

THIRD EDITION

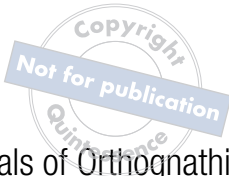
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Essentials of

ORTHOGNATHIC SURGERY

Johan Reyneke, BChD, MChD, FCMFOS (SA), PhD



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Essentials of ORTHOGNATHIC SURGERY **THIRD EDITION**

Johan Reyneke, BChD, MChD, FCMFOS (SA), PhD

Director
Centre of Orthognathic Surgery
Mediclinic
Cape Town, South Africa

Extraordinary Professor
Department of Maxillofacial and
Oral Surgery
University of the Western Cape
Cape Town, South Africa

Clinical Professor
Department of Surgical Sciences
Division of Oral and Maxillofacial Surgery
University of Oklahoma College of Dentistry
Oklahoma City, Oklahoma

Clinical Professor
Department of Oral and Maxillofacial Surgery
University of Florida College of Dentistry
Gainesville, Florida

Associate Professor
Division of Oral and Maxillofacial Surgery
Universidad Autónoma de Nuevo León
Monterrey, Mexico

With contributions from

Steven M. Sullivan, DDS

Professor and Chair
Department of Surgical Sciences
Division of Oral and Maxillofacial Surgery
University of Oklahoma College of Dentistry
Oklahoma City, Oklahoma

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PREFACE

From the outset, the fundamental purpose of *Essentials of Orthognathic Surgery* was to provide the clinician with basic and “to the point” information regarding the assessment, diagnosis, treatment planning, and treatment of individuals with dentofacial deformities. The general plan of the third edition is unaltered; however, as with most fields in medicine, orthognathic surgery is a dynamic science that is developing exponentially over time. It was therefore exciting to refresh the text by adding new developments and ideas and use clinical cases as demonstration.

This edition is enhanced by extending several chapters and by the addition of several new sections such as the diagnosis and treatment of hemifacial microsomia, the role of total temporomandibular joint replacement in orthognathic surgery, functional and esthetic nasal control with Le Fort I osteotomy, functional tongue reduction for open bite cases, and indications and implementation of a unilateral sagittal split osteotomy for the correction of mandibular asymmetry.

Since Vilray Blair completed a bilateral osteotomy of the mandible under chloroform anesthesia in 1897, the correction of mandibular dentofacial deformities has developed into a routine surgical procedure that is carried out all over the world. We are fortunate to have been able to stand on the shoulders of giants in the field of orthodontics and oral and maxillofacial surgery who lay the

foundations of this surgical science. It is, however, our responsibility to develop the science and art of orthodontics and surgery further and to share our experience with our students and colleagues to the benefit of our patients.

There is an old saying: “A pleasure shared is a pleasure doubled.” Successful treatment allows the clinician to share the functional and esthetic changes with not only the patient but also the patient’s family and friends and the orthognathic treatment team. We don’t change faces, we change lives. I have been blessed with the privilege of correcting dentofacial deformities for more than 40 years and honored by sharing experience gained over this time through this book and other contributions. Sharing experience is an essential ingredient of education, and I thank all the postgraduate residents in oral and maxillofacial surgery who honored me by allowing me to participate in their education.

Acknowledgments

I would like to express my sincere appreciation and gratitude to my good friend and colleague Steven Sullivan, who added further value by contributing two new sections: the management of the airway in the orthognathic surgery patient and 3D virtual treatment planning for orthognathic surgery.

1 Principles of Orthognathic Surgery



When people recognize malpositioned teeth or obvious jaw deformities, they usually seek treatment from an orthodontist, who can improve tooth alignment, function, and facial esthetics. More severe deformities that require a combination of orthodontics and surgery for correction are called *dentofacial deformities*. These deformities can affect physical orofacial function in several ways. Mastication can be impaired, and—especially in severe cases—this impairment can affect digestion and general nutritional health. Lip incompetence due to excessive vertical growth of the maxilla results in mouth breathing, which eliminates the physiologic effect of the nose on breathing. Speech is often affected by dentofacial deformities despite the body’s adaptive capabilities. Malpositioned teeth may have a profound effect on proper oral hygiene maintenance, making teeth more susceptible to dental caries and periodontal disease. The patency of the airway and normal breathing is certainly affected by the position of the jaws, and dentofacial deformities are currently considered an important etiologic factor in the development of obstructive sleep apnea. Several types of dentofacial deformities also affect temporomandibular function. The physical effects of a dentofacial deformity are important, but the psychosocial impact of a dentofacial deformity on an individual is often paramount. This type of deformity can profoundly affect the quality of life and may entail lifelong adjustment.

Treatment Options for Dentofacial Deformities

The combination of surgery and orthodontic treatment makes it possible to treat dentofacial deformities that are not possible to correct with orthodontics alone (eg, vertical maxillary excess and severe anterior open bite malocclusion). Orthognathic surgery has created new and exciting opportunities in the treatment of patients with dentofacial deformities and provided the orthodontist with options other than compromised treatment for patients with skeletal disharmony. Experience in orthognathic surgery, an increased understanding of its biologic basis, and a refinement of its art form now enable us to routinely deliver a stable, esthetic, and functional result to patients. When severe skeletal discrepancies result in malocclusion, three kinds of treatment are available: growth modification, orthodontic camouflage, and orthognathic surgery.

Growth modification

This treatment approach should only be considered for mild skeletal deformities. In growing children, dentofacial orthopedics can alter the expression of growth to some extent. However, the extent of growth alteration varies, and this topic remains controversial. The following facial growth patterns may be influenced by growth modification in adolescents:

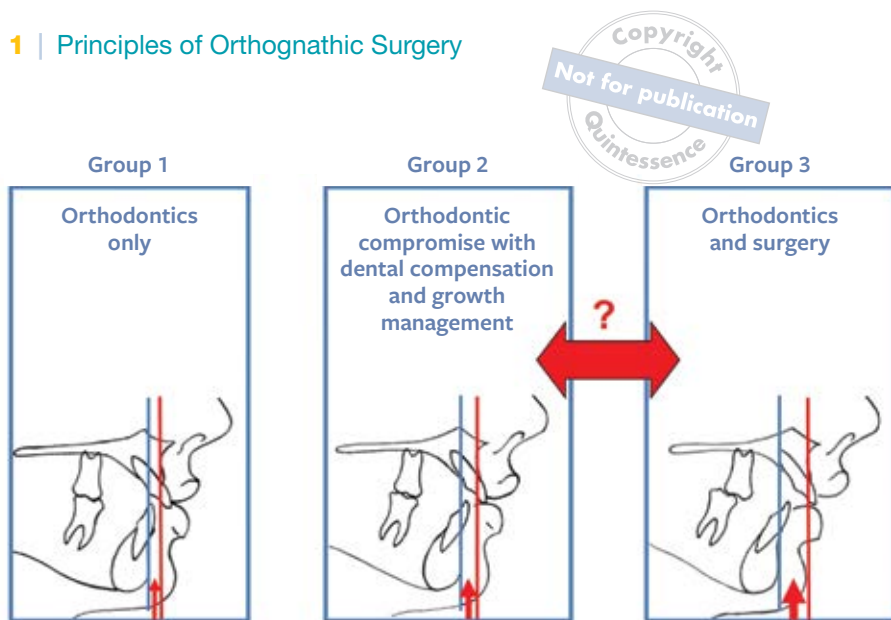


Fig 1-1 Patients who may seek treatment for their malocclusions from an orthodontist can in general be divided into three categories according to the severity of their skeletal deformities. When planning treatment, it can be challenging but is essential to differentiate between groups 2 and 3.

- *Maxillary anteroposterior excess*: Excessive horizontal growth of the maxilla may be impeded by headgear or camouflaged by extraction of the maxillary first premolars and orthodontic retraction of the incisors.
- *Maxillary anteroposterior deficiency*: Moderate improvement can be established by orthodontic protraction.
- *Vertical maxillary excess*: High-pull headgear with temporary anchorage devices can impede the vertical growth of the maxilla and diminish the severity of the deformity.
- *Mandibular anteroposterior deficiency*: Headgear combined with functional appliances may improve mandibular projection.

Skeletal deformities such as mandibular anteroposterior excess, vertical maxillary deficiency, and microgenia cannot be easily influenced by growth modification. In addition, there are some patients who may undergo growth modification for a long period of time with headgear or elastics and end up still requiring a surgical approach. This can be very disappointing and frustrating for the patient as well as their family and health care providers.

Preparing for surgery in these cases would often also require “reverse” orthodontics, decompensating the attempts to compensate the dentition before orthognathic surgery, prolonging treatment even further.

Orthodontic camouflage

Certain patients with mild skeletal discrepancies would benefit from orthodontic camouflage rather than surgery. Dental compensation for a skeletal deformity, or orthodontic camouflage, may, however, be associated with impaired esthetics, questionable posttreatment stabil-

ity, and prolonged treatment time (see Figs 1-2 and 1-3). Corrective treatment may require rebanding and a second orthodontic treatment followed by orthognathic surgery.

Orthognathic surgery

Combined orthodontic and surgical correction is considered the best treatment modality for dentoskeletal imbalances once growth has ceased. Although orthognathic surgery is associated with certain risks and challenges, it has become a more refined and less traumatic procedure for patients and therefore is now a reasonable treatment option. Improving skeletal relationships will result in remarkable facial changes, and this is an important goal to consider.

Selecting a treatment

Patients seeking orthodontic treatment have a wide range of functional and esthetic needs and can be divided into three groups (Fig 1-1):

- *Group 1*: Those with a normal skeletal relationship and malocclusions that can be treated using routine orthodontic techniques.
- *Group 2*: Those with mild to moderate skeletal discrepancies. The malocclusions of many of the patients in this group can be corrected by dental compensation and growth management. Both options—pursuing only orthodontic treatment and pursuing combined treatment—will have advantages and disadvantages that must be discussed between the clinicians, the patient, and the patient’s parents (if necessary). There are several factors that will determine the treatment decision.



Fig 1-2 (a to f) A 19-year-old patient with a skeletal Class II relationship who would be considered to fall into group 3. Her maxillary first premolars were removed and the maxillary incisors retracted in an attempt to correct her occlusion. Unfortunately, the treatment compromised her esthetics and occlusion, resulting in a severe convex profile that accentuated her prominent nose and a Class II deep bite malocclusion.

- Group 3:** Those with moderate to severe skeletal discrepancy and noticeable facial imbalance. The negative effects of compromised orthodontic treatment for patients in the third group would be unacceptable, making combined surgery and orthodontics the treatment of choice. In cases when the surgical option is not acceptable to the patient, it would be wise for the surgeon not to accept the patient for treatment. Orthodontic treatment alone for patients in this group will certainly worsen the esthetics, have doubtful stability, and possibly have negative long-term periodontic implications (Figs 1-2 and 1-3). On the other hand, only pursuing surgery without orthodontics would also lead to compromise.

An important challenge for the clinician is to differentiate between patients on the borderline between group 2 and group 3. An orthodontic camouflage treatment for patients in group 3 would be a mistake, just as surgical treatment of certain patients in group 2 would be inappropriate. The decision regarding the best treatment for borderline patients is influenced by various factors:
- The patient's main complaint and preferences.** Some patients are interested only in improving occlusion, whereas esthetic change is a high priority for others. The patient's priority is an important factor in treatment planning: The patient needs to be able to weigh the two treatment options against each other and must therefore be well informed.

 1. Long orthodontic treatment. This often involves headgear, functional appliances, and a different extraction pattern with a compromised treatment outcome. The possibility of worsening esthetics, instability, and long-term periodontal problems should be discussed with the patient (and parents when applicable).
 2. Shorter orthodontic treatment combined with surgery. The surgical implications, possible complications, and improved treatment outcome must be discussed with the patient (and parents when applicable).
- The orthodontist's preferences and skills.** If the orthodontist has encountered poor surgical results with previous patients, there will be a natural hesitation to continue



Fig 1-3 (a to c) A 16-year-old patient with a skeletal Class III relationship. His four premolars were removed at a younger age, and an attempt was made to establish an occlusion with orthodontic treatment. This is an example of a patient that would fall into the group 3 category; however, he was treated with orthodontics only.

to recommend surgery. The orthodontist's confidence in the success of surgery is an important factor.

- *Available surgical skills.* Orthognathic surgical expertise may not be available in the area, and the patient may be unable to travel.
- *Lack of insurance coverage.* The financial implications of orthodontic treatment with the added burden of surgery and hospitalization can be substantial, and this is a significant factor for patients to consider.

Treating patients in group 3 with orthodontics alone (group 2 treatment) may create additional problems (eg, occlusal relapse, worsening of the profile, obstructive sleep apnea (OSA), periodontal and temporomandibular joint decline) rather than solving the existing problem. Surgical treatment of patients in group 2 is appropriate when camouflage treatment would produce an unacceptable esthetic result or when orthodontics alone cannot achieve the desired facial change. Camouflage treatment also can be considered an alternative treatment method that should render acceptable functional, stable, and esthetic results.

Treatment Objectives in Orthognathic Surgery

Four treatment objectives are fundamental in orthognathic surgery: (1) function, (2) esthetics, (3) airway patency, and (4) stability of results. These objectives form the basic goals in treating patients with dentofacial deformities and often go hand in hand.

Function

Functional and esthetic deformities often exist concurrently, so treatment should be designed to correct both. The orofacial functional objectives should not only incorporate the bite and chewing functions but also include normal breathing, speech, swallowing, and temporomandibular joint function. When correcting a functional problem, the clinician should make full use of the opportunity to improve facial esthetics at the same time. It is particularly challenging to treat patients whose function is poor but esthetics are already good. Careful planning is essential to avoid additional esthetic deformity while providing optimal functional relationships.

Esthetics

The patient's main concern is often their facial appearance, and it is paramount to establish what the patient perceives as esthetically wrong. As Leo Tolstoy said in *Childhood*, "I am convinced that nothing has so marked influence on the direction of a man's mind as his appearance, and not his appearance itself so much as his conviction that it is attractive or unattractive."

Esthetic imbalance is often the result of a significant dentoskeletal deformity. Esthetic results can be improved by surgery alone in some patients, although the functional problem will not necessarily be treated. For example, if a patient with mandibular anteroposterior deficiency is treated with surgical advancement of the chin, this may result in a Class II malocclusion. In contrast, for a patient with vertical maxillary excess, it may be possible



Fig 1-4 This 20-year-old patient was referred to the surgeon with the main complaint that her chin appeared too small and she did not like her “gummy smile.” Previous orthodontic treatment lasted 3 years and consisted of extraction of four first premolars, retraction of maxillary incisors, and proclination of mandibular incisors. She was not offered the option of surgical correction of her skeletal problem. (a) Frontal view. (b) Profile. (c) Smile. The dental compromise for the skeletal disharmony is evident in the occlusion (d) and the cephalometric analysis (e). The ideal treatment for this patient would have been the preoperative orthodontic creation of a Class II malocclusion (possibly with a different extraction pattern), followed by the vertical repositioning of her maxilla and advancement of her mandible. In this case, however, an acceptable, although compromised, esthetic result was achieved by superior repositioning of her maxilla and advancement genioplasty, while the existing occlusion was maintained. →

to achieve a Class I occlusion by orthodontic treatment alone; however, an ideal esthetic result is not possible.

Because the orthodontic placement of the teeth dictates surgical movement (and ultimately facial changes), the orthodontist must carefully assess patients with musculoskeletal deformities before orthodontic treatment is begun. Accurate preoperative orthodontic and surgical planning that considers the indicated surgical movement is necessary to ensure not only good functional results but also an optimal esthetic outcome. As seen in the patient in Fig 1-4, the dentition has been compromised for skeletal vertical maxillary excess and mandibular anteroposterior deficiency. Function and questionable stability have been

achieved; however, the esthetic result is poor. An acceptable result is achieved after surgical compromise.

The patient in Fig 1-5 decided against surgical correction of her Class II malocclusion and vertical maxillary excess dentofacial problem. The orthodontic compromise treatment plan consisted of extraction of first maxillary premolars, retraction of maxillary incisors, and establishment of an occlusion. Four months after beginning orthodontic treatment, the patient thought her appearance was worsening and realized that this treatment option would not be acceptable to her. It was then decided to decompensate the maxillary incisors to open the extraction spaces in the maxilla. The surgical treatment plan consisted



Fig 1-4 (cont) (f) Postoperative frontal view. (g) Postoperative profile. (h) Smile.

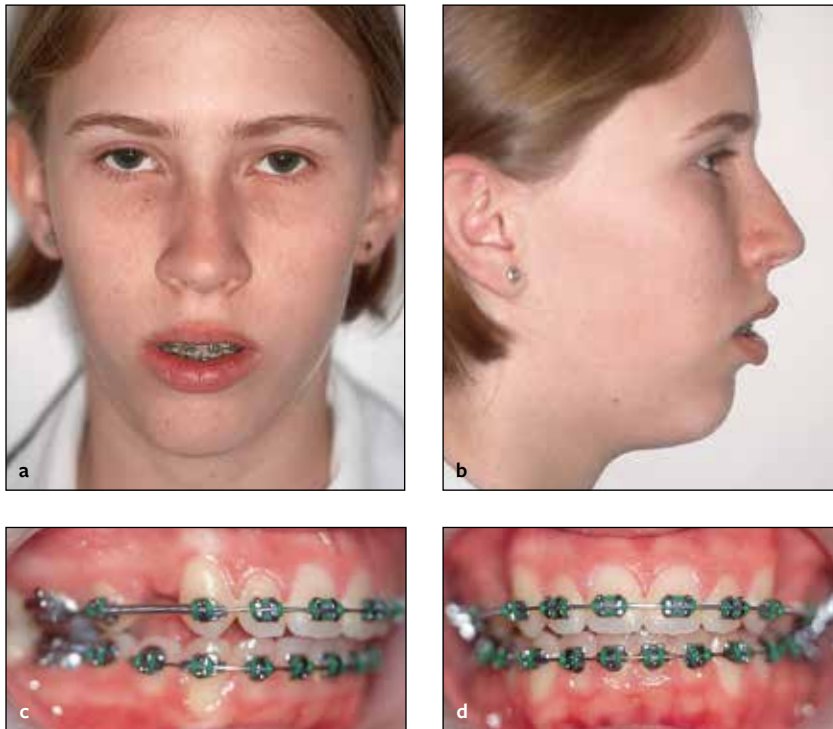


Fig 1-5 Because the patient decided not to have surgery, the compromise orthodontic treatment consisted of extraction of the maxillary first premolars and retraction of the maxillary incisors. The deteriorating esthetic results are evident in the frontal (a) and profile (b) views. (c to e) The diagnosis of vertical maxillary excess and microgenia with a Class II malocclusion is confirmed by the occlusion. →

of a two-piece Le Fort I maxillary osteotomy, superior repositioning of the maxilla, and surgical closure of the extraction spaces by advancement of the posterior maxillary segment (see Figs 1-5g and 1-5h). The mandible would autorotate, and the chin would be surgically advanced by means of a sliding genioplasty. In this case, an acceptable surgical solution could be found (see Figs 1-5i to 1-5m);

however, in other cases, the surgical compromise for the orthodontic compromise may be limited from either an esthetic, functional, or stability aspect. In some patients with orthodontic compromise, the compromised dentition may cause challenges with solving the dentofacial problems and may even prevent a solution.

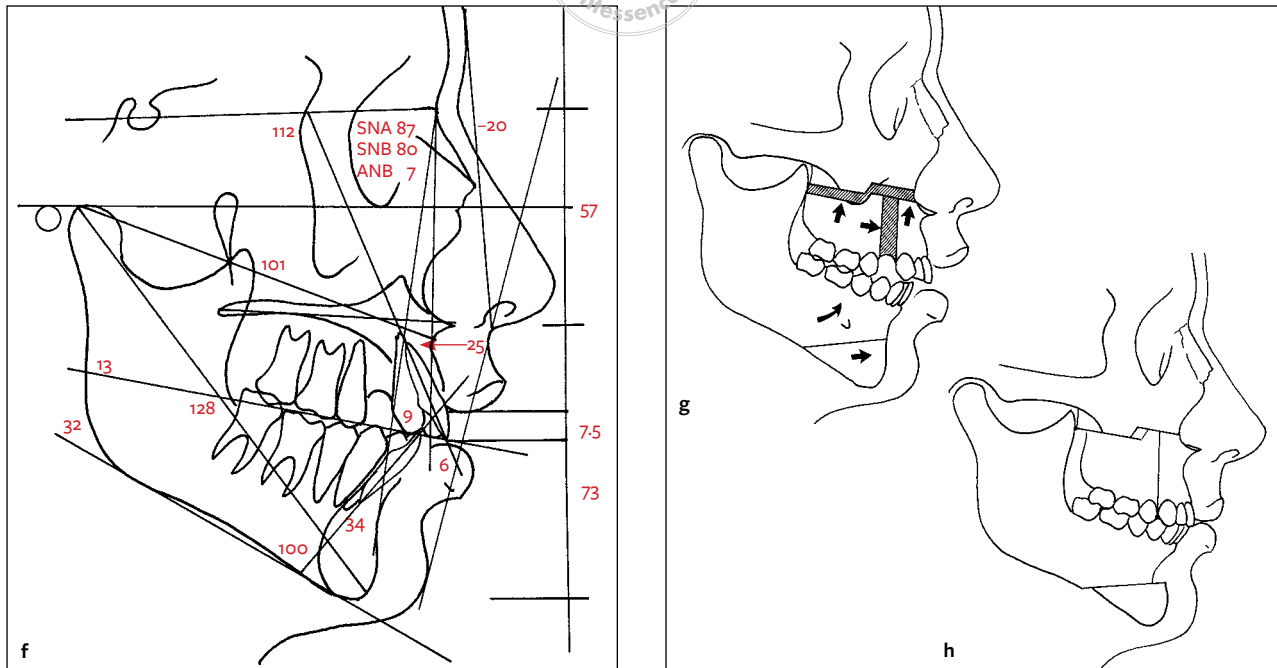


Fig 1-5 (cont) (f) Cephalometric tracing confirming diagnosis. (g) Surgical treatment plan. The maxillary incisors were decompensated, opening the spaces where the first premolars had been extracted. The surgery consisted of a two-piece Le Fort I maxillary osteotomy, superior repositioning of the maxilla, and advancement of the posterior segment to close the spaces. The chin was advanced by means of a sliding genioplasty. (h) Postoperative dental, skeletal, and soft tissue positions. (i) Postoperative frontal view. (j) Postoperative profile. (k to m) Postoperative occlusion.



Airway patency

There are several anatomical risk factors that may play a role in causing OSA. These include regional obesity, alteration of the nasal cavity, enlargement of other critical soft tissue structures of the upper airway, inadequate pharyngeal muscle tone, and a retrusive maxillomandibular skeleton. Patients with

dentofacial deformities may suffer from OSA or be candidates to develop OSA. Some changes caused by dentoskeletal treatment when the patient is young may result in development of OSA when the patient gets older. A thorough medical and sleep history should be taken and a physical examination completed when indicated. See “Airway Considerations in Orthognathic Surgery” in chapter 2.

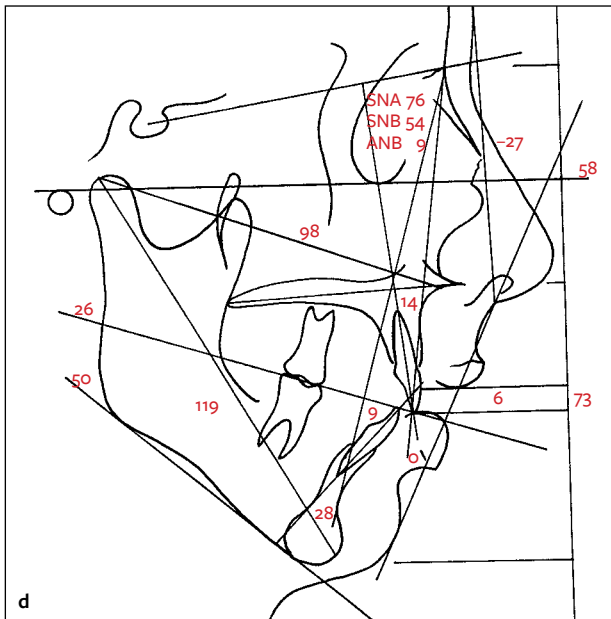


Fig 1-6 A 15-year-old patient reported an inability to bite certain foods with her front teeth. She recalled that she had an open bite before orthodontic treatment. Her four first premolars were removed as part of her orthodontic treatment, which lasted 2 years. Her bite was good at the time of band removal. Her frontal (a) and profile (b) views revealed a convex profile, maxillary vertical excess, and mandibular anteroposterior deficiency. (c) She had a Class II anterior open bite malocclusion. (d) The skeletal soft tissue and dental relationship is evident on the cephalometric tracing. The patient was rebanded and the maxillary arch aligned in three segments; the anterior segment contained the incisors, whereas the right and left posterior segments included all the teeth from the canines to the second molars. The surgery consisted of a three-piece Le Fort I maxillary osteotomy with superior repositioning and expanding of the posterior segments, which allowed the mandible to autorotate. The chin was advanced by means of a sliding genioplasty. The acceptable esthetic and functional result is seen in the postoperative frontal view (e) and profile (f) as well as in the occlusion (g).



Stability

A treatment outcome of good function of pleasing esthetics is not acceptable without stability. Certain orthodontic tooth movements have questionable stability. An example is the extrusion of teeth to correct a skeletal anterior open bite; any preoperative orthodontic attempt to correct this type of open bite adds significant instability to the overall result. After the jaws are surgically repositioned beyond their biologic parameters, they will relapse into a more harmonious musculoskeletal relationship for the individual. Figure 1-6 demonstrates a case in which the orthodontic treatment of an open bite led to poor stability and unacceptable esthetics. Occlusal stability at any moment is the result of the sum of all the forces acting against the teeth (Enlow, 1990). A good occlusion is often the best retainer. It has been shown that the use of sound orthodontic mechanics and surgical techniques will produce optimal stability, function, airway, and esthetics.

Patient Consultation

There will be separate consultations with the orthodontist and with the surgeon, and each will have both an initial consultation to inform the patient about treatment and a definitive consultation to begin the treatment. Before the final consultation with the patient, the orthodontist and surgeon will formalize and agree on a diagnosis and treatment plan.

First orthodontic consultation

Because people with malpositioned teeth and a jaw deformity usually seek treatment from an orthodontist, the orthodontist must usually discuss the possible need for a surgical procedure at the initial consultation. During the first orthodontic consultation, a clinical examination is performed and the appropriate records obtained. The surgeon will need a copy of these records as well.

Definitive orthodontic consultation

The final pretreatment consultation takes place only after a systematic patient evaluation has been conducted and the orthodontist and surgeon have agreed on a final treatment plan. It is mandatory that the patient (and perhaps the parents or spouse) be well informed. Well-informed patients follow instructions and, as a general rule, are easy to treat.

Orthodontists and surgeons should develop their own methods of informing patients about treatment options and gaining their confidence. It is important to keep explanations simple and to use the patient's radiographs and dental casts to demonstrate the problems. Solutions for the problems should be discussed in general terms, and the need for surgery must be explained. The patient and their family (if applicable) must understand the importance of properly aligning the teeth, and that the bite may not improve or even get worse during the preoperative phase. Word choice is important for the orthodontist in discussing the type of surgery required. Terms such as *reposition*, *lengthen*, or *shorten* should be used when describing the surgical procedures. The final and more detailed explanation of the surgery should be left to the surgeon. Treatment results of patients with similar problems may be used to demonstrate specific treatment objectives.

For most patients, the treatment time is extremely important, but it is preferable not to give a specific length of time. It is important, however, to give the patient a general idea of the length of treatment and a treatment profile explaining various phases of the treatment, the sequence of the stages, and the time each phase could take. The patient should be alerted to factors that might influence the treatment time and surgical precision, such as bone density, periodontal disease, patient cooperation, age, and tooth extractions. It is also important at this stage to inform the patient about the cost of the orthodontic aspect of the treatment.

Explanation of typical treatment profile

A typical treatment profile consists of six phases:

1. *Placement of orthodontic bands on the teeth.* Any necessary extractions of teeth (including third molars) are completed at this time. The orthodontic bands are usually fitted 2 to 3 weeks later.
2. *Preoperative/preparatory orthodontic phase (9 to 18 months, on average).* The teeth are now aligned in their optimal positions in each arch. When the orthodontist is satisfied that this preparation is complete, the patient is referred back to the surgeon.
3. *Surgical phase and healing time (4 to 6 weeks).* The surgeon surgically repositions the jaw or jaws into their most favorable relationship to establish a good occlusion (bite) and balanced facial proportions. After a short healing period, the patient returns to the orthodontist for the final correction of the bite. It is very important that the patient see the orthodontist 2 to 3 weeks after surgery for postoperative orthodontic control.



4. *Postoperative orthodontic phase to perfect the bite (3 to 6 months).* The purpose of orthodontics after the surgery is to refine the bite. Minor tooth movement occurs during this phase to finalize the occlusion and achieve a satisfactory result.
5. *Removal of orthodontic bands.*
6. *Retention phase (6 to 12 months).* When orthodontic treatment has been completed, the teeth that have been moved through bone need to be stabilized in their new positions for a time. The orthodontist manufactures and fits a retention appliance, which must be worn by the patient as instructed by the orthodontist.

The duration of the presurgical orthodontic phase will vary as the severity and type of malocclusion varies. For example, mandibular advancement will be performed earlier in the orthodontic phase for Class II deep bite cases than for mandibular setback cases. In fact, in some cases, the orthognathic surgery may be performed before the orthodontic treatment begins. When performing surgery first, it is mandatory that an acceptable, stable occlusion can be established at the time of surgery. This treatment approach requires an experienced and competent orthodontist and surgeon.

First surgical consultation

The initial surgical consultation includes a general discussion of the basic principles of combined orthodontic and surgical treatment and why surgery is necessary. Most patients are apprehensive at this consultation, and the fact that they may need surgery has often come as a surprise to them. The surgeon should therefore use this consultation as an opportunity to inform the patient about the orthognathic surgical principles and to gain the patient's confidence. The importance of a comprehensive treatment plan developed by both the orthodontist and surgeon is explained. At this consultation, a systematic patient evaluation is conducted, and records are obtained if not previously sent from the orthodontist.

Definitive surgical consultation

The definitive surgical consultation is conducted once the orthodontist and surgeon have finalized a treatment plan. The need for orthodontic preparation before surgery is confirmed. The basic principles of the specific surgical treatment, general sequence of events of the surgical phase of treatment, hospitalization time, recovery period, and need for a soft food diet are discussed. The surgical objectives may be explained by treatment results of patients with similar dentofacial problems. A patient information brochure is provided, and the patient is reassured

during the preoperative orthodontic phase that he or she is welcome to discuss with the surgeon any concerns regarding the planned surgery. The estimated costs, including costs of the planned surgery, hospitalization costs, and the anesthetization fee, should also be discussed at this time.

Consultation with Other Disciplines

Consultation with practitioners in other disciplines may be needed in the treatment of patients with a dentofacial deformity.

Periodontics

In general, most periodontal diseases should be treated prior to orthodontic banding. The teeth and periodontium should be sound before treatment. The importance of oral hygiene during the orthodontic treatment phase should be stressed, and the possibility of periodontal treatment after debanding should be mentioned to the patient.

Prosthodontics

Any work on fixed partial dentures is preferably performed after a period of orthodontic retention. However, it is often advantageous for the patient to consult with a prosthodontist before beginning treatment. The prosthodontist can contribute valuable insight into certain aspects of the surgical/orthodontic treatment and prosthodontic rehabilitation. For example, in a patient with congenitally missing lateral incisors, should the interdental spaces be closed, or should spaces be maintained and the missing teeth be replaced by implants or fixed partial dentures? For edentulous patients or those with a limited number of teeth that would not require orthodontic treatment, the preoperative prosthodontic consultation is mandatory.

Implant dentistry

It is often possible to place the necessary implants at the time of orthognathic surgery. It is important, however, to keep any postoperative orthodontic tooth movement in mind. Dental implants can often be placed more accurately after band removal and a short period of retention. However, it will be more expensive for the patient to undergo two separate surgeries. For patients requiring bone grafts before implants can be placed, the surgeon should consider placing the bone grafts during orthognathic surgery.

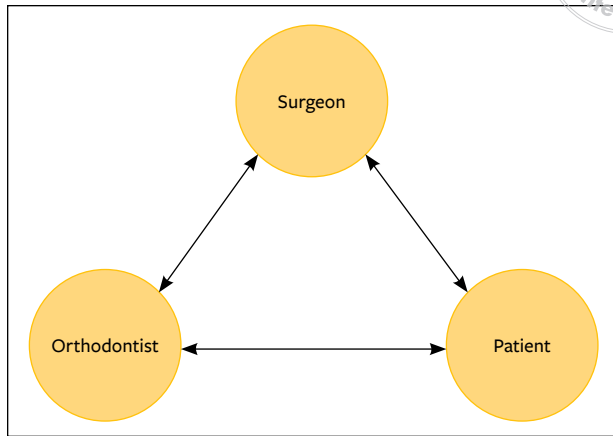


Fig 1-7 Kindness, communication, and free flow of information between the surgeon, orthodontist, and patient facilitate efficient and successful treatment and ensure patient confidence.

General dentistry

Problems such as dental caries, fractures, periodontitis, and poor-fitting crowns should be addressed before treatment begins. The condition of certain teeth may influence the decision of which teeth are extracted for orthodontic reasons. The initial referral to the orthodontist or surgeon is often made by the general practitioner, and it is important to keep him or her informed of the treatment plan and the progress of the patient's treatment. The general practitioner should be part of the treatment team.

Importance of communication

Accurate treatment planning and meticulous orthodontic and surgical practice are essential to the achievement of treatment objectives. Just as important, however, is communication between the clinician and the patient, as well as between clinicians. It is crucial to have adequate communication between the orthodontist, patient, and surgeon about the patient's main complaint and concerns, dentofacial diagnosis, treatment possibilities, and treatment objectives (Fig 1-7). The confident sharing of information with the patient will build trust between patient and clinician. Remember, people want to know how much you care before they care how much you know.

The communication between the surgeon and the orthodontist is equally important. Lack of communication here not only hampers the development of an efficient and sound treatment plan but also generally leads to poor treatment results. Patients are extremely concerned about poor or lacking communication between the orthodontist and the surgeon, and it can lead to confusion. Clinicians should refrain from sending messages to each other via the patient.

Treatment plan

The development of a treatment plan has three advantages:

1. It represents an agreement between the orthodontist and the surgeon on how the patient will be treated.
2. The treatment plan and objectives can confidently be presented to the patient without contradictions.
3. Although the treatment plan may be changed when indicated, it serves as a solid guideline.

The treatment plan may need to be revised or changed after the preoperative orthodontic treatment is under way. The reason for a change in treatment plan and the solution should be discussed by the orthognathic team so that there will be no surprises during the immediate preoperative surgical consultation. Superb orthodontic alignment of teeth and excellent surgical technique do not substitute for good clinical judgment, optimal decision making, proper communication, and empathy with patients.

Recommended Reading

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