Why Surgery-First?

Conventional Surgical Orthodontics

Surgery-First

What are the Problems?

- The worsening facial profile, some masticatory discomfort during presurgical orthodontics, and long-term low QOL were cited as problems. (Proffit, White, Sarver 2003)
- Presurgical orthodontic treatment was time-consuming, taking as long as 24 months. (Luther, Morris, Hart 2003)
- Overall treatment duration was longer than commonly expected, with a mean length of 32.8 months. (O’Brien et al. 2009)
**Styles of Surgery-First**

**Ortho-Driven**
To solve skeletal problems with OGS and dental problems using SAS

**Surgery-Driven**
To solve both skeletal and dental problems using OGS

**Surgery-First**

**Facial Types of Our Surgery-First Cases (N=162)**

- **87%**
- **8%**
- **5%**

Class III (141)  
Class II (13)  
Class I (8)

As of December 31, 2013

Class III patients seem to benefit more from the Surgery-First than Class II cases.  
(Kim, Mahdavie, Evans 2012)

**A Recent Surgery-First Case**

**Point 1: Case Selection**

**Surgery-Driven**
Indications of Surgery-First:
1) Crowding: no~mild  
2) Curve of Spee: no~mild  
3) U1 and L1: normal~mild  
4) Asymmetry: no~mild
(Liou et al. 2011)

**Ortho-Driven**
Indications of Surgery-First:  
Most jaw deformities are indications except for a few specific types of cases.  
(Sugawara 2012)

**Ceph Analysis**

1. CDS Analysis  
2. Wits Appraisal (-24.0 mm)
There is absolutely no difference in the way to make cephalometric predictions between the conventional approach and the Surgery-First. Only the order of the procedures is different.

Class II denture with open bite reveals the true extent of decompensation. (No overcorrection)
Ortho-Driven

The use of the skeletal anchorage system using miniplates or miniscrews is indispensable in the postsurgical orthodontics of SF. (Nagasaka et al. 2009, )

Surgery-Driven

Since skeletal and dental problems are solved surgically, the application of TADs is not necessarily required.

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)

11 days after OGS (Aug 27, 2012)
YI 22-02 At debonding (Jul 11, 2013)

Ceph Superimposition

Facial Changes

Evaluation of End Result

Ceph Analysis

Comparison Pre and Post

1. CDS Analysis
2. Wits Appraisal (-2.5 mm)

Total Treatment Time: 12.0 months
Benefits and Problems

**Benefit 1**
The timing of OGS is entirely up to the patient.
Since the OGS precedes orthodontic treatment, the patient has the opportunity to choose the timing of surgery to allow for the postoperative healing period. (Kim, Mahdavie, Evans 2012)

**Benefit 2**
Facial deformity is immediately corrected.
In Surgery-First, patients can avoid the exacerbation of their profiles and occlusions.

**Benefit 3**
Decompensation can be performed effectively and efficiently.
(Nagasaka et al. 2009)

**Benefit 4**
The total treatment time is much shorter than in the conventional approach.

**Short Group (8.7 mos)**
Initial | Imm. after surgery | At debonding
**Benefit 5**
Tooth movement may be accelerated after OGS.

“OGS triggers a 3- to 4-month period of higher osteoclastic activities and metabolic changes in the dentoalveolus postoperatively.” (Liou et al. 2011)

**Benefit 6**
In Ortho-Driven style, the range of indications for one-jaw surgery is significantly expanded.

**Benefit 7**
In the Surgery-First approach, the unlikely event of a surgical error and a possible post-surgical relapse can be compensated during the post-surgical orthodontics.
The Problem

Without pre-surgical orthodontics, it is difficult to obtain a stable occlusion immediately after OGS.

Conclusion

Although there are two different styles of the Surgery-First approach. Clearly, the benefits of both styles substantially outweigh the problems associated with them. It must be noted that orthodontists and surgeons must be experienced to predictably achieve the desired outcome.

Tohoku Univ.
Prof. H. Kawamura
Prof. H. Nagasaka
Prof. S. Goto
Prof. T. Takahashi

UCONN
Prof. R. Nanda
Prof. F. Uribe

SAS Centre
Dr. H. Momono
Dr. S. Yamada