Clinical application of 3D oral dental scanner Condor for indirect ceramic restauration.

HEMMI Bertrand, BOUCHIHA Kévin, PELISSIER Bruno, DURET François
UFR d'Odontologie de Montpellier 545 avenue du Professeur Viala. 34193 Montpellier cedex 5 France

N° P53

CLINICAL PROCEDURES AND DIGITAL (R)EVOLUTION: CONTEMPORARY SYNERGIES IN CONSERVATIVE/ RESTORATIVE DENTISTRY
AIC 19th INTERNATIONAL CONGRESS and CONSEURO
11-13 May 2017 BOLOGNA

Aim : To demonstrate the precision of 3D oral dental scanner Condor (Biotech dental, France) during his clinical application.

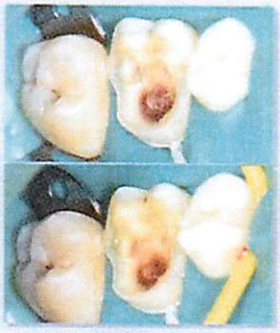
Material and method : A 25-year-old patient was addressed by his orthodontist in the clinic of Montpellier dental faculty with the request or complete conservative treatment before the orthodontic treatment.

Diagnostic: Clinical examination demonstrate: 1) the presence of white spots on vestibular surfaces of 11 and 21 teeth and also on all maxillary posterior teeth; 2) DOV (distal-occlusal-vestibular) amalgam restoration on 26 tooth with defected borders in his occlusal part; 3) Occlusal amalgam restoration on 36 tooth and carious lesion ICDAS 4 on 37 tooth; 4) Occlusal composite restoration on 46 tooth.

Treatment plane: we realize a treatment plan in 4 steps: 1) treatment of tooth 37: caries excavation and direct composite restoration; 2) replacement of amalgam restoration of tooth 36 by direct composite restoration; 3) replacement of amalgam restoration of tooth 26 by direct ceramic restoration using intraoral scanner device; 4) there is not an esthetic request from the patient for the white spot treatment. They will be treated later by remineralization and/or erosion infiltration.

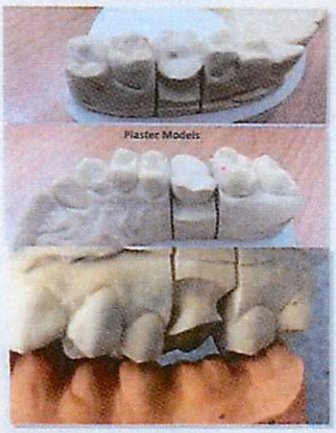

Empreinte optique


Amalgam

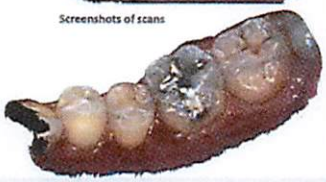

Preparation

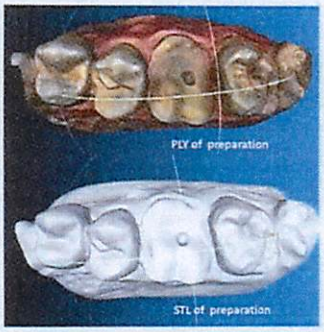

Adhesif and IDS


Final preparation


Plaster Models

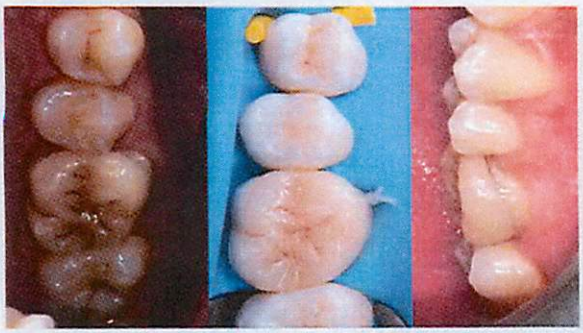

Screenshots of scans




PLY of preparation

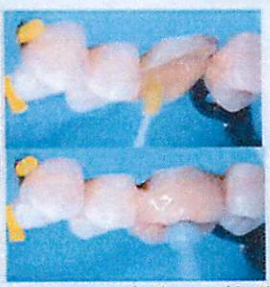
STL of preparation


occlusion


Indirect ceramic restoration with traditional technic


direct ceramic restoration using intaoral sanner device


Laying of the ceramic restauration CFAO




direct ceramic restoration using intaoral sanner device

Results : The indirect and the direct restorations were compared using an objective clinical criteria and the subjective criteria of the patient. We are clearly noticed that the 3D oral dental scanner Condor (Biotech dental, France) is permitted us a better restauration of the anatomical complexity of the tooth surface. In the same time the direct communication with the patient during the machining process help us on the color choices and improve the final form of the indirect restauration.

Conclusion : The use of the camera condor can be easily integrated into a daily dental practice.

CONDOR intraoral scanner

APE, it may lead to esthetic problems after maturation and repositioning of gums and teeth.
1st case: a 35-y patient was not happy with his smile. The patient denied the assumption of any drugs that may have led to teeth discoloration. AI diagnosis was done. Treatment plan started with one-month at-home 10% bleaching. Afterwards, micro abrasion with Opalustre® was performed. APE was treated with gingival surgery. Upper jaw was the one to be prosthetically treated with overlays and veneers. Provisionals were luted with the spot-etch technique. A 2-mm DVO increased was obtained. Lithium disilicate overlays and veneers were adhesively luted. Finally, the lower jaw was treated as the upper jaw. 2nd case: 34-y patient came to restore dental esthetics. From anamnesis it can be concluded that the patient is affected by AI. For economical reason patient would like to firstly treat anterior teeth (1.4 to 2.4). APE is treated surgically, firstly, to reduce both gummy smile and short tooth syndrome, and secondly, to create veneers on normal tooth dimensions. A wax-up and a mock-up were created. Lithium disilicate veneers were created by the technician and adhesively luted.
Clinical results of the study showed that correct diagnoses of AI and APE is crucial in obtaining excellent esthetics.
It can be concluded that an interdisciplinary rehabilitation should be mandatory and conservative therapies should be preferred to conventional prosthetic rehabilitation.

Clinical Cases

Poster P.51

BRINGING HARMONY: CORRECTING THE MIDLINE AND OCCLUSAL PLANE WITH PORCELAIN FELSPATHIC VENEERS

Spagopoulos D.*, Papazoglou E.
Department of operative dentistry, university of Athens ~ Athens ~ Greece

Achieving ideal aesthetics is the optimum goal when referring to smile enhancement. The objective was to precisely derotate the midline and correct the asymmetrical soft tissue architecture. It is very important in complex cases to have the control throughout the whole procedure. The clinician and the technician should work in synergy through delicate stages transforming the soft and the hard tissues predictably.
In this case a 24-year old female with an inclination of the midline and gummy smile wanted to improve it after her second orthodontic treatment. Six months after the clinical crown lengthening of the teeth 14–24 the tissues were stabilized and the patient followed a home bleaching protocol for 16 days. Impressions were taken so that a wax-up was created for the teeth 13–24. The wax-up was tried-in through the mock-up procedure. The patient agreed with the new formed shapes and the teeth were prepared over the mock-up before a final impression was taken. The OneBite® system was used in this case together with photographs to help the technician mount the working model on the articulator with the same midline and cant as in the mouth. The lab created the feldspathic veneers using as a guide the wax-up. They were bonded under rubber dam isolation. Light curing composite cement was preferred because the veneers did not exceed 0.8mm in thickness. Due to the rubber dam use residues of the cement were completely removed with a scalpel N12.
Feldspathic porcelain veneers are the gold standard in achieving esthetics and durability with very high survival and success rates.
In cases with inclined midline the preparation of the teeth should follow the correct inclination to give adequate room for optimum laminate veneer thickness. Recalls are important to preserve the esthetic outcome.

Clinical Cases

Poster P.52

CLINICAL ANALYSIS OF TOOTH FRAGMENT REATTACHMENT WITHOUT ADDITIONAL PREPARATION

Lipari F.*[1], Lo Giudice R.[2], Lizio A.[1], Puleio F.[1], Nicita F.[1]
[1]Department of Biomedical and Dental Sciences and Morphofunctional Imaging, Messina University, AOU Policlinico "G. Martino" ~ Messina ~ Italy, [2]Department of Clinical and Experimental Medicine, Messina University, AOU Policlinico "G. Martino" ~ Messina ~ Italy

The aim of this poster is to describe the clinical procedures of a direct fragment reattachment (DFR) technique without any tooth preparation and to present the results of a 3-year clinical study on the topic. The DFR technique provides a minimally invasive approach achieving clinical success, joining functional results with satisfactory aesthetics.
This clinical study included 9 patients (5 males, 4 females) with a coronal fracture. In all the cases the fragment was available and intact. The authors illustrate the adhesive procedure used. Under local anaesthesia and after placing a rubber dam, both the fractured parts of the tooth and the fragment were disinfected with 0.2% chlorhexidine, etched with 37% phosphoric acid gel, rinsed and infiltrated by the primer and the bonding agents of a 3-step adhesive system in order to obtain the retention without any additional tooth preparation.
After a 1-year and a 3-year follow-up the statistical analysis (McNemar's test) shows the good performances of direct fragment reattachment technique in terms of fragment position and stability, gingival swelling, presence of endodontic and periapical pathology (12 months p=0.008; 36 months p=0.016). After 36 months the detachment of the bonded fragment has been observed in 22.2% of cases (in one case the detachment occurred after a new trauma) and complications were recorded in 11.1% of the patients.
The DFR technique is an effective and excellent alternative to direct and indirect restorations. Our follow-up data show that this ultra-conservative procedure is fast, easy and offers a long-term predictability; it also allows good functional and aesthetic outcomes.

Clinical Cases

Poster P.53

CLINICAL APPLICATION OF 3D ORAL DENTAL SCANNER CONDOR FOR INDIRECT CERAMIC RESTAURATION

Hemmi B.*, Bouchiha K., Pelissier B., Duret F.
University of Montpellier. Department of Conservative Dentistry and Endodontics ~ MONTPELLIER ~ France

To demonstrate the precision of 3D oral dental scanner Condor (Biotech dental, France) during his clinical application.
A 25-year-old patient was addressed by his orthodontist in the clinic of Montpellier dental faculty with the request of complete conservative treatment before the orthodontic treatment.
Diagnosis: Clinical examination demonstrated: 1) the presence of white spots on vestibular surfaces of 11 and 21 teeth and also on all maxillary posterior teeth; 2) DOL (distal-occlusal-lingual) amalgam restoration on tooth 26 with defected borders in his occlusal part; 3) Occlusal amalgam restoration tooth 36 and carious lesion ICDAS 4 tooth 37; 4) Occlusal composite restoration tooth 46.
Treatment plane: we realized a treatment plan in 4 steps: 1) treatment of tooth 37: caries excavation and direct composite restoration; 2)

replacement of amalgam restoration of tooth 36 by direct composite restoration; 3) replacement of amalgam restoration of tooth 26 by indirect ceramic restoration using intraoral scanner device; 4) there is not an esthetic request from the patient for the white spot treatment. They will be treated later by remineralization and/or erosion infiltration.
The indirect and the direct restorations were compared using an objective clinical criterion and the subjective criteria of the patient. We are clearly noticed that the 3D oral dental scanner Condor (Biotech dental, France) allowed a better restoration of the anatomical complexity of the tooth surface. In the same time the direct communication with the patient during the machining process help us on the color choices and improve the final form of the indirect restauration.
The use of the camera condor can be easily integrated into a daily dental practice.

Clinical Cases

Poster P.54

CLINICAL MANAGEMENT OF AN IATROGENIC ROOT PERFORATION IN A MAXILLARY CENTRAL INSICOR

Ilbeyli Cetintas D.*, Kasimoglu Y., Pinar Erdem A., Sepet E.
Istanbul University, Faculty of Dentistry, Department Of Pediatric Dentistry ~ Istanbul ~ Turkey

Root perforations are undesired complications of endodontic treatment which result in loss of integrity of the root and further destruction of the adjacent periodontal tissues. The size,location of the perforation and the time lapse in repair influence prognosis of the tooth. Root perforations can be solved by either nonsurgical or surgical approaches. Present case report illustrates nonsurgical root perforation repair by biodentine.
An eleven-year-old-girl was referred to Istanbul University, Faculty of Dentistry, Department of Pedodontics for the evaluation of maxillary right central incisor. She visited a dentist with the complain of spontaneous pain a week ago. The dentist decided for a root canal treatment. During the treatment a lateral perforation occurred and he referred the patient to a pediatric dentist. At the initial examination, the medical and dental histories were taken and stated as unremarkable. Radiographic examination revealed the presence of mesiolateral mid-root perforation of maxillary left central incisor.
The decision to nonsurgically manage the perforation using biodentine was taken with the informed consent. Root canal enlargement was performed. Hemostasis was achieved with absorbable haemostatic gelation sponge pieces. biodentine was mixed and carried to the perforation site. The root canal was filled with calcium hydroxide paste. after two weeks the canal was opened and biomechanical preparation was carried out. Irrigation procedure was performed by using NaOCl 5.25% and EDTA 17% combination. The root canal was filled with gutta percha and AH plus using lateral condensation technique. The crown restoration was made with composite resin.
At the 3-month follow-up, the radiographic and clinical examinations revealed that the patient was asymptomatic and biodentine provided on effective seal for perforation repair.

Clinical Cases

Poster P.55

CLINICAL MANAGEMENT OF SUBLUXATION AND CROWN FRACTURE IN MAXILLARY CENTRAL INCISORS

Parlak B.*, Pinar Erdem A., Sepet E.
Istanbul University ~ Istanbul ~ Turkey

Anterior crown fractures are common form of traumatic dental injuries that mainly affect the maxillary central incisors. This case report describes the management of maxillary central incisors with subluxation and crown fractures
A healthy 9-year-old girl was admitted to Istanbul University, Faculty of Dentistry, Department of Pedodontics, with a traumatic injury to the young maxillary central incisors, 16 hours after a fall from her bike. Both maxillary central incisors were subluxated and both had crown fractures without pulp exposure. Maxillary left incisor was sensitive to percussion and palpation. A flexible splint was made. As an emergency treatment calcium hydroxide and glass ionomer cements were applied to exposed dentin. Two weeks later, splint was removed after the stabilization of the incisors was achieved and both teeth were restored with composite resins. A fistula was detected at the apical mucosa of the maxillary left incisor after 3 months; prolonged Ca(OH)2 therapy was planned for both apexification and intracanal medicamentation, also antibiotic/corticosteroid paste was applied for the persistent infection. The apical constriction was observed after three months, root canal was filled using the lateral condensation technique with AHplus seal and gutta percha.
Both maxillary incisors were asymptomatic after 5 months recall. The patient is currently in the follow- up phase.
Since the teeth with subluxation and crown fracture without pulp involvement can lose vitality; periodical patient visits are significantly important.

Clinical Cases

Poster P.56

CONSERVATIVE THERAPY OF THE RADICULAR EXTERNAL RESORPTION: MTA VS ADHESIVE SYSTEMS.

Fumei G.*, Bucci M., Rapetti R., Aiuto R., Re D.
University of Milan. Department of Biomedical, Surgical, and Dental Science. Istituto Stomatologico Italiano. Division of oral Rehabilitation.School of Dentistry, Prosthodontic Division. Head prof Dino Re ~ MILANO ~ Italy

Conservative therapy in cases of severe radicular resorption allows to maintain the tooth otherwise irrevocably compromised. Clinical management of these cases carries the possibility of different biomaterials' use to gain the element's morpho-functional restoration. The objective of this study is to show two different therapeutic approaches due to clinical needs: in the first case is possible to observe the utilization of more traditional and reliable MTA while, in the second case, adhesive techniques with ultimate generation composites provides a good aesthetic result.
The first case, male, caucasic, 35y, with no evidences on medical history, showed a root external resorption on the palatal surface of 1.3, occasionally spotted. The second case, male, caucasic, 40y, negative medical history came to our clinic, Oral Rehabilitation University Department of Istituto Stomatologico Italiano, to evaluate the dyschromia on element 1.1.
After a detailed medical history collection, an objective examination and the use of instrumental exams (CBCT), it was possible to diagnose an extensive external radicular resorption in both cases. The complexity of the pathology, with the requesting of a surgical flap, results in a difficult field isolation, no matter which material we use. The possibility to perform the surgery and the restoration under microscope support allowed to upgrade the accuracy in high precision operative steps of positioning of materials.