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Yiu Yan Leung

Aesthetic Considerations in Orthofacial Surgery **1**

Federico Hernández-Alfaro and Adaia Valls-Ontañón

Currently, the wish to optimize facial esthetics—in the context of a dysfunctional occlusion or not—has become the main motivation for orthognathic surgery in many cases. In this context, considering that protrusive faces are advised more attractive and that the lack of skeletal support accelerates the aging process, orthognathic surgery will mostly involve a forward movement of the maxillamandibular complex.

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Tom C.T. van Riet, Cornelis Klop, Alfred G. Becking, and Jitske W. Nolte

Orthognathic surgery in asymmetric cases is challenging because of diversity and individuality. Clinical observations are of paramount importance and need to be systematically thorough. Three-dimensional diagnosis and virtual planning have been proven extremely helpful in facilitating treatment toward symmetry in difficult cases with increasing precision. Compared with orthognathic surgery in symmetric situations, asymmetries produce numerous pitfalls and provide opportunities for out-of-the-box procedures.

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Rama Krsna Rajandram, Lavanyah Ponnuthurai, Komalam Mugunam, and Yunn Shy Chan

Bimaxillary protrusion is a unique dentofacial deformity trait that can exist in an individual as an isolated problem or in combination with other skeletal and dental-related issues. Orthodontist and oral and maxillofacial surgeons are often the main primary team involved in the management of bimaxillary protrusion. Clinical dilemma often exists as cases can either be treated orthodontically or may require a combination of orthodontic and skeletal segmental orthognathic surgery. This article aims to help clinicians improve their approach to management of bimaxillary protrusion by creating a classification based on the severity that can guide treatment selection.

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Hao Wu, Dongming He, Yong Wu, Lingyong Jiang, and Xudong Wang

Orthognathic surgery is an effective approach to correct vertical maxillary excess (VME), which is a common maxillofacial deformity and exhibits excessive vertical development of maxilla. This review summarizes different clinical features of total, anterior and posterior VME, as well as corresponding surgical managements guided by preoperative computer-assisted surgical planning. The virtual simulation will do favor to the final determination of individual surgical plans to achieve satisfactory outcomes. Finally, a typical clinical case will be presented to demonstrate the surgical management of VME.

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Bernadette Quah, Timothy Jie Han Sng, Chee Weng Yong, and Raymond Chung Wen Wong

Obstructive sleep apnea (OSA) involves obstruction or reduction of an individual's airway during sleep and is associated with several comorbidities. Patient evaluation includes detailed history, clinical and radiographic examination, endoscopy, and polysomnography. Management may be nonsurgical or surgical, and Phase II of the Stanford Protocol of surgical management involves maxillomandibular advancement (MMA). Surgical considerations (eg, degree of movement, timing of surgery) and potential complications specific to MMA are discussed in this review. With adequate planning and communication with the patient, MMA is effective in treating OSA, as measured with objective and subjective measures.

Patient-Specific Implants in Orthognathic Surgery **61**

Dion Tik Shun Li and Yiu Yan Leung

Virtual surgical planning and three-dimensional (3D) printing have broadened the horizons of oral and maxillofacial surgery, including orthognathic surgery. 3D-printed personalized surgical guide and patient-specific implant (PSI) not only serve to guide accurate osteotomies and as a good fitting of osteosynthesis plate, but more importantly define a revolutionary waferless approach concept that is totally different from the conventional wafer-guided jaw fixation technique. This review discusses the limitations of the conventional orthognathic approach, and how PSI may overcome these limitations, improve accuracy, and bring additional benefits in the execution of orthognathic surgery.

Surgery First and Surgery Early Treatment Approach in Orthognathic Surgery **71**

Gabriele A. Millesi, Matthias Zimmermann, and Maija Eltz

We have observed a revival of the original Surgery First approach in orthognathic surgery. Fully digital planning and simulation of the surgery has improved the predictability of Surgery First procedures. The orthodontist plays a crucial role in the successful management of Surgery First and Surgery Early cases. Surgery First and Surgery Early procedures have made the correction of a dentofacial deformity and dysgnathia a clear and transparent procedure. The decision of the treatment protocol is based on a thorough consideration and discussion between the surgeon, the orthodontist, and the patient for a successful outcome.

Zygoma and Mandibular Angle Reduction: Contouring Surgery to Correct the Square Face in Asians **83**

Michael D. Han and Tae-Geon Kwon

Changing the facial appearance with facial contouring surgery is popular, especially in East Asian countries where a square face is a common chief complaint. Mandibular angle reduction, malar reduction, genioplasty, and chin and body contouring surgery can be performed as independent or ancillary procedures during orthognathic surgery. Many techniques have been developed and different osteotomy designs have been proposed to enhance outcomes and minimize complication risks. Here, we review the surgical techniques and considerations for mandibular angle and malar reduction, the two most commonly performed contouring surgeries in East Asia to correct the square face.

Genioplasty in Contemporary Orthognathic Surgery 97

Mrunalini Ramanathan, Elavenil Panneerselvam, Anantanarayanan Parameswaran, and Takahiro Kanno

In contemporary orthognathic surgery planning, the genium/chin constitutes an important part that contributes to the maxillofacial profile. The aesthetics of the lower face is affected by the position of the genium which makes reestablishment of genial morphology an essential component. It is hence necessary to evaluate the genium objectively on its individual merit, and any discrepancy is addressed accordingly. This review presents an overview of contemporary genioplasty techniques, their applications, and considerations on stability, osteosynthesis, complications, and the future developments.

Rhinoplasty as an Adjunct to Orthognathic Surgery: A Review 115

Tian Ee Seah and Velupillai Ilankovan

Orthognathic surgery is a well-recognized method to correct dentofacial deformities. The main goal of orthognathic surgery is to improve soft tissue change. Soft tissue changes to the nose have been well documented. Simultaneous rhinoplasty during orthognathic surgery can be performed to correct existing inherent nasal deformities and also the unfavorable changes that arose from the maxillary surgery. Challenges for concurrent nasal surgery with jaw surgery include preoperative, perioperative, and postoperative which can be overcome with meticulous planning and experience. In complex cases, rhinoplasty can be staged in the last 6 months after the orthognathic surgery.

Definitive Rhinoplasty and Orthognathic Surgery for Patients with Cleft Lip Palate 127

Riham Eldesouky and Amir Elbarbary

While primary cleft lip nasal deformity has been well described, secondary cleft lip nasal deformity reflects the combination of residual deformity that follows primary operative maneuvers and growth-related nasal distortions. Secondary cleft lip nasal deformities are further associated with underlying skeletal and dentofacial abnormalities along with soft tissue constriction adding to the complexity of the deformity and posing major aesthetic and functional challenges to the multidisciplinary care team. Definitive rhinoplasties are performed to address these deformities and improve the quality of life in cleft patients following skeletal maturity and ideally after all underlying skeletal discrepancies have been corrected by orthognathic surgery. Maxillary advancement with or without mandibular setback is often required after careful planning and orthodontic preparation. Patients with cleft lip benefit tremendously from definitive rhinoplasty irrespective of inevitable residual discrepancies that remain and adjuvant therapies could enhance the overall outcome.

Adjunctive Aesthetic Procedures in Orthognathic Surgery 139

Johan Jansma and Rutger H. Schepers

An important aesthetic goal in orthognathic planning is to improve facial balance, harmony, volume, and symmetry. It is therefore logical that adjunctive aesthetic procedures become a part of the overall orthognathic treatment plan and that their possibilities are discussed with orthognathic candidates. Such procedures help to improve the final outcome of the orthognathic treatment and enhance patient satisfaction. Training and experience are of utmost importance when offering and performing aesthetic facial surgery. This article discusses various facial aesthetic procedures that can be combined with orthognathic surgery, to the patient's benefit, to help them become the most beautiful version of themselves.