

investigated the reliability of landmarks identification using two different visualization techniques: 3D reconstruction and multiplanar views. The author found a better reproducibility of cephalometric landmarks using CBCT in multiplanar views than in 3D image reconstructions. Furthermore, the points with lower reliability were the condyle, ramus point and sella turcica, while the most reliable are the ones found on the midsagittal plane.

Conclusion: 2D conventional images may have some issues with distortion and magnification that can lead to cephalometric measurements inaccuracy. Cephalometric landmarks and measurements on 3D CBCT are reliable and can possibly be used as a quantitative orthodontic diagnostic tool. The midsagittal plane and the dental landmarks demonstrated the highest reliability. Landmarks with the lowest reliability included those marked on the condyle and other anatomic structures with prominent curvatures.

Evaluation of tooth size in non-syndromic unilateral and bilateral cleft lip and palate patients: a case-control study

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Aim: Cleft lip and palate is the most common craniofacial aberration, with a general prevalence of 7.94 every 10.000 births. Those patients display a higher rate of various dental anomalies such as: tooth agenesis, microdontia, eruption and root development anomalies. Between those anomalies tooth agenesis is the most frequent with a range of prevalence varying from 50% up to 56.9%, while microdontia is attested in percentage from 36.8% to 69.6%. Literature point out a relationship between tooth agenesis and reduction of mesio-distal dimension of tooth upon the general population, in particular a study of Mirabella et Al. demonstrated how patients with missing upper lateral incisor presented a lowered tooth size compared to a control group without agenesis. The knowledge of dental anomalies in patients with cleft lip and palate is important in order to plan an adequate multidisciplinary treatment. The aim of this study was to evaluate the tooth size in patients with cleft lip and palate presenting at least one upper lateral incisor compared with a first control group of general orthodontic patients without agenesis and a second control group with at least one missing lateral incisor.

Methods: In this retrospective study, records of 30 cleft lip and palate patients recruited from the maxillo-facial surgery clinic of the San Bortolo Hospital of Vicenza, beyond 30 patients representing the control group of

general orthodontic patients from the Padua Dental Clinic and 40 patients with at least one missing lateral incisor treated by a freelance in Trento were collected and analyzed. Patients were selected according to the following inclusion criteria: no other syndromes, no previous teeth extractions, complete development of dentition (excluded secondo and third molars), and adequate orthodontic records composed of panoramic radio-graphs, cephalograms, and dental casts. Mesio-distal tooth size of all tooth excluded second and third molars has been measured on digital or plaster dental casts.

Results: Non-syndromic patients with at least one missing lateral incisor show a significant reduction of mesio-distal tooth size, especially of the contralateral upper lateral incisor and of the lower bicuspid. Tooth size in cleft lip and palate patients is similar to that of the control group of general orthodontic patients without tooth agenesis.

Conclusions: In this study cleft lip and palate patients don't have a reduction of tooth size dimension towards the general orthodontic population.

Lowered tooth size is a characteristic pattern of patients with missing lateral incisors and not of cleft lip and palate patients.

Upper airways 3D study before and after oral appliance therapy in Obstructive Sleep Apnoea

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Aim: Obstructive Sleep Apnoea Syndrome (OSAS) shows apnoea or hypopnea due to upper airways stenosis during sleep with its typical symptoms including snoring during sleep and excessive daytime sleepiness. Cone Beam Computed Tomography (CBCT) is useful to reach an accurate 3D volumetric analysis of upper airways. The Oral Appliances (OA) are considered to be an effective treatment for Obstructive Sleep Apnea Syndrome (OSAS). The aim is to detect morphological changes in upper airways using CBCT before and after oral appliance therapy.

Methods: The study included 30 patients (18 males and 12 females). They were diagnosed with OSAS using polysomnography (PSG). Some criteria has been applied to diagnose OSAS: an apnoea-hypopnoea index (AHI) of >5 per hour during sleep and pathological daytime sleepiness. The therapeutic effect of oral appliance was evaluated by using PSG

and when it showed an AHI of <10 or a decrease of >50%. Two types of OA were applied: the Mandibular Advancement Device and Twin Block Appliance. These enlarged the upper airways by holding the mandible forward, at the 60-70% of the maximum mandible advancement and at the minimum vertical position. A CBCT was performed in all the patients.

Results: The mean upper airways' 3D volumetric reconstructions increased significantly during the presence of OA versus the absence of OA ($p < 0.01$). AHI diminished significantly during the presence of OA ($p < 0.01$). Oral therapy is effective for treating mild and moderate OSA.

Conclusion: the advantage of a 3D evaluation of the upper airway during OA therapy is the accurate visual confirmation of morphological changes in each region of the upper airway and it could increase the compliance and motivation of the patients for the treatment. OSAS treatment methods included surgery, nasal continuous positive airway pressure (NCPAP), weight reduction, drug therapy and, in the mild and moderate OSA, the use of oral appliances. CBCT is useful to detect morphological changes of upper airways, by a 3D evaluation analysis during oral devices' use. The management of the obstructive sleep apnoea syndrome could be challenging. The treatment recommendations should be proposed by a multidisciplinary approach, that involves different specialists: otorhinolaryngologists surgeons, neurologists, sleep doctors and dentists.

Surgery-first approach vs conventional orthodontic surgical treatment of dental and skeletal malocclusions

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Aim: The aim of this study is to assess the benefits, limits and indications of surgery first approach (SFA) and compare main features of conventional combined approach.

Methods: Conventional combined surgical and orthodontic treatment of dentofacial deformity includes a prolonged period of presurgical orthodontic

therapy (12-18 months) and often excessively long postsurgical orthodontic period resulting in an extended treatment time (2-3 years) which may be exhaustive for the patient to sustain. In addition, the visual impact of unpleasant fixed appliances and often worsening or aggravation of the existing deformity at dental and soft-tissue level during the pretreatment period, resulting from decompensatory tooth movements may lead to considerable patient dissatisfaction and may lead the patient to give up treatment. The surgery-first approach has been introduced to compensate the previously mentioned untoward effects of conventional orthognathic surgery (prolonged treatment period, unsightly long-term braces visibility, worsened facial deformity) yet, produce equally excellent results if carefully selected and appropriately managed.

Results: Following orthognathic surgery, a period of rapid metabolic activity within tissues is known as the regional acceleratory phenomenon (RAP). By performing surgery first, RAP can be exploited to facilitate efficient orthodontic treatment. This phenomenon is believed to be a key factor in the notable reduction in treatment duration using SFA. The phenomenon of regional acceleration could be utilized to enhance faster tooth movement which considerably reduces treatment duration and may also present difficulties associated with tooth movement. It is very important that the orthodontist and surgeon involved in SFA should closely not only follow the orthognathic surgery principles but also understand the limitations of orthodontic teeth movement and the surgery-first approach.

Conclusion: The surgery-first approach has improved rapidly since its introduction. The indication for the surgery-first approach has widened with technical advancement. However, the limitations of this approach should be considered. Team approach between surgeons and orthodontists is a vital component for successful treatment. The surgery-first approach was developed to improve patient care. The first indication for the surgery-first approach should be patient demand. Patients, generally, do not like preoperative orthodontic treatment. The primary aim of preoperative orthodontics is decompensation and occlusal stability after surgery. The surgery-first approach is basically a team approach between orthodontists and surgeons. Any surgery without a preoperative consultation between surgeons and orthodontists is inadvisable. Based on this consultation, the patients who do not require extensive preoperative orthodontics are indicated for the surgery-first approach. The indications for the surgery-first patient are minimal crowding in the anterior teeth, favorable curve of Spee, and normal range of angle between the basal bone to upper and lower incisors.