

Orthodontic Principle and Guideline in Surgery-First Approach

Daniel C. Shing Huang, DDS, PhD, 9/25/2017 8:00am

At the beginning of 21st century, the concept of patient-centered care was introduced to provide care that is respectful of and responsive to individual patient preferences, needs, and values and to ensure that patient values guide all clinical decision. On the same trend in orthognathic sugery, the surgery-first approach has become a new paradigm for providing more effective and efficient care to fit patient needs. Up to the present, the surgery-first approach has been documented to shorten or totally eliminate preoperative orthodontic treatment. However, most of the surgical treatment plan is carried out in 2D or 3D skeletal and dental image. The changes in soft tissue are simulated after the skeletal and dental changes are determined. We shall realize that the major concern of patients is seeking orthognathic surgery to improve their facial appearance. But the changes of facial appearance is always the last choice, not the first choice in deciding surgical movement.

In this presentation, a new concept will be presented to show how soft tissue changes could be the determinant factor for surgical movement. How to create a best face for patients should be the first priority, not the last priority in deciding skeletal and dental movements.

Orthodontic Diagnosis for Yaw, Roll and Pitch Problems

Daniel C. Shing Huang, DDS, PhD, (9/26/2017, 13:30-17:00)

The accurate evaluation of craniofacial deformities is the most important preparation before orthognathic surgery. Three dimensional (3D) computed tomography should be used to avoid image distortion which is inherent in two dimensional (2D) images e.g., cephalometric radiography or photography. The evaluation should be started from the view that patients look into themselves i.e. the frontal view for yaw and roll problems. The pitch problems in vertical and horizontal dimensions (i.e. lateral view) should be the last step to identify.

During this workshop, the following steps will be demonstrated to work out the yaw, roll and pitch discrepancy in hard and soft tissue.

1. How to orient the CBCT according to natural head position
2. How to determine the mid-facial plane (MFP) using hard and soft tissue from upper and middle face.
3. How to identify the yaw discrepancy in hard and soft tissue
4. How to identify the roll discrepancy in hard and soft tissue
5. How to identify the pitch discrepancy in vertical dimension
6. How to identify the pitch discrepancy in horizontal dimension

These yaw, roll, pitch discrepancy should be the goals to be corrected in the orthognathic surgery. The best facial appearance should be improved after correcting most of the yaw, roll, and pitch discrepancy in the soft tissue.

Orthodontic Evaluation and Planning for Facial Aesthetic

Daniel C. Shing Huang, DDS, PhD, 9/27/2017 8:00am

Throughout human history, facial attractiveness has been pursuit for more than 5,000 years. How to define the facial attractiveness has been attempted for thousand years. Various methods including neoclassic canon, proportion, craniofacial anthropometry, golden ratio, 2D or 3D cephalometric norm and esthetic lines have been proposed to define facial beauty. Unfortunately most of the proposed, quantified measurements could not be reproduced in a large sample size or in different ethnic, gender, or age groups.

As a clinician, without possessing an accurate guide for facial beauty, should not promise our patients to have the most beautiful face after orthognathic surgery. Instead, we shall communicate with our patients about the limit of current knowledge for the beautiful face. We will do our best to create your best face by correcting most discrepancy in yaw, roll and pitch dimensions.

The following steps should be followed to create the best face for each patient.

1. The importance to evaluate face as patients seeing themselves
2. Natural head position should be used for clinical evaluation
3. Determining the mid-facial plane in the upper and middle regions of the face
4. Determining the yaw discrepancy for hard and soft tissue in axial view
5. Determining the roll discrepancy for hard and soft tissue in coronal view
6. Determining the pitch discrepancy in vertical dimension
7. Determining the pitch discrepancy in horizontal dimension

Application of CW and CCW Rotation in Orthodontic Planning for Surgery-First Approach

Daniel C. Shing Huang, DDS, PhD, 9/27/2017 9:00am

The surgery-first approach has become a new treatment paradigm in correcting dentomaxillofacial deformities. As compared with “orthodontics-first” approach, surgery-first approach has been documented for the following advantages.

1. Total treatment time is reduced by eliminating or shorting preoperative orthodontic treatment period.
2. The facial profile is improved from the onset of treatment as a result of skeletal base correction.
3. Patient satisfaction and cooperation rates are high due to immediate improvement in facial appearance.
4. Orthodontic decompensation is efficient and effective, in response to the establishment of a proper maxillomandibular relationship and the regional acceleratory phenomenon.
5. Early maxillomandibular advancement could increase the dimensions of the upper airway and could immediately improve the breathing disorder.

However, many disadvantages about “surgery-first” approach have been published too. Most of disadvantages are related to the final dental occlusion which could not be fitted properly after surgical movements. Therefore, any occlusal condition with the potential to compromise the surgical procedure or the clinical outcome (e.g., severe dental crowding, needing extractions, significant facial asymmetry with 3-dimensional dental compensations or chin deviation, severe transverse discrepancy requiring surgically assisted rapid palatal expansion, arch discrepancy, missing teeth, and Class II Division 2 malocclusion with overbite) was considered a contraindication for surgery-first approach (AJODO, 2016;149:448-62). Consequently, high clinical expertise, accurate prediction of postoperative tooth movement, and precise assessment of skeletal discrepancy are mandatory for doing “surgery-first” approach.

In this presentation, a new concept of using “concentric circles transformation” technique could achieve maximal skeletal movement with minimal dental movement in sagittal plane, coronal plane and transverse plane respectively. To keep minimal dental movement, most of the mentioned dental problems could be avoided. The facial beauty could still be achieved with the needed maximal skeletal movement.