Orthodontic Treatment of Skeletal Class II Open Bite;
1) Closing the open bite and
2) Solving the A-P discrepancy

Tae-Woo Kim DDS MSD PhD
Professor, Department of Orthodontics
School of Dentistry
Seoul National University
President, Korean Association of Orthodontists
Seoul, Korea

Background

- In 2013 and 2014, two lectures were given regarding open bite.
- They were focused on how to closing the open bite.
- Today's lecture consists of two parts

1) Methods of closing the open bite

2) Methods of solving the A-P discrepancy

1) Methods of closing the open bite

- **One mid-palatal mini-implant + TPA**
- **MEAW**
- **Combinations**

- This part will be explained shortly with the cases for the audience who didn't attend the 2013 & 2014 lectures.

E-handout are available at

1) **2013** https://www.aaoinfo.org/node/625
2) **2014** https://www.aaoinfo.org/node/2382

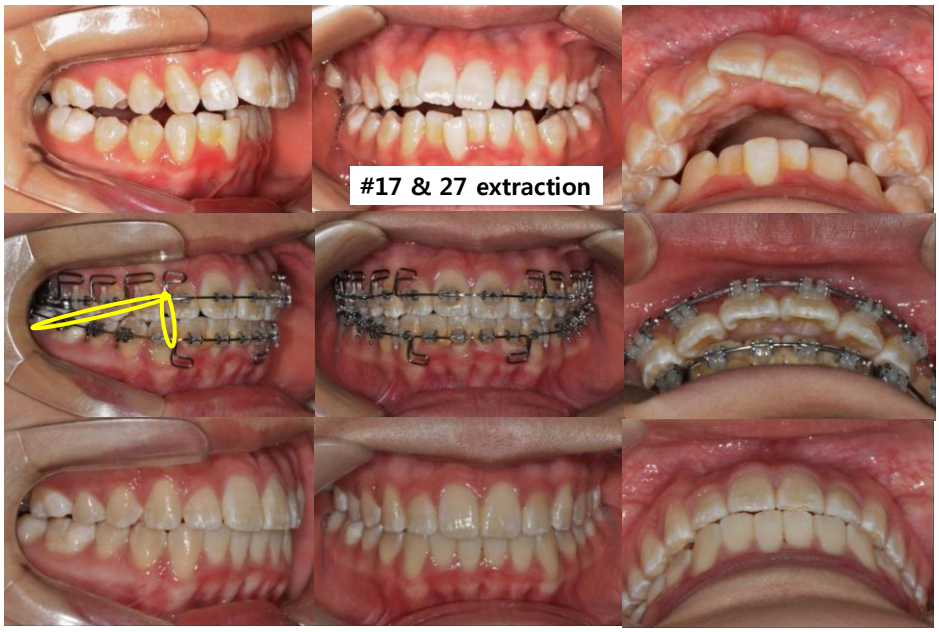
2) Methods of solving the A-P discrepancy

- After closing the open bite, the next challenge is "Antero-posterior skeletal discrepancy". Some of the A-P discrepancy may be decreased during the intrusion of posterior teeth by the counter-rotation of mandible. But it is hard to still to resolve some remaining overjet because of A-P skeletal discrepancy.
- Of course, all of skeletal Class Ⅱ open bite cases cannot be treated by orthodontics only. some of them need orthognathic surgery.

2) Methods of solving the A-P discrepancy

- **Class II elastics with or without upper MEAW**
  - **Class II elastics are the simplest way, but**
  - **for most of open-bite cases have TMJ disc displacement and CO-CR discrepancy, it is limited to use Class II elastics.**
- **Mini-implant**
  - **For distal driving of upper teeth**
- **Anchor plate**
  - **For more extensive distal driving of upper molars**

① Class II elastics with upper MEAW



① Class II elastics with upper MEAW

Limitation in a patient with CO-CR discrepancy.

At upright position　　At supine position

1. During the finishing stage, I try to obtain a stable occlusion at habitual CO position at upright position.
2. If the patient doesn't respond to Class II elastics or relapses in overjet after debonding, please consider the skeletal anchorages for distal driving of upper teeth.

② Mini-implant

For distal driving of upper teeth

② Mini-implant
For distal driving of upper teeth

In this case, because of DJD of TMJ, Class II elastics distracted the condylar heads from the fossa, which made the severe overjet decreased at first.
But after stopping Class II elastics, the overjet appeared again.
By using mini-implants between upper bicuspids and first molars, upper posterior teeth were moved distally and upper anterior teeth were retracted with root lingual torque. This patient showed upper & lower incisal contact at both upright and supine positions

② Mini-implant
For distal driving of upper teeth

Limitation in a patient with CO-CR discrepancy.

After using Class II elastics
At upright position

After stopping Class II elastics
At upright position

1. During the finishing stage of this patient, it was impossible to obtain a stable occlusion at habitual CO position at upright position.
2. The patient doesn't respond to Class II elastics and overjet reappeared just after stopping Class II elastics.
3. The mini-implants were used for distal driving of upper teeth.

③ Anchor plate

For more extensive distal driving of upper molars

③ Anchor plate

For more extensive distal driving of upper molars

In this case, because of DJD of TMJ, Class II elastics distracted the condylar heads from the fossa, which made the severe overjet decreased at first.
But after stopping Class II elastics, the overjet appeared again.
By using Anchor plates in the maxilla, upper posterior teeth were moved distally and upper anterior teeth were retracted with root lingual torque.

Anchor plates

ANCHOR PLATE

New Orthodontic Anchor Plates

This Anchor Plate is made of pure titianium suitable for osseointegration and tissue integration. Anchor plate is developed to provide intraoral absolute anchorage for the intrusion or distalization of molars. This plate has three positions: head, armand body. jeil's Anchor Plate does not disturb any kind of tooth movement because they are placed outside the dentition. Furthermore, this plate is the most distinctive feature of SAS in comparison with other orthodontic implant systems.

Item	T-L Type			T-R Type			Y-L Type			Y-R Type		
Code	AP-TL-010	AP-TL-013	AP-TL-016	AP-TR-010	AP-TR-013	AP-TR-016	AP-YL-010	AP-YL-013	AP-YL-016	AP-YR-010	AP-YR-013	AP-YR-016
Image												

Item	T-S Type			T-M Type			T-L Type		
Code	AP-TS-010S	AP-TS-010M	AP-TS-010L	AP-TM-013S	AP-TM-013M	AP-TM-013L	AP-TL-016S	AP-TL-016M	AP-TL-016L
Image									

Item	Y-R Type			Y-L Type			Y-D Type		
Code	AP-YR-010D	AP-YR-013D	AP-YR-016D	AP-YL-010D	AP-YL-013D	AP-YL-016D	AP-YD-010	AP-YD-013	AP-YD-016
Image									

http://www.jeilmed.co.kr/eng/medi_sub01_01_view.html?part_idx=8&idx=27

Anchor plates

- **Indications**
  - **When the inter-radicular spaces are narrow**
    - **Especially between first and second molars**
  - **When the attached gingiva is too narrow**
  - **When bone quality is poor**
  - **In cases with frequent failure of mini-implants**
  - **When the amount of distal driving of posterior teeth are more than 3mm.**
  - **bone-anchored maxillary protraction for growing Class III patients.**

Advantages

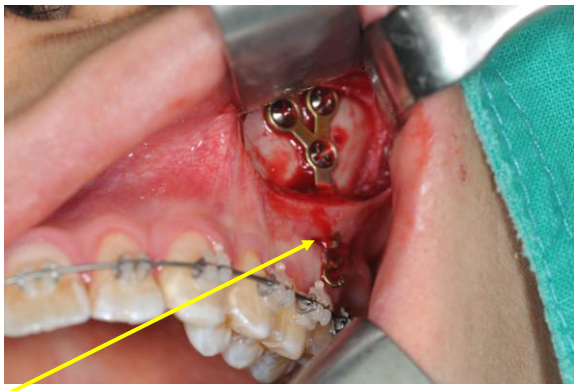
- The greatest advantage of miniplates is their high success rate.
  - In a systematic review of temporary skeletal anchorage devices by Schätzle et al, the average failure rates of various devices were 7.3% for miniplates, 10.5% for palatal implants, and 16.4% for miniscrews.

Junji Sugawara, Temporary skeletal anchorage devices: The case for miniplates
American Journal of Orthodontics and Dentofacial Orthopedics 2014:145(5):559-565

Structure

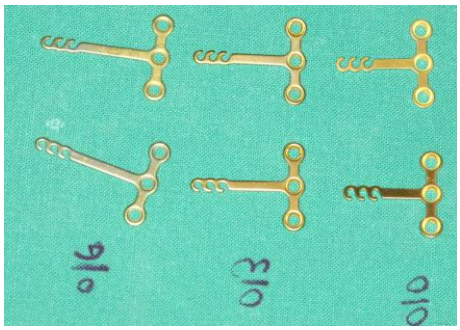
- Head – exposed intraorally
  - circular, hooked, tubular
  - bendable
- Arm
  - 16,13,10 mm
- Body – positioned subperiosteally
  - T, L, Y, I shapes

Maxilla



Small incision is positioned for the head to be appeared through attached gingiva or muco-gingival junction

Mandible



Provided by **Prof. Sung Min Kim**, Department of Oral and Maxillofacial Surgery, School of Dentistry, Seoul National University/Seoul National University Dental Hospital