

Clinical Paper  
Orthognathic Surgery

# On a definition of the appropriate timing for surgical intervention in orthognathic surgery

**F. Hernández-Alfaro**<sup>1,2</sup>,  
**R. Guijarro-Martínez**<sup>1,2</sup>

<sup>1</sup>Institute of Maxillofacial Surgery, Teknon Medical Centre Barcelona, Barcelona, Spain; <sup>2</sup>Department of Oral and Maxillofacial Surgery, Universitat Internacional de Catalunya, Sant Cugat del Vallés, Barcelona, Spain

*F. Hernández-Alfaro, R. Guijarro-Martínez: On a definition of the appropriate timing for surgical intervention in orthognathic surgery. Int. J. Oral Maxillofac. Surg. 2014; 43: 846–855. © 2014 International Association of Oral and Maxillofacial Surgeons. Published by Elsevier Ltd. All rights reserved.*

**Abstract.** Together with the introduction of new orthodontic techniques and minimally invasive surgery protocols, the emergence of modern patient prototypes has given way to novel timing schemes for the handling of dento-maxillofacial deformities. The aim of this study was to define, justify, and systematize the appropriate timing for orthognathic surgery. A retrospective analysis of orthognathic surgery procedures carried out over a 3-year period was performed. Six timing schemes were defined: ‘surgery first’, ‘surgery early’, ‘surgery late’, ‘surgery last’, ‘surgery only’, and ‘surgery never’. Gender, age at surgery, main motivation for treatment, orthodontic treatment length, and number of orthodontic appointments were evaluated. A total of 362 orthognathic procedures were evaluated. The most common approach was ‘surgery late’. While aesthetic improvement was the leading treatment motivation in ‘surgery first’, ‘surgery early’, and ‘surgery last’ cases, occlusal optimization was the chief aim of ‘surgery late’. Sleep-disordered breathing was the main indication for treatment in ‘surgery only’. Compared to ‘surgery late’, orthodontic treatment was substantially shorter in ‘surgery early’ and ‘surgery first’ cases, but the number of orthodontic appointments was similar. In conclusion, the skilful management of dento-maxillofacial deformities requires a comprehensive analysis of patient-, orthodontist-, and surgeon-specific variables. Each timing approach has well-defined indications, treatment planning considerations, and orthodontic and surgical peculiarities.

Keywords: orthognathic surgery; timing; surgery first; dentofacial anomalies; malocclusion.

Accepted for publication 17 February 2014  
Available online 13 March 2014

During the last decade, treatment concepts in orthognathic surgery have undergone a profound reassessment. In particular, the traditional therapeutic scheme based on a variable length of preoperative orthodontic preparation, surgery itself, and a relatively stable period of postoperative orthodontics,

has given way to a new trend in surgical timing that entails the performance of the surgical intervention prior to orthodontic treatment.<sup>1–7</sup> The so-called ‘surgery first’ approach has gained popularity among orthodontists and surgeons for several reasons. First, the skeletal bases – and there-

fore the aesthetic concern, which is often the patient’s chief complaint – are corrected from the beginning.<sup>1,6</sup> This circumstance improves patient compliance with post-operative orthodontics and makes a powerful contribution to global satisfaction with treatment.<sup>5</sup> Second, orthodontic treatment

– and hence total treatment time – is significantly reduced. This improved orthodontic efficiency is probably related to the transient demineralization of the operated bones due to the regional acceleratory phenomenon (RAP)<sup>1,2,7–11</sup> and to a more efficient skeletal position in which soft tissue imbalances that can interfere with orthodontic movements have been suppressed.<sup>7</sup> Third, when compared to the conventional orthodontics–surgery–orthodontics approach, a ‘surgery first’ protocol does not seem to impair the final occlusal result. Consequently, the satisfaction of orthodontists and patients with the treatment is at least as high as with the traditional timing scheme.<sup>5</sup>

The ‘surgery first’ concept was implemented at our centre in 2010. After documenting our preliminary experience with this approach,<sup>1,5</sup> we realized that a significant number of patients did not fall into this ‘black or white’ (traditional approach vs. ‘surgery first’ approach) classification. Indeed, several patients were operated on at different time-points along the orthodontic treatment timeline. After a comprehensive analysis of the indications and limitations of these different timing schemes, the aim of this study was to define, justify, and subsequently systematize the appropriate timing for surgical intervention in the context of dento-maxillofacial deformities.

### Materials and methods

A retrospective analysis of all orthognathic surgery procedures performed at a specialized centre in dento-maxillofacial anomalies during a 3-year time period (June 2010 to June 2013) was performed.



Fig. 1. Case example 1: Frontal, three-quarter, and profile views of a patient treated with a ‘surgery first’ approach. The patient’s main motivation for surgery was her wish to correct her facial asymmetry and concave profile.

The guidelines of the Declaration of Helsinki on medical protocol and ethics were followed in all treatment phases. Patient clinical records and media files were reviewed with the approval of the institutional medical centre committee on ethical medical practice.

Patients were classified according to the time at which the surgical intervention took place with regards to orthodontic treatment. The categories were established as outlined below.

### Surgery first

By definition, this approach proceeds with orthognathic surgery without preoperative orthodontic preparation and is followed by regular postoperative dental alignment. Our particular methodology has been described in detail elsewhere.<sup>5</sup>

Patients were selected for a ‘surgery first’ sequence on the basis of a skeletal malocclusion requiring combined orthodontic–surgical treatment without extractions, the need for aesthetic

improvement, or sleep-disordered breathing (SDB) as the main motivation for treatment. Orthodontic management was performed by an officially qualified orthodontist with previous experience in orthognathic surgery. Exclusion criteria were as follows: severe crowding in need of extractions, severe asymmetry with three-dimensional (3D) dental compensations, transverse maxillary hypoplasia requiring previous surgically-assisted rapid palatal expansion (SARPE), class II second division with overbite, acute periodontal problems, and underlying temporomandibular joint (TMJ) disease (Figs 1 and 2).

As well as routine virtual planning of the orthognathic osteotomies, the necessary dental movements of the future orthodontic treatment were simulated in a 3D virtual orthodontic setup for this group of patients. This was built by the combined orthodontic–surgical team (Fig. 3).

Brackets (without archwires) were bonded 1 week before surgery. In order to avoid dental movements that could



Fig. 2. Case example 1: Frontal, three-quarter, and profile views after surgery.

Download English Version:

<https://daneshyari.com/en/article/3132484>

Download Persian Version:

<https://daneshyari.com/article/3132484>

[Daneshyari.com](https://daneshyari.com)