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

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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

#17 & 27 extraction
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 bicuspid 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
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.

After stopping Class II elastics
At upright position
锚板

用于更广泛的上磨牙远移

在这种情况下，由于TMJ的DJD，Class II 弹力带将关节头远离凹窝，这使严重的前突度有所降低。但停止Class II 弹力带后，前突度再次出现。

通过使用上颌锚板，上后牙远移并上前牙根舌向复位。
Anchor plates

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
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