTER PRESENTATION



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Septic arthritis following a facial laceration - A case report

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Background: Post-traumatic septic arthritis is a rare and severe complication. This is most common in young, healthy males and most commonly affects the large joints of the lower limb. The most common pathogen responsible for septic arthritis is *Staphylococcus aureus*.

Case: A 4-year-old male attended Luton and Dunstable A&E following a fall at home, resulting in a full-thickness laceration of the left eyebrow. This was sutured under local anaesthetic and the patient was sent home with chloramphenicol ointment. He then reattended 2 days later after developing swelling of the left eye and reporting inability to weight-bear on the right leg. Medically, he was generally fit and well.

Extraoral examination showed left periorbital cellulitis with mild drainage from the laceration. The right leg and hip were painful on palpation. Bloods showed a raised white cell count of 29.7 and a CRP of 69.3. CT showed a pre-septal collection of the left eye and a subsequent MRI showed a collection in the right hip joint suggestive of septic arthritis.

Management included wash-out of the right hip collection by orthopaedics and wash-out of the left eyebrow laceration under general anaesthetic. Swab taken from the eyebrow laceration showed *Streptococcus A* species. Osteomyelitis developed within the right hip, secondary to the initial septic arthritis. A PICC line was placed and the patient received 6 weeks of IV antibiotics.

Conclusion: This case raises awareness of this complication rarely seen in maxillofacial trauma. It reinforces the importance of choosing the best modality of treatment of lacerations in children and ensuring thorough irrigation of traumatic lacerations.

Recent Publications

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3. Dodwell ER. Osteomyelitis and septic arthritis in children. *Current Opinion in Pediatrics*. 2013;25(1):58–63. doi:10.1097/mop.0b013e32835c2b42

Biography

Charlotte Watson graduated from King's College London Dental Institute in 2020. Since then, she has distinguished herself during one year of general dental practice and two subsequent years of training in a hospital. Her first year in the hospital covered Oral Surgery, Oral Medicine and Restorative at Guy's Hospital in London. Currently, she is training at a busy Maxillofacial Surgery Unit at Luton and Dunstable, encountering a broad range of clinical scenarios. Although having a wide variety of clinical experience, she has a particular interest in Oral Surgery and is looking forward to developing this further.

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DAY-2 Poster Presentation



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External apical Root Resorption differences between clear aligner treatment and fixed Orthodontic treatment

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External Apical root resorption (EARR), which has received a lot of attention for a long time, is a common idiopathic problem related to orthodontic therapy. Some of the factors that affect root resorption include genetics, age, gender, nutrition, the type of appliance, the amount of force applied during therapy, extraction or non-extraction, treatment length, and the distance the tooth or teeth migrate. When it penetrates the dentin, the uncertain circumstance of the loss of apical root tissue turns into an irreversible one.

The use of clear aligner treatment (CAT) has grown significantly in popularity over the past few years among orthodontic clinics. Given its inherent advantages in terms of comfort and aesthetics, CAT has gradually become a top option in treatment planning, especially among adults. Furthermore, because CAT is removable, patients may find it more convenient to maintain their oral hygiene with it.

There are various distinctions between clear aligner treatment and fixed orthodontic treatment (FOT) that, when viewed mechanically, could affect External Apical Root Resorption. First, intermittent forces are used in clear aligner therapy since the aligners must be taken out for dental hygiene and eating, whereas continuous forces are used in fixed orthodontic treatment. Second, compared to fixed orthodontic treatment, the degree of pressures and moments in clear aligner therapy may be different. Thirdly, forces are applied to the teeth during clear aligner therapy via attachments, whereas with fixed orthodontic treatment, forces are applied by brackets positioned in the centre of the tooth crowns.

Although EARR after orthodontic treatment may not be prevented by CAT, the incidence and severity of EARR may be less than what has been observed in studies in FOT.

References

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Biography

Arda Saribas was born in 1998 in Diyarbakir, Turkey. He graduated from Hacettepe University Faculty of Dentistry in 2021. After completing his master's degree, in 2021, he started his doctorate program in the Department of Orthodontics at Izmir Katip Celebi University. He is currently a PhD candidate at Department of Orthodontics, Faculty of Dentistry, Izmir Katip Celebi University. He is also a member of Turkish Orthodontic Society.

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Clear aligner materials in Orthodontics

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Orthodontic clear aligners are a popular alternative to traditional braces for straightening teeth. Clear aligners are made of a clear plastic material that is custom-fit to the patient's teeth. Unlike traditional braces, which are affixed to the teeth with brackets and wires, clear aligners are removable and must be worn for at least 22 hours per day.

With the rapid technological improvements in biomaterials, computer-aided design (CAD) and manufacturing (CAM), clear aligner therapy (CAT) has emerged as a promising alternative to conventional fixed appliances (FAs) in orthodontics.

One of the key factors that contribute to the success of clear aligners is the quality of the material used. Over the years, there have been several advances in clear aligner materials that have resulted in improved performance and patient comfort.

Recent advancements in orthodontic clear aligner materials have resulted in improved mechanical properties and increased patient comfort. One such material is thermoplastic polyurethane (TPU), which is a type of flexible plastic that has good elastic recovery and shape memory. TPU clear aligners have been shown to have better mechanical properties than traditional polyethylene terephthalate glycol (PETG) aligners, making them less likely to crack or deform during use. Additionally, TPU aligners have been shown to cause less discomfort and irritation to the soft tissues of the mouth than PETG aligners. Another advanced material used in clear aligners is a composite of polyurethane and polyethylene glycol dimethacrylate (PEGDMA). This material has been shown to have excellent mechanical properties and to be more resistant to staining than other clear aligner materials. Furthermore, PEGDMA composite aligners have been found to be more effective at moving teeth than PETG aligners.

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Biography

Ali Riza Ozdurmus was born in 1989 in Bodrum, Turkey. He graduated from Near East University Faculty of Dentistry in 2013. After completing his master's degree, he worked as a general dentist for a while in Izmir. In 2017, he started his doctorate program in the Department of Orthodontics at Izmir Katip Celebi University. He is currently a PhD candidate at Department of Orthodontics, Faculty of Dentistry, Izmir Katip Celebi University. He is also a member of Turkish Orthodontic Society and Turkish Aligner Society.

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Eye tracker device in Orthodontics

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Aesthetics is an important source of motivation for patients to want orthodontic treatment. Aesthetic perception of orthodontists; while the reference lines are based on norm values, ratios and angles, the aesthetic perception of the patients is related to more subjective criteria. Detection of these perception differences; It has an important role in evaluating the expectation of the patient from the treatment, the need for treatment, the result of the treatment and the psychology of the patient. Methodology & Theoretical Orientation: Eye tracker devices have emerged as valuable tools in the field of orthodontics, revolutionizing treatment planning, design, and patient engagement. By leveraging the data obtained through these devices, orthodontists can enhance treatment outcomes and deliver personalized care that aligns with patient. As the field of orthodontics continues to embrace technological advancements, eye tracker devices offer a promising methodology for optimizing orthodontic treatment and improving patient satisfaction. Findings: The use of eye tracker devices in orthodontics has generated valuable research insights. Eye tracking studies have explored various aspects of orthodontic treatment, such as smile attractiveness, midline position, and buccal corridors, providing evidence-based knowledge to guide treatment planning and aesthetics. Conclusion & Significance: The utilization of eye tracker devices in orthodontics has led to improved treatment planning. By analyzing the visual attention and gaze patterns of patients, orthodontists can better understand how individuals perceive treatment-related materials and optimize treatment options based on patients' individual visual preferences and perceptions. Eye tracker devices have facilitated a more personalized and patient-centered approach to orthodontic treatment. By integrating eye tracker data with digital imaging and orthodontic software, clinicians can tailor treatment plans to align with patients' visual preferences, resulting in improved patient satisfaction and treatment adherence.

Recent Publications

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Biography

Özge SÖZEN was born in 1993 in Balıkesir. She graduated from Vefa High School in 2011 and then completed her graduate education at Marmara University Faculty of Dentistry in 2016. She started PhD education in İzmir Katip Çelebi University Health Sciences Institute Orthodontic Program in 2020.

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The relationship between skeletodental anomalies and posture

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The ideal body posture is achieved by the spine forming a slight S- shaped curvature with cervical lordosis, thoracic kyphosis, and lumbar lordosis. Nowadays, the orthodontic literature contains signs that there is a correlation between orthodontic and orthopedic findings. For this reason, an interdisciplinary treatment approach that combines orthopedics and orthodontics is becoming more and more important. Because of the functional connection between the stomatognathic system and the cervical spine, these two medical fields are inevitably linked.

While the dentoalveolar, maxillofacial and craniofacial structures are in close relationship with each other due to their close neighborhood, they are also in close relationship with the spine and posture due to functional and morphological reasons. Thus, the stomatognathic system can play an important role in postural control and skeletal anomalies can cause spinal changes and postural differences.

The prevalence of co-occurrence spine and postural deformity and orthodontic malocclusions suggests pathological correlations concern both orthodontics and orthopaedics. Since there is a multifactorial situation in the etiology of temporomandibular disorders and malocclusions, no studies have been able to prove a cause-effect relationship between the stomatognathic system and posture, but many studies agree that the importance of a multidisciplinary approach in the treatment of these diseases.

In this presentation, the literature on examining the spinal and postural effects of skeletal anomalies has been reviewed.

Recent Publications

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2. Festa F, Tecco S, Dolci M, Ciufolo F, Di Meo S, Filippi MR, Ferritto AL, D'Attilio M (2003) Relationship between cervical lordosis and facial morphology in Caucasian women with skeletal class II malocclusion: a cross sectional study. *Cranio*. 21:121–129.
3. Gresham H, Smithells PA (1954) Cervical and mandibular posture. *Dent Rec*, 74:261-264

Biography

Bahar Ozer has expertise in evaluation and a passion for improving the dental health and orthodontic malocclusions. After completing her Bachelor's degree at Marmara University in 2017, she started her doctoral education at Izmir Katip Celebi University in 2019 and still continues her research there.

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Allogenic nasal cartilage for grafting in dorsal rhinoplasty

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Statement of the problem: Among the defects of the nose, the saddle type of the nose is often found, which is associated with the loss of the dorsal part of the quadrangular cartilage. In patients with a saddle nose, the aesthetics of the face are disturbed, which makes the patient turn to the rhinoplasty method.

Background: The aim of this study was to evaluation of long-term outcomes and patient satisfaction after nasal dorsal rhinoplasty with an allogeneic cartilage graft of the nasal septum.

Materials and methods: This study included 104 patients, ean age at surgery was 28.7 years (41 males; 63 females) who underwent nasal dorsal augmentation with allogeneous nasal septal cartilage graft from 2017 to 2023. Donor patients were patients who had taken excess nasal septal cartilage during functional rhinoplasty. According to the indications, crushed allogenic septal cartilage graft and PRF was also used. The aesthetic results of rhinoplasty were assessed from preoperative and postoperative photographs and also by visual inspection. To assess the results of aesthetic rhinoplasty Visual analogue scale (VAS) «Utrecht Questionnaire» was used.

Results: In 86 patients included in the study, there were no serious complications there was no deformation or extrusion. Allograft resorption was not observed in any of the cases. Analysis of mean aesthetic scores according to the visual analogue scale (VAS) showed significant improvement after rhinoplasty from 3.6 preoperative to 8.3 (P <0.001) 3 months after surgery and 8.9 (P <0.001), respectively 1 year after surgery. Preoperative and postoperative mean aesthetic scores according to the visual analogue scale (VAS)

Conclusions: Rhinoplasty with allogeneic cartilage graft of the nasal septum allows to achieve stable positive functional and aesthetic results and safe alternative to autologous cartilage in rhinoplasty, preventing complications, and additional surgical procedures. Rhinoplasty with allogeneic cartilage graft of the nasal septum allows to achieve stable positive functional and aesthetic results.

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Biography

Armen Harutyunyan's educational journey began with studies at Saratov State Medical University from 2002 to 2003. He continued his pursuit of medical excellence at Yerevan State Medical University after Mkhitar Heratsi, graduating between 2003 and 2007. His dedication to specialization led him to complete a Clinical Residency in Maxillofacial Surgery at a prominent Municipal Hospital from 2007 to 2010

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Effectiveness of UV functionalised short implants placed in the posterior segments of the Atrophied Maxilla controlled case series

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Statement of the Problem: Short implants in patients with bone atrophy in the posterior atrophied maxilla are a viable alternative to bone grafting with a favorable prognosis. The use of short implants in the atrophied maxilla reduces the operating time and costs, making the procedure more accessible to patients. Patients were satisfied with the minimally invasive method of treatment.

Background: The study was to evaluate the survival rate of short implants (5-6 mm) functionalized with UV radiation, placed in the posterior segments of the atrophied maxilla. Materials and methods: The study included 47 patients from 2018 to 2023 (aged 27 to 56 years, 24 women and 23 men) without any systemic diseases, with unilateral/bilateral missing teeth and of the vertical atrophy posterior maxillary area. Total installed 64 short UV-functionalized implants and 62 standard implants over 10 mm in length in segments maxilla with sufficient bone parameters.

The clinical indices included the following parameters: ISQ, MBL, OHIP-G scale.

Results: For short implants, the median ISQ at placement was 62.2 for primary stability and the median ISQ at 5 months was 69.6 ISQ. For standart implant, the mean ISQ at placement was 64.3 ISQ, and ISQ after 5 months was 71.6 ISQ.

After 6 months mean MBL short implants 0.87 mm, after 1 year 1.13 mm, after 5 year was 1.48 mm. After 6 months mean MBL standard implants 0.84 mm, after 1 year 1.24 mm, after 5 year was 1.58 mm.

Mean OHIP-G scores-patients satisfaction with the implant at 4.8 ± 0.3 , satisfaction with the operation 4.6 ± 0.4 ; satisfaction with prosthetics 4.7 ± 0.5 .

Cumulative 5-year short implants rates was 96.7%, standard implants was 97.4%, and prosthesis cumulative survival rate was 97.2%.

Conclusions: Short ultraviolet functionalized implants used in the posterior resorbed segment of the maxilla reliable alternative to sinus lift, demonstrating fewer complications, reduction in the number of additional surgical interventions and showed satisfactory long-term survival.

Recent Publications

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Biography

Naira Ghambaryan, MD, is a respected educator and healthcare professional, serving as a Lecturer in the Department of Surgical Stomatology and Maxillofacial Surgery. Her journey in the field of medicine and dentistry is marked by a dedication to both academic excellence and practical patient care.

Naira's academic journey began at Yerevan State Medical University after M. Heraci, where she pursued her Bachelor's degree in Stomatology from 2000 to 2005. Her commitment to dentistry led her to undertake an internship at the same institution from 2005 to 2006. During this time, she acquired fundamental knowledge and skills that would lay the foundation for her future career.

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The influence of genetics on Orthodontic malocclusion

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Malocclusion is a common disarrangement of teeth or jaws that affects populations worldwide, resulting in impaired oral function, increased susceptibility to dental trauma, periodontal disease and reduced dentofacial esthetics (1, 2).

Malocclusion often develops as a complex trait condition that is influenced by combinations of transcription and growth factors acting on bone, teeth, and skeletal muscles (3). Craniofacial bone growth and development have been reported to be affected by many signaling pathways, including transforming growth factor β (TGF- β), bone morphogenetic protein (BMP), Hedgehog, and fibroblast growth factor (FGF) pathways (4, 5).

Skeletal malocclusion usually has a genetic etiology, with familial aggregation and hereditary tendency (6). Identification of these factors and mechanisms would help diagnosis, prediction, and treatment for skeletal variations (7).

Recent Publications

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Biography

Damla Cardak graduated from Vefa High School in 2008. She completed her undergraduate education at Istanbul University Faculty of Dentistry in 2015. Later, she increased her clinical experience in general dentistry. She started associate degree education in Anadolu University Open Education Faculty Management of Healthcare Organizations and finished in 2022. In 2021, she started her doctorate education at Izmir Katip Celebi University, Institute of Health Sciences, Department of Orthodontics.

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Evaluation of smile aesthetics in different face types

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Before the treatments applied in today's modern dentistry and especially in the field of orthodontics, not only dental structures but also facial soft tissues are evaluated, and facial soft tissue aesthetics can be changed as a result of the treatments applied (1). Although patients come mainly to improve their smiles, there are more studies on skeletal structure than soft tissue structure in the orthodontic literature, and smiling is mentioned less frequently (2).

Providing an ideal dental or skeletal relationship in the mouth does not guarantee that smile aesthetics will also be provided. Although intraoral structures are effective in smile aesthetics, the importance of extraoral soft tissue cannot be ignored. Significant changes occur in facial structures during smiling (3). Smile should be evaluated by examining the area surrounded by the upper lip, lower lip and lateral commissures, and anatomical structures such as teeth, gingiva, alveolar base and periodontal tissue in this area (4).

Two-dimensional and three-dimensional recording methods were used while making smile evaluations. Today, three-dimensional imaging methods (stereophotogrammetry) have begun to replace traditional two-dimensional diagnostic methods (photography, video recordings) (5). Studies have observed differences in smiling between groups and genders. Considering these differences, the evaluation of orthodontic treatments will help achieve ideal treatment goals (6, 7).

Recent Publications

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Biography

Ozkan Buyuk graduated from Faculty of Dentistry, Gazi University in 2006. In his undergraduate education, he also studied at Cardiff University within Erasmus Student Exchange Program. After graduation, he started his postgraduate education at Gazi University, Institute of Health Sciences, Oral Pathology Program. In 2013, he did internship and studies on molecular biology at the Department of Pathology, Faculty of Medicine, Cologne University. Between 2014-2019, he worked as a lecturer at Nisantasi University Dental Prosthesis Technology Program. He also got enrolled in undergraduate education in Anadolu University Open Education, Healthcare Management Program in 2017. In 2019, he started his doctorate education at Izmir Katip Celebi University, Institute of Health Sciences, Department of Orthodontics. In 2020, he was appointed to the Oral and Dental Health Program of Izmir Katip Celebi University Vocational School of Health Services. He continues his clinical and academic studies in orthodontics and lectures at associate degree level.

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Accepted Abstracts



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Dental implant survival in patients with osteoporosis

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Osteoporosis is very common, particularly in post-menopausal women and is characterized by a decrease in bone mass and strength. Osteoporosis also affects the jawbone and it is considered a potential contraindication to placement of dental implants. The present paper reviews the literature regarding the effect of osteoporosis on osseointegration of implants. Experimental models have shown that osteoporosis affects the process of osseointegration, which can be reversed by treatment. However, studies in subjects with osteoporosis have shown no differences in survival of the implants compared to healthy individuals. Therefore, osteoporosis cannot be considered a contraindication for implant placement. Oral bisphosphonates are the most commonly used pharmacological agents in the treatment of osteoporosis. Although there have been cases of osteonecrosis of the jaw in patients treated with bisphosphonates, they are very rare and it is more usually associated with intravenous bisphosphonates in patients with neoplasms or other serious diseases. Nevertheless, patients treated with bisphosphonates must be informed in writing about the possibility of this complication and must give informed consent. Ceasing to use bisphosphonates before implant placement does not seem to be necessary.

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Raman spectroscopy, *In vivo* application for bone evaluation on dental surgery and periodontology. Possible alternative to histology

Eduard Gatin

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Our days, there is a large number of surgical techniques involving the implantation of various types of bone graft and /or bone substitutes in order to achieve periodontal regeneration. Despite positive observations in animal models and successful outcomes reported for many of the available regenerative techniques and materials in patients, including histologic evidence, robust information on the degree to which reported clinical improvements reflect true periodontal regeneration remains just limited. It is requested a method adapted for a quick evaluation of the bone and precise in the mean time.

For the bone tissue, at micro level octacalcium phosphate (OCP, $\text{Ca}_8(\text{HPO}_4)_2(\text{PO}_4)_4 \cdot 5\text{H}_2\text{O}$), is considered very important because it is regarded as an *in vivo* precursor of HA. Trying to find traces for phase transition of OCP to HA, the presence of HA nano rods and plate-like HA particles can be utilized as signs of bone good quality evidenced by SEM investigation (Fig. 1 b). The normalized peak intensity values, are related to each compounds concentration.

A group of ten patients was involved to our study. Investigation was performed by RAMAN technique, first *in vivo* and then *in vitro* for the harvested bone samples.

There were evaluated / compared the following peaks, for *in vivo* and then *in vitro* for the harvested bone samples (Fig 1 a):

- 430 – 450 cm^{-1} (ν_2 , PO_4^{3-});
- 955 – 960 cm^{-1} (HPO_4^{2-} , immature bone);
- 960 – 965 cm^{-1} (mineral bone, mature bone);
- 1023 cm^{-1} ($\text{P}_2\text{O}_7^{4-}$; PPI, inorganic pyrophosphate)

Raman method adapted for “*in vivo*” bone quality evaluation, is much less invasive then the well-known CT (computer tomography) or CBCT (con beam computer tomography) already used and more accurate. For this purpose, the Raman probe was modified with a “special cap” in order to assure regular sterilization for *in vivo* use.

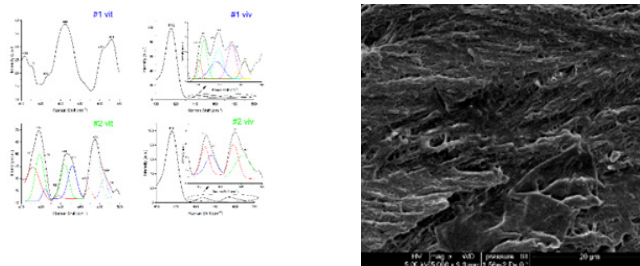


Fig.1. (a) Raman spectra for patients (#1, #2) *in vitro* and *in vivo*; (b) SEM micrograph patient #1.

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Evaluation of the effects of human dental pulp stem cells on the biological phenotype of hypertrophic keloid fibroblasts

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Objective: Despite numerous existing treatments for keloids, the responses in the clinic have been disappointing, due to either low efficacy or side effects. Numerous studies dealing with preclinical and clinical trials have been published about effective therapies for fibrotic diseases using mesenchymal stem cells; however, no research has yet been reported to scientifically investigate the effect of human dental pulp stem cells (HDPSCs) on the treatment of keloids. The objective is to provide an experimental basis for the application of stem cells in the treatment of keloids. **Methods:** Human normal fibroblasts (HNFs) and human keloid fibroblasts (HKFs) were cultured alone and in combination with HDPSCs using a transwell cell-contact-independent cell culture system. The effects of HDPSCs on HKFs were tested using a CCK-8 assay, live/dead staining assay, quantitative polymerase chain reaction, Western blot and immunofluorescence microscopy. **Results:** HDPSCs did not inhibit the proliferation nor the apoptosis of HKFs and HNFs. HDPSCs did, however, inhibit their migration. Furthermore, HDPSCs significantly decreased the expression of profibrotic genes (CTGF, TGF- β 1 and TGF- β 2) in HKFs and HNFs ($p < 0.05$), except for CTGF in HNFs. Moreover, HDPSCs suppressed the extracellular matrix (ECM) synthesis in HKFs, as indicated by the decreased expression of collagen I as well as the low levels of hydroxyproline in the cell culture supernatant ($p < 0.05$). **Conclusions:** The co-culture of HDPSCs inhibits the migration of HKFs and the expression of pro-fibrotic genes, while promoting the expression of anti-fibrotic genes. HDPSCs' co-culture also inhibits the synthesis of the extracellular matrix by HKFs, whereas it does not affect the proliferation and apoptosis of HKFs. Therefore, it can be concluded that HDPSCs can themselves be used as a tool for restraining/hindering the initiation or progression of fibrotic tissue.

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Advanced ceramics in Implant Dentistry: InPerio® Implant System

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The interest in ceramic implants has been renewed as an important and wide research goal. Nowadays, certain advanced ceramic materials make it possible to combine the versatility of titanium-based implantology and the biological benefits of traditional ceramic-based implants. These disruptive materials expand the boundaries of conventional ceramics in terms of mechanical properties, material engineering, surface topography, biological integration, aesthetics, microbial adhesion, and long-term success of dental implants. The goal of this lecture is to provide an overview of the technical progressions in advanced ceramics for dental implantology and the preclinical and clinical evaluation of new ceramic dental implants designed to provide modern implantology. Specifically, new ceria-stabilised zirconia and alumina (Ce-TZP/Al) shows superior fracture toughness than other ceramic materials and exhibits semi-plastic deformation (ceramic ductility), a key factor in modern implant design. Based on the features of this new advanced ceramic, the InPerio® Implant System overcomes the gap between the versatility of cutting-edge titanium implants and the biological advantages of ceramics. Clinically speaking, InPerio® is suitable for immediate loading protocols and direct screwing to the implant with primary stability, even in extremely compromised cases. Prosthetically, InPerio® has a multiunit connection that allows the use of straight or dynamic screws and rotatory or anti-rotational systems for multiple and single restorations (respectively), and allows for a complete digital work-flow.

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Orthognatic Surgery

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It's also known as corrective jaw surgery or simply jaw surgery. Is surgery designed to correct conditions of the jaw and lower face related to structure, growth, airway issues including sleep apnea, TMJ disorders, malocclusion, problems primarily arising from skeletal disharmonies, otorrino orthodontic dental bite problems that cannot be easily treated with braces, as well as the broad range of facial imbalances, disharmonies, asymmetries and malproportions where correction can be considered to improve facial aesthetics and self esteem.

This surgery is performed via the mouth, where jaw bone is cut, moved, modified and realigned to correct malocclusion or dental facial deformity. The word "osteotomy" means the division of bone by means of a surgical cut.

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Development and initial validation of the Oral health activities questionnaire

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Statement of the problem: The purpose of this study was to introduce a new Oral Health Activities Questionnaire (OHAQ, hereinafter) that examines different activities and behaviours related to the oral hygiene regimen of each analysed subject.

Methodology & Theoretical Orientation: A sample of 658 students was analysed to determine the OHAQ scale's basic metric characteristics. To determine the construct validity of the OHAQ, descriptive statistics and correlation analysis, as well as differences testing, were applied to groups of subjects on the basis of self-reported oral status measures.

Findings: The dimensions of oral health activities were determined, and the scales for their measurement were constructed. Females and males differed in the OHAQ questionnaire measures. Significant but low inter-correlations were found among the measures. In the female and male subsample, four different oral health (OH, hereinafter) types of subjects were identified, exhibiting different characteristic behaviours regarding oral health. OHAQ scales showed good discriminant validity, revealing the differences related to specific self-reported oral status measures (e.g., frequency of toothache and the number of filled teeth).

Conclusion & Significance: The OHAQ represents a satisfactory measurement instrument for determining the level of OH activities and for doing quick and reliable classifications of the participating subjects according to their OH activities and behaviours. The process of further validation and advancements of the OHAQ scales and measures should be continued through a clinical examination of subjects.

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Exploring the toxicity and biocompatibility of recent advances in biomaterials for Dentistry and Maxillofacial surgery

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The growing interest in using biomaterials for tissue engineering in recent years is largely due to their potential in Dentistry and Maxillofacial Surgery. One such material, hydroxyapatite, is often used for bone reconstruction because its chemical structure is similar to that of human bone. A particularly promising source of hydroxyapatite is Fish Scale-Derived Hydroxyapatite (FSHA), which is rich in calcium phosphate and has been shown to support cellular growth and attachment, indicating its biocompatibility.

Maintaining the shape and structure of the alveolar ridge after a tooth extraction is crucial for successful implant placement and prosthetic rehabilitation. To address this, researchers have developed 3D-printed bone scaffolds using various biomaterials, such as polylactic acid (PLA) and FSHA, to enhance their bone regeneration potential. This technology allows for precise customization and increased patient-specificity, making it a promising option for socket preservation and alveolar ridge maintenance. With this background, this study aims to evaluate the toxicity and bone regeneration potential of FSHA in both in vitro and in vivo murine models, as well as to develop and assess the biocompatibility of 3D printed scaffolds made from PLA and FSHA.

The in vitro study showed that FSHA is biocompatible, and in vivo studies showed statistically significant new bone production, suggesting that it has regenerative potential. Furthermore, the 3D-printed PLA-FSHA scaffolds displayed compressive strength comparable to that of human cancellous bone. The estimated average pore size of the scaffold was $572 \pm 33 \mu\text{m}$, which is suitable for angiogenesis, cell migration, and proliferation. The biocompatibility of the PLA-FSHA scaffolds was also confirmed through in vitro and in vivo testing in accordance with ISO10993-4/5/6, including tests for hemocompatibility, cytotoxicity, and histological analysis. Based on the results of this study, it can be concluded that FSHA, due to its good osteoconductive properties, can be used as a promising option for socket preservation in various forms in dentistry and maxillofacial surgical applications.

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Regulation of Orthodontic tooth movement by stem cells: A Systematic Review

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During Orthodontic Tooth Movement (OTM), the tooth relocates to a new periodontal position formed by alveolar bone and periodontal ligament remodeling. Instrumental to this process and to the maintenance of homeostasis in periodontal tissues are a unique group of multipotent stem cells residing in the periodontal ligament, called Periodontal Ligament Stem Cells (PDLSCs). PDLSCs can respond to mechanical (orthodontic force), environmental (hypoxia) and biological (paracrine signals) stimuli present during OTM, and orchestrate it both directly (osteogenic differentiation and osteogenesis, collagen regeneration in the extracellular matrix of the periodontal ligament) and indirectly (paracrine signaling with other cell types to promote angiogenesis, osteoclastogenesis or recruiting of circulating cells to the periodontal ligament). The understanding of the mechanisms through which PDLSCs govern OTM, as well as the stimuli which cause this response and the different signals and messengers involved could give rise to development of future therapies leveraging modulation of endogenous PDLSCs activity to control OTM, adding Orthodontics to the growing number of disciplines which benefit from the application of stem cell therapies, for many the next revolution in Medicine.

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