

Saturday, March 4, 2023, 8h30

Session title: **Digital tools to prevent periodontal complications in orthodontic treatment - avoid/decrease periodontal complications and to prepare the ideal 3D positioning of the implant**



Moderator: **Prof. dr. Véronique Christiaens** (her CV can be found under her profile in the app)

### **Abstract**

Preoperative evaluation of hard and soft tissues may enable the identification of clinical cases at high risk for mucogingival complications related to orthodontic therapy. A structured, scientifically based methodology on how to perform this preoperative evaluation will be presented. An overview of how Clear aligner therapy (CAT) planning has incorporated 3D imaging data of bone and roots, superimposed on intraoral scan data will then be presented. These features can aid in optimal positioning of teeth and bone to allow for safe orthodontic movement. During the presentation, adjunctive applications of CAT in conjunction with periodontal plastic surgery for comprehensive functional and esthetic management of patients will be discussed.



**Tali Chackartchi** (her CV can be found under her profile in the app): *Periodontal phenotype evaluation and modification*

Orthodontic therapy is of widespread use among children and adults. This treatment modality is aimed to improve esthetics and function in cases of malocclusion. Being an elective treatment, we aim for an esthetic treatment outcome with no adverse effects. Periodontal phenotype is defined by the characteristics of the bone and its overlying gingival phenotype. Certain bone morphologies and soft tissue phenotypes might be considered as risk factors for the development of gingival recessions following orthodontic tooth movement. Gingival recessions might compromise the esthetic treatment outcome as well as tooth stability in advanced cases.

Preoperative evaluation of hard and soft tissues surrounding the treated teeth, considering the planned orthodontic tooth movement, might enable the identification of clinical cases at high risk for mucogingival complications related to orthodontic therapy.

A structured scientifically based, methodology will be presented illustrated with clinical cases.



**Dr. Cristina Sola and Homa H. Zadeh, DDS, PhD** (CVs to be found in their profiles in the app): *Optimization of periodontal plastic surgical outcomes with combination of VISTA and Clear Aligner Therapy*

Orthodontic therapy is a valuable adjunct to periodontal and implant therapy by optimizing the position of roots for improved functional and esthetic outcomes. Conditions such as crowding or unfavorable root positions may predispose to gingival recession. Pathologic migration, secondary to periodontitis may also require orthodontic therapy to return the dentition to pre-disease position. Teeth that are located outside of the alveolar bone are more prone to gingival recession and the efficacy periodontal root coverage is reduced. Orthodontic therapy may be instrumental to increase the efficacy of periodontal plastic surgery by repositioning roots in more favorable position for the treatment of gingival recession defect. However, orthodontic therapy may also be associated with adverse periodontal responses, such as gingival recession or marginal bone loss. Clear aligner therapy (CAT) has emerged as a form of orthodontic therapy that is well-accepted by adults. In particular, CAT has significant advantages in periodontal patients, showing better tissue response. Recent advances in digital planning for CAT has incorporated 3D imaging data of bone and roots, superimposed on intraoral scan data. These features can aid in optimal positioning of teeth and bone to allow for safe orthodontic movement. This presentation will discuss adjunctive applications of CAT in conjunction with periodontal plastic surgery for comprehensive functional and esthetics management of patients.

Educational objectives:

- Adjunctive application of Clear Aligner Therapy to optimize periodontal and implant health and esthetics
- Role of Phenotype Modification Therapy (PMT) in improving orthodontic outcomes
- 3D planning tools available for CAT
- Combination of 3D CBCT imaging with intraoral surface scan data for optimizing alveolar bone and root position



**Maria Cadenas** (her CV can be found under her profile in the app): *Clinical Case*

This presentation shows how Digital Planning can help in a case where periodontal, implant and orthodontic therapy were required. The patient was a 40-yo man whose chief complaints were bleeding gums and increasing tooth gap. Intraoral examination showed a bilateral neutroclclusion of

the canines, upper interincisal diastema, several caries and composite restorations. Teeth 16, 26, 35, 36, 37 and 46 were missing. The upper left premolars were extruded, complicating the prosthetic rehabilitation. Treatment started with caries management and periodontal treatment of the infrabony defect of tooth 11. Afterwards, implants were placed in the third and second quadrants to facilitate orthodontic treatment. The orthodontic treatment approach was to start with sectional bracket placement on the second quadrant, where intrusion was needed. After 6 months, the remaining teeth were bonded. A digital set up was performed before placing the fixed appliances, in order to visualize treatment goals and allow post treatment evaluation. After the end of orthodontic treatment, implant placement was performed in regions 16 and 46, followed by prosthetic rehabilitation.

**Aims:**

- To discuss the role of Phenotype Modification Therapy (PMT) in improving orthodontic outcomes
- To identify how adjunctively applying Clear Aligner Therapy may optimize periodontal and implant health as well as aesthetics

**Key points to remember:**

- The long-term success of orthodontic treatment includes a critical analysis of the patient's phenotype.
- A combination of 3D CBCT imaging with intraoral surface scan data is crucial for optimal alveolar bone and root positioning.