Tratamento da mordida aberta

Histórico

- É difícil de tratar e as chances de recidiva são grandes.
- Década de 60 até o meio dos 70 = era dos esporões linguais.

ETIOLOGIA

- Padrão de crescimento
- Hábito de sucção digital
  - Abaixam a mandíbula
  - Impedem a irrupção dos dentes
- Função ou postura anormal da língua
- Obstrução nasal
- Respiração bucal
- Postura anormal da mandíbula ou da cabeça

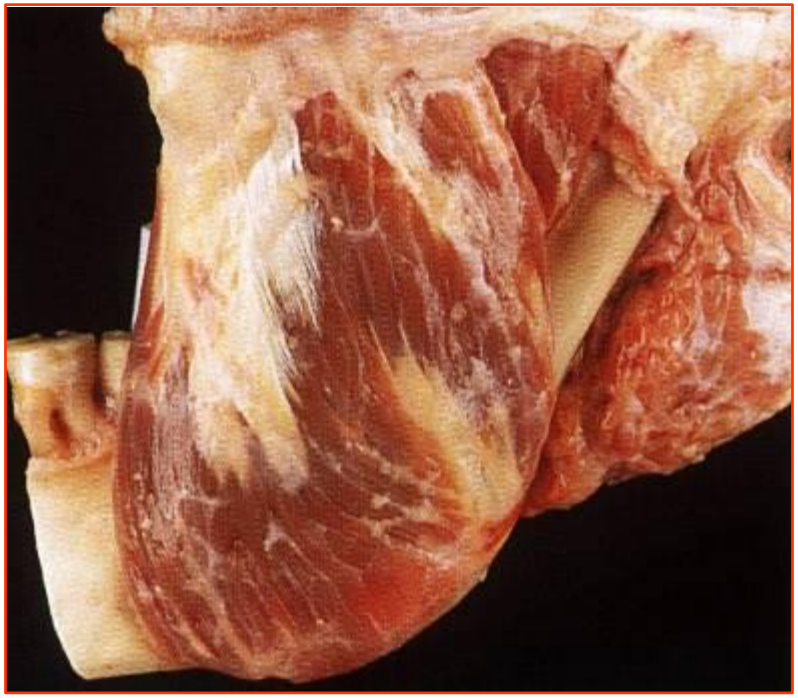
ETIOLOGIA

- O excesso de crescimento vertical não é necessariamente, pois muitos pacientes com essa alteração podem apresentar mordida profunda.

Etiologia

Buschang, et al. 2002 Seminars Orthod.

- Há considerável evidência que pacientes hiperdivergentes apresentam:
  - Músculos da mastigação menores, mais finos, menos ativos
  - Menor força muscular (de mordida)



Etiologia

Buschang, et al. 2002 Seminars Orthod.

- **Controvérsia**
  - As pequenas forças oclusais em indivíduos com face longa produzem a hiperdivergência

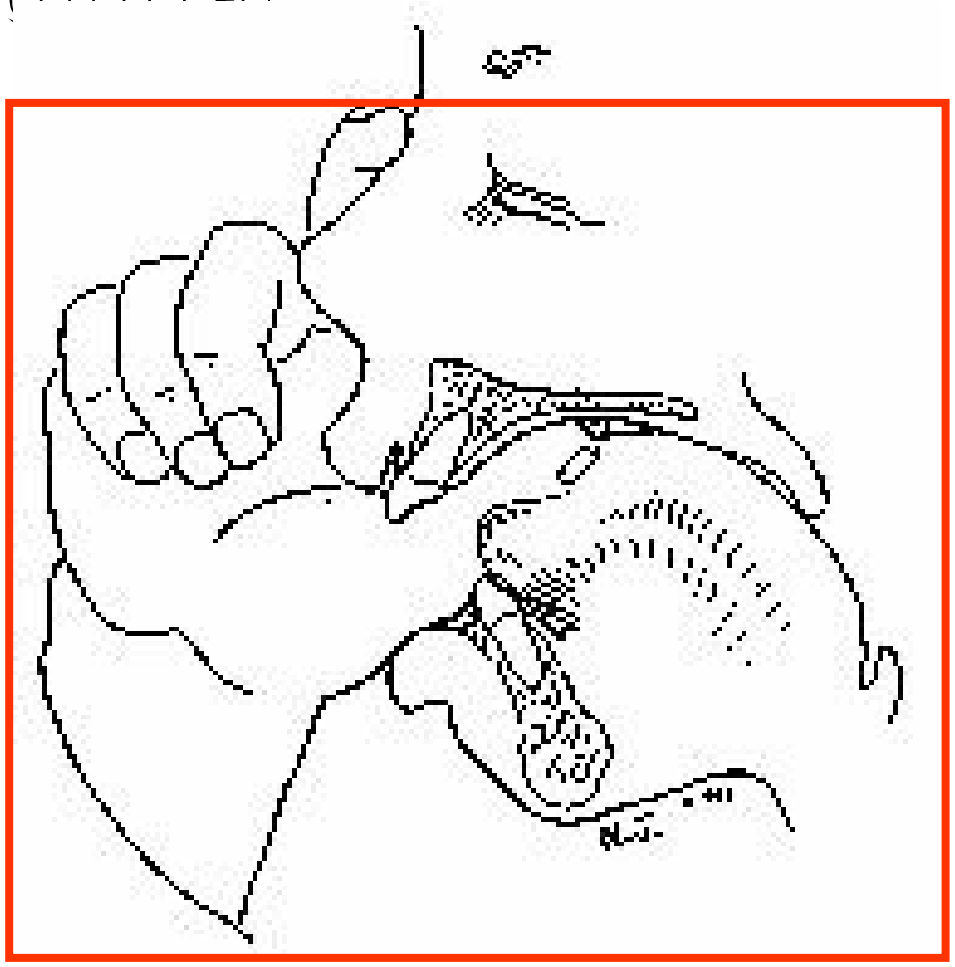
Ou ???

  - As pequenas forças oclusais são o resultado biomecânico das proporções faciais verticais aumentadas.

Hábitos anormais

Sucção anormal

- Sucção do polegar e digital
- relacionados com:
  - Classe II
  - mordida aberta anterior
  - mordida cruzada posterior
  - protrusão maxilar
  - abôboda palatina alta
  - lábio superior Hipotônico
  - lábio inferior hipertônico
- a má-oclusão depende:
  - posição do dedo
  - contração da musculatura
  - morfologia facial
  - duração da sucção

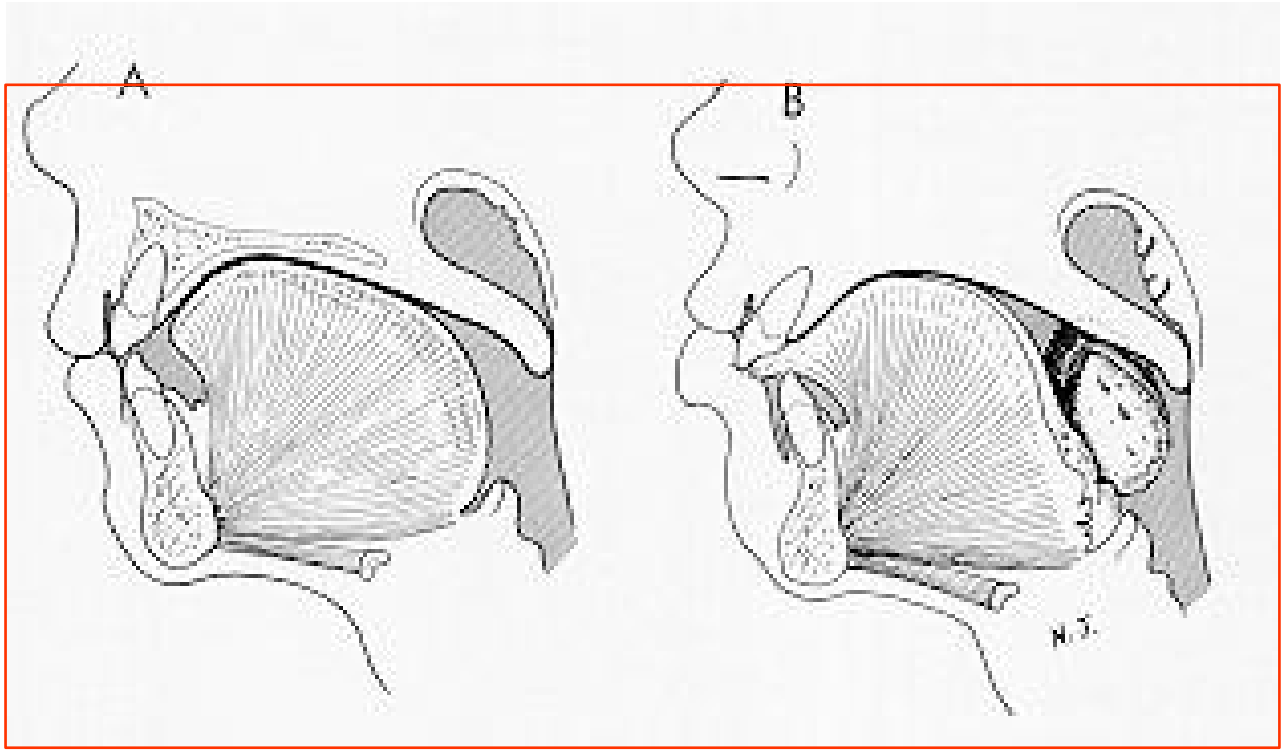


Hábitos anormais

Interposição lingual

- Deglutição com interposição lingual simples
  - deglutição com contatos dentários normais
  - relacionada com sucção de chupeta e digital
- Deglutição com interposição lingual complexa
  - deglutição sem contatos dentários, e com a língua projetada
  - associada com alterações respiratórias crônicas, respiração bucal, tonsilite, faringite
    - O contato da língua causa dor na tonsila. A mandíbula abaixa reflexamente, separando os dentes e promovendo mais espaço para a língua se projetar .

Interposição lingual



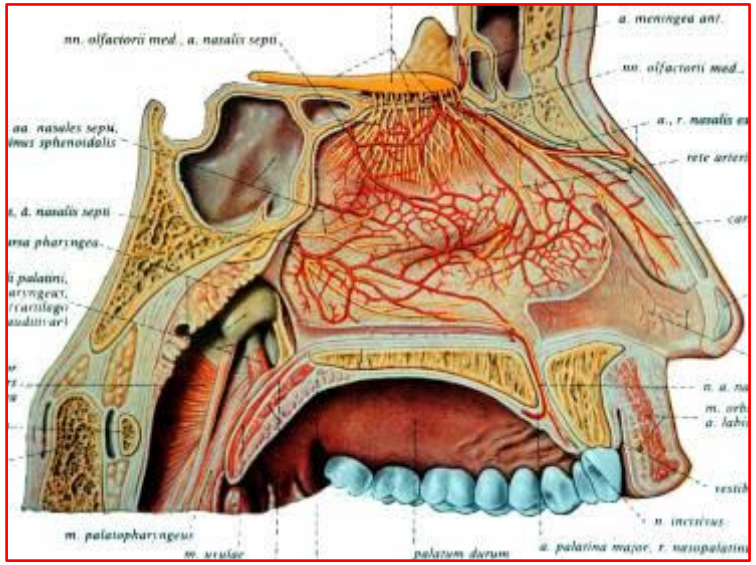
A- deglutição normal

B- Deglutição com interposição lingual complexa

Hábitos anormais

- **Hábito de sucção e de morder o lábio**
  - vestibuloversão dos inc. superiores
  - linguoversão inc. inferiores
- **Onicofagia**
  - más posições dentárias
- **Postura**
  - alteração na posição mandibular
  - postura anormal da língua (mordida aberta)
- **Outros hábitos**
  - dormir sobre o braço
  - morder lápis

Doenças nasofaringeanas e distúrbios na função respiratória



Adenóide

↷ respiração bucal

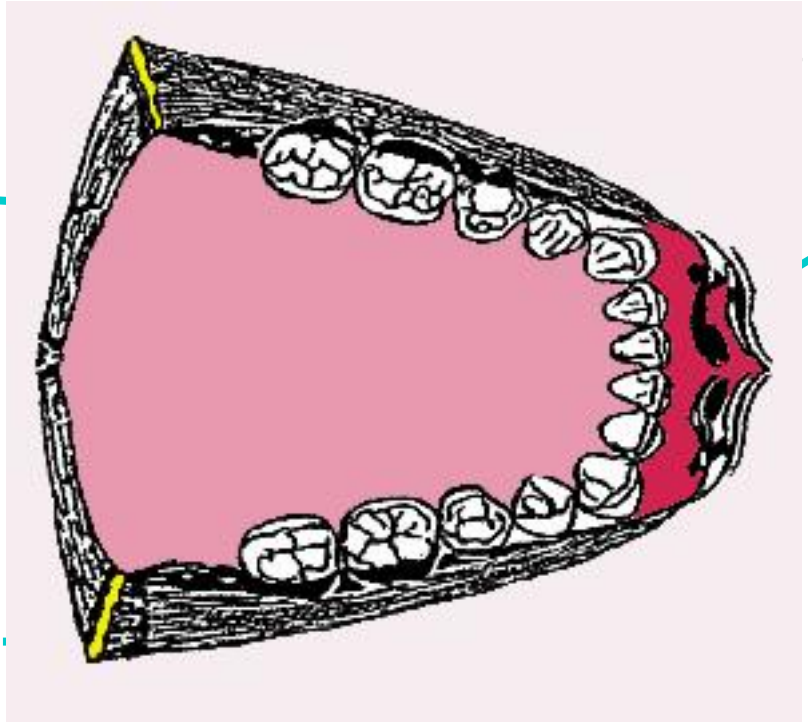
↷ alteração na postura mandibular

↷ alteração na forma craniofacial

↷ má-oclusão

- aumento da altura facial
- palato estreito e alto
- aumento na AFAI
- mordida aberta
- tendência a mordida cruzada

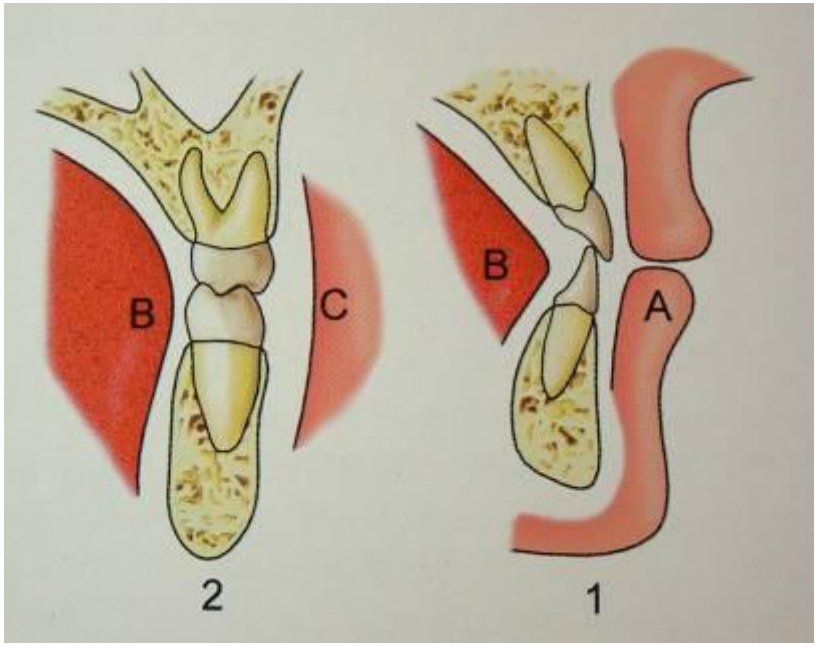
M. Constritor
superior da faringe



M. Orbicular da boca

Rafe pterigomandibular

Mecanismo Bucinador



Graber,T.

Mordida aberta dentária

- Está relacionada com o hábito de sucção digital.
- Apresentam falta de irrupção dos incisivos.
- Tem correção espontânea se o hábito for suspenso em 80% dos pacientes entre 7-9 a 10-12 anos (WORMS, 1971).

Mordida aberta esquelética

- Apresentam excesso de irrupção dos incisivos e molares superiors.
- A altura alveolar é aumentada.
- AFP diminuída
- AFA mandibular aumentada.
- FMA aumentado
- Ângulo mandibular aumentado
- Retrusão mandibular
- Inclinação inferior da parte posterior da maxila.
- Mordida aberta anterior combinada com interposição lingual

Alterações na maxila

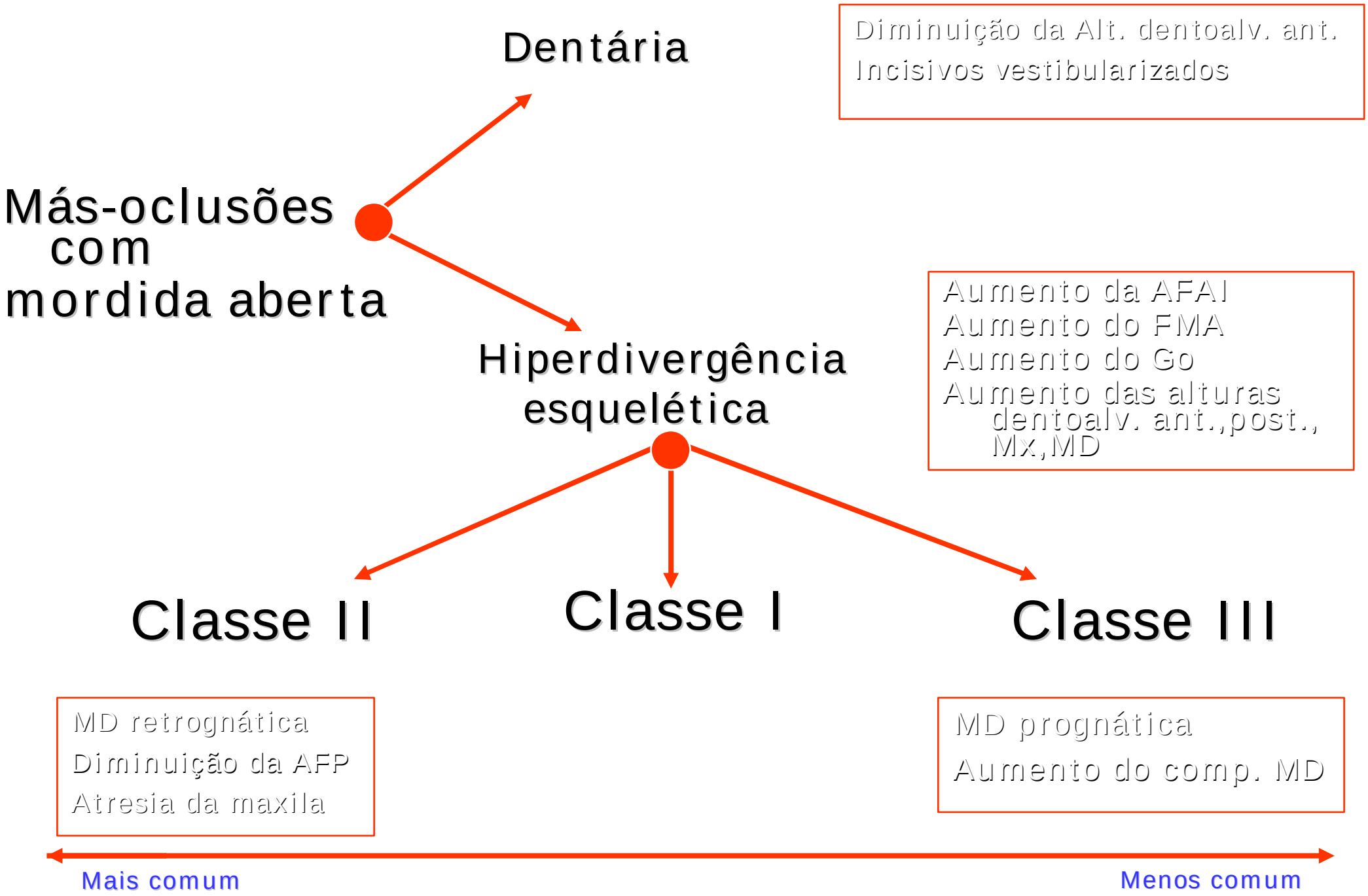
Buschang, et al. 2002 Seminars Orthod.

- Inclinação anterior do plano palatino
- Altura facial anterior superior diminuída
- Maxila diminuída
- Sempre estreita com alta incidência de mordida cruzada posterior

Alterações na mandíbula

Buschang, et al. 2002 Seminars Orthod.

- AFAI aumentada
- FMA aumentado
- Ângulo mandibular aumentado
- Atura do ramo diminuída
- Fossa mandibular posicionada mais superiormente em relação à sela turca
- Altura dentoalveolar aumentada


Dentária
Diminuição da Alt. dentoalv. ant.
Incisivos vestibularizados
Más-oclusões com mordida aberta
Hiperdivergência esquelética
Aumento da AFAI
Aumento do FMA
Aumento do Go
Aumento das alturas dentoalv. ant.,post., Mx,MD
Classe II
Classe I
Classe III
MD retrognática
Diminuição da AFP
Atresia da maxila
MD prognática
Aumento do comp. MD
Mais comum
Menos comum

Está indicado o tratamento precoce??

- Os padrões de crescimento são estabelecidos precocemente.
  - Mordida aberta em hiperdivergentes não se auto-corrige.
- Se o tratamento for postergado para a dentição permanente, a oportunidade de modificação do crescimento poderia ser perdida.

CIRURGIA

Quando começar?

- Aos 7 -8 anos
- Tão logo estejam maduros o suficiente para cooperar (Jeryl English).

O QUE BUSCAR NO TRATAMENTO?

- Controle da dimensão vertical
- Aumentar a razão entre AFP/AFA.
- Real autorotação anterior da madíbula para aumentar a altura mandibular posterior.
- Redução do ângulo goníaco
- Aumentar o crescimento vertical do côndilo.
- Redução das alturas dentoalveolares na maxila e mandíbula (intrusão dos molares)
- Aumento na angulação do plano palatino
- Expansão da maxila

TRATAMENTO DA MORDIDA ABERTA

- ELÁSTICOS INTERMAXILARES
- PLACA DE MORDIDA POSTERIOR
- AEB DE TRAÇÃO ALTA
- GRADE LINGUAL
- MENTONEIRA
- BIONATOR FECHADO
- FR IV
- MEAW
- IMPLANTES – MINI-PLACAS
- EXERCÍCIOS MASTIGATÓRIOS
- CIRURGIA ORTOGNÁTICA

Resultados de vários tipos de tratamentos para a mordida aberta esuqlética

Efeito	AEB TA	AEBTA + placa	XP	AEB + XP	PBB passivo	PBB ativo	Mentoneira vertical
Qtda cresc. Cond.	-	-	0	0	0	0	+
Direção cresc. Cond.	0	0	0	0	-	0	+
Posição MD AP	0	0	0	0	+	+	+
AFP	-	-	0	0	+	0	+
AFA	0	0	0	0	+	+	0
Relações esq. AP	+	+	0	0	+	+	+
6s	++	++	_	++	+	+	+
6i	-	0	_	-	+	+	+
Sobremordida	0	0	+	++	+++	+	+
sobressaliência	+	+	+	++	+	+	+

AEB de tração alta

- Segura o crescimento sutural da maxila
- Evita o desenvolvimento dentoalveolar vertical
- Não comprovado o efeito de rotação da maxila

AEB conjugado com placa

- Evita a inclinação dos molares
- Deslocamento superior e para distal da maxila
- Rotação horária do plano palatino
- Intrusão relativa dos molares

Extrações

- Será que tratamento com exo e perda de ancoragem promove:
  - Rotação anterior da mandíbula
  - Diminuição da AFA
  - Diminuição da mordida aberta

- Vários estudos mostram que **não!!!!**

Extrações + AEB de tração alta

- Melhor controle do movimento vertical do molar superior.
- Não tem efeito sobre a posição da mandíbula.
- Os molares inferiores extruem mais.

- Se o objetivo é melhorar a orientação, a a posição e a forma da mabdíbula, deve-se buscar outra abordagem.

Bite block posterior

- Modificam efetivamente o padrão esquelético vertical.
- Deslocamento maxilar anterior
- Aumento no comprimento mandibular
- Intrusão molar posterior
- Rotação anterior da mandíbula
- Aumento do trespasse vertical
- Redução da AFA

Mentoneira vertical

- Único aparelho que efetivamente altera a forma mandibular.
  - Aumenta a altura posterior.
  - Redireciona o crescimento condilar.
  - Diminui o ângulo goníaco.

ORIGINAL ARTICLE

Early treatment of vertical skeletal dysplasia: The hyperdivergent phenotype

Wayne L. Sankey, DDS, MS,[a] Peter H. Buschang, PhD,[b] Jeryl English, DDS, MS,[c] and Albert H. Owen, III, DDS[d]
Dallas, Tex

This cephalometric study evaluated an early nonextraction treatment approach for patients with severe vertical skeletal dysplasia and maxillary transverse constriction. Thirty-eight patients, 8.2 years (± 1.2 years) of age, were treated for 1.3 years (± 0.3 years) with lip seal exercises, a bonded palatal expander appliance, and a banded lower Crozat/lip bumper. The bonded palatal expander functioned as a posterior bite-block and was fixed in place throughout treatment. Patients with poor masticatory muscle force (79%) wore a high-pull chincup 12 to 14 hours per day. A control group was matched for age, sex, and mandibular plane angle. Treatment changes for chincup and other patients were not significantly different. Overall, treatment significantly enhanced condylar growth, altered it to a more anterosuperior direction, and produced "true" forward mandibular rotation 2.7 times greater than control values. Posterior facial height increased significantly more in patients than in controls, and the maxillary molars showed relative intrusion. In treated patients, articular angle increased, gonial angle decreased, and the chin moved anteriorly twice as much as in controls. Treatment also led to increased overbite and decreased overjet. Maxillary and mandibular expansion did not cause the mandibular plane angle to increase. The 16 patients with openbite malocclusions exhibited a 2.7 mm increase in overbite and inhibition of growth in anterior lower facial height. The aggregate of individual changes demonstrates a net improvement, indicating this treatment approach may be suited for hyperdivergent patients with skeletal discrepancies in all 3 planes of space. (Am J Orthod Dentofacial Orthop 2000;118:317-27)

Stability of anterior openbite treated with crib therapy

g J. Huang, DMD, MSD;
ustus, DC, FIS, MSD;
nedy, MSD, FRCD; and
h, DDS, MSD

enbite patients treated with cribs were collected. The sample was divided into two groups with group one comprised of 26
two comprised of seven nongrowing patients. There was a significant increase in overbite for both groups during
oup also showed a significant increase in overbite during the posttreatment period. During the posttreatment time
ing sample and zero percent of the nongrowing sample exhibited relapse. However, all patients who achieved a
maintained a positive overbite posttreatment. These findings suggest that patients who achieve a positive overbite
of maintaining this correction after orthodontic treatment is completed. This statement appears to be true for
The reason for this increased stability may be due to a modification of tongue position or posture.

matic

often difficult to treat successfully. Numerous theories have been proposed for the etiology of openbite,
bits,[3,7,8] enlarged lymphatic tissue,[9] and tongue function and posture.[2,10,11–16] Orthodontic
toalveolar changes and/or modification of oral habits. While this treatment was appropriate if the
e for addressing openbites which were due to skeletal imbalance. Fortunately, these
urgery. However, correcting the openbite is only part of the challenge. Lopez-Gavito[17]
entional orthodontic appliances relapsed more than three millimeters ten years after
also exhibit significant relapse posttreatment. One possible explanation for these
ation or posture, and that this etiologic factor may be ignored in both
or might increase the stability of corrected openbite. Cribs have been used to
efore, the purpose of this study is to determine if crib therapy has an effect

By Greg
Roberto J
David B. Ken
Vincent G. Koku

Abstract:

The records of 33 op
growing patients and grou
treatment. The nongrowing g
interval 17.4 percent of the grow
positive overbite during treatment
with crib therapy have a good chance
both growing and nongrowing patients.

Key Words:

Crib • Openbite • Stability • Relapse • Cephalo

Malocclusions characterized by anterior openbite are
including heredity,[1,2] unfavorable growth patterns,[3–6] digit h
treatment of openbite before the 1970s consisted mainly of dem
problem was due to a dental malrelationship, it was often inadequa
unfavorable skeletal patterns can now be corrected with orthognathic
reported that more than 35 percent of openbite patients treated with conv
treatment. Similarly, Denison[18] has reported that openbites treated surgically
findings is that anterior openbite may be caused and/or maintained by tongue fun
conventional and surgical treatment. If this is true, then modification of tongue behav
modify tongue behavior, but there have been no studies of posttreatment stability. There

ORIGINAL ARTICLE

or Openbite and its Treatment with Multiloop Edgewise Archwire

Anteri

Young H. Kim

Abstract:

sis of anterior openbite malocclusion, with a detailed presentation of a treatment approach using multiloop

Etiology and diagno

Edgewise archwires.

Key Words:

• Edgewise • Elastic traction • Openbite

Archwire loops • Cephalometrics

t fascination in orthodontics. It is difficult to treat, and relapse tendencies are strong. Valid or not, numerous articles various treatment modalities, depending on the etiology ascribed to the openbite malocclusion by the orthodontist

Openbite malocclusion has long held grea and seminars have been presented to espouse

ated in these cases because the malocclusion is often thought to be caused by a tongue thrust. The early tongue thrusts," when it was emphasized to such a degree that some orthodontists did not even examine a for tongue thrust. Even where tongue thrust is a factor, if it should be of neurologic or pathologic origin, ful correction (SUBTELNY AND SUBTELNY 1973[15]).

A tongue cnb or lingual prongs are widely advo sixties to the mid-seventies could be called the "era of malocclusion unless the patient had first received therapy a a mere tongue cnb or speech therapy cannot produce succes

be a natural phenomenon. When there is a vertical gap during incisor eruption, the tip of the tion to contain the bolus. Fortunately, most children avoid or soon overcome this altered

Tongue thrusting during the eruption of permanent incisors can tongue may be placed between the upper and lower incisors in deglu function as the incisors erupt into normal relation

bit during the mixed dentition stage is often based on changes that would have ger sucking are exceptions, in which therapy must be based on the severity and

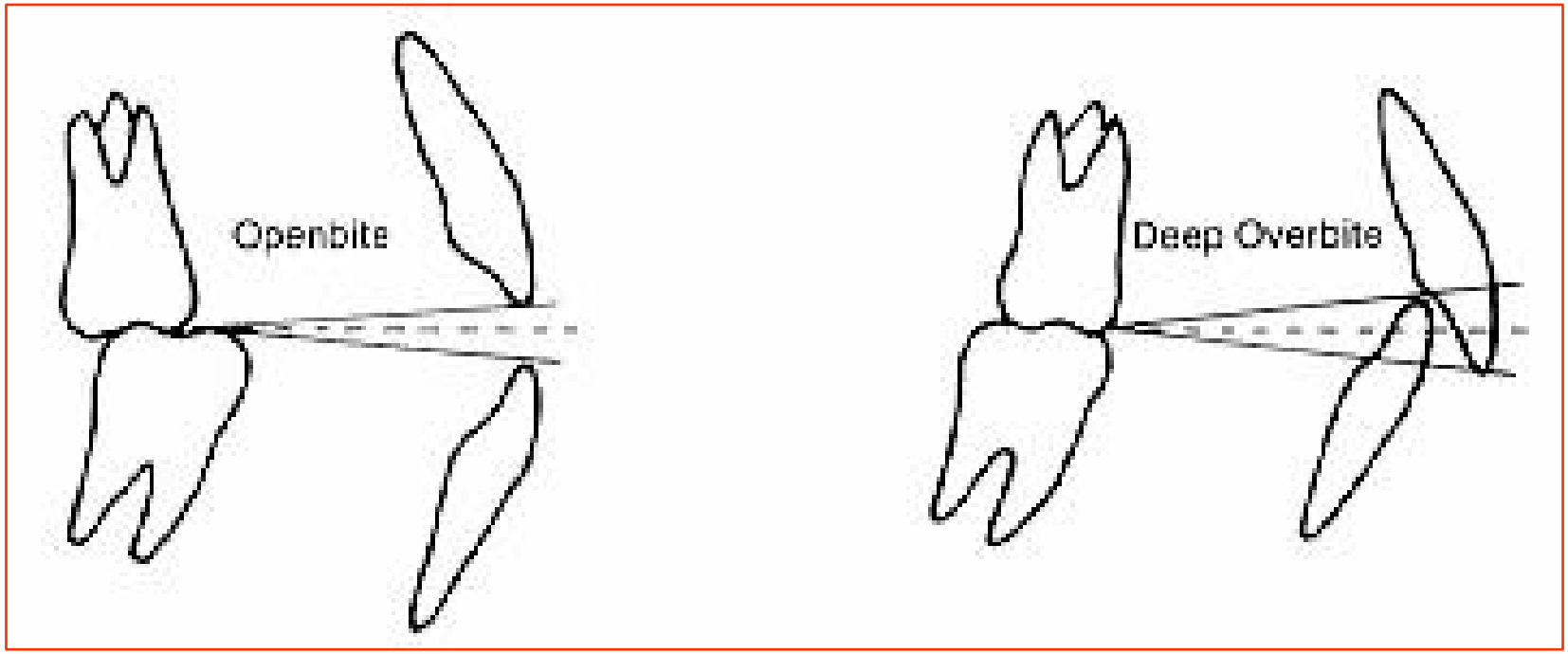
The great success often claimed for tongue cnb or speech therapy for ope otherwise occurred spontaneously with growth. Active habits such as thumb or l history of the habit

r 1. Even though this patient did have a thumb-sucking habit, careful advice was enough for this youngster to stop the habit, resulting in a y had been used at that time without adversely affecting the

Spontaneous correction of an anterior openbite with normal growth is illustrated in Fig evaluation indicated that active therapy should not be undertaken at that stage. Instead, natu beautiful self-correction. If functional appliance or a tongue cnb, or even tongue-thrust therapy child's behavior, it could have been claimed that the treatment produced this correction

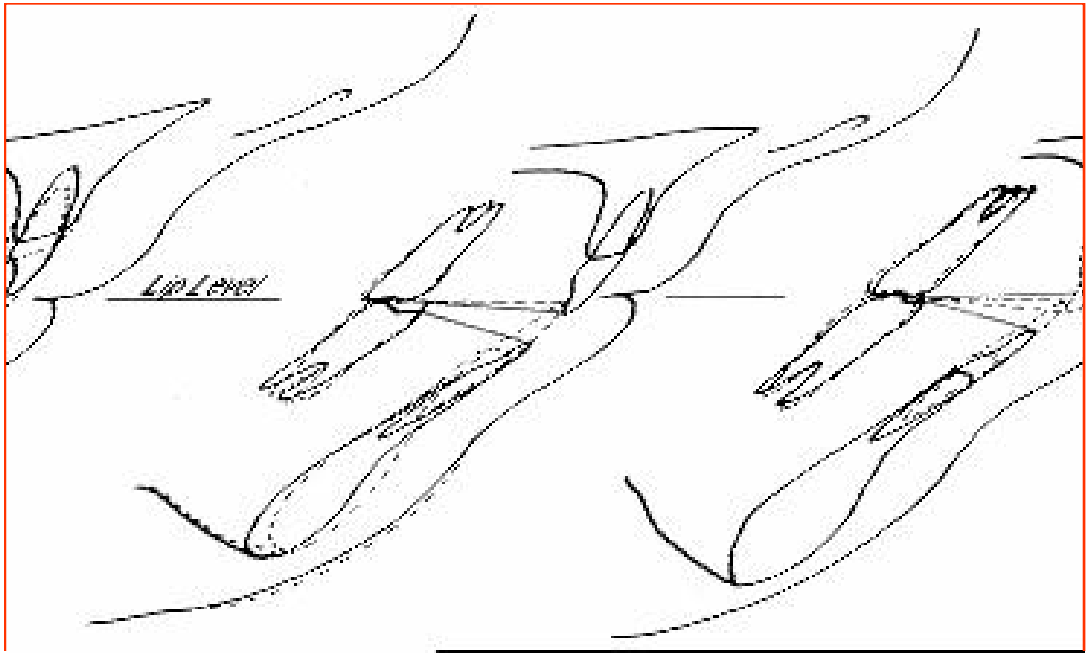
Planos oclusais

- Os planos oclusais superior e inferior divergem anteriormente na mordida aberta, e se sobrepõem muito na mordida profunda.



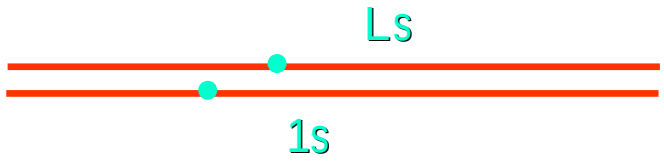
Objetivo do tratamento

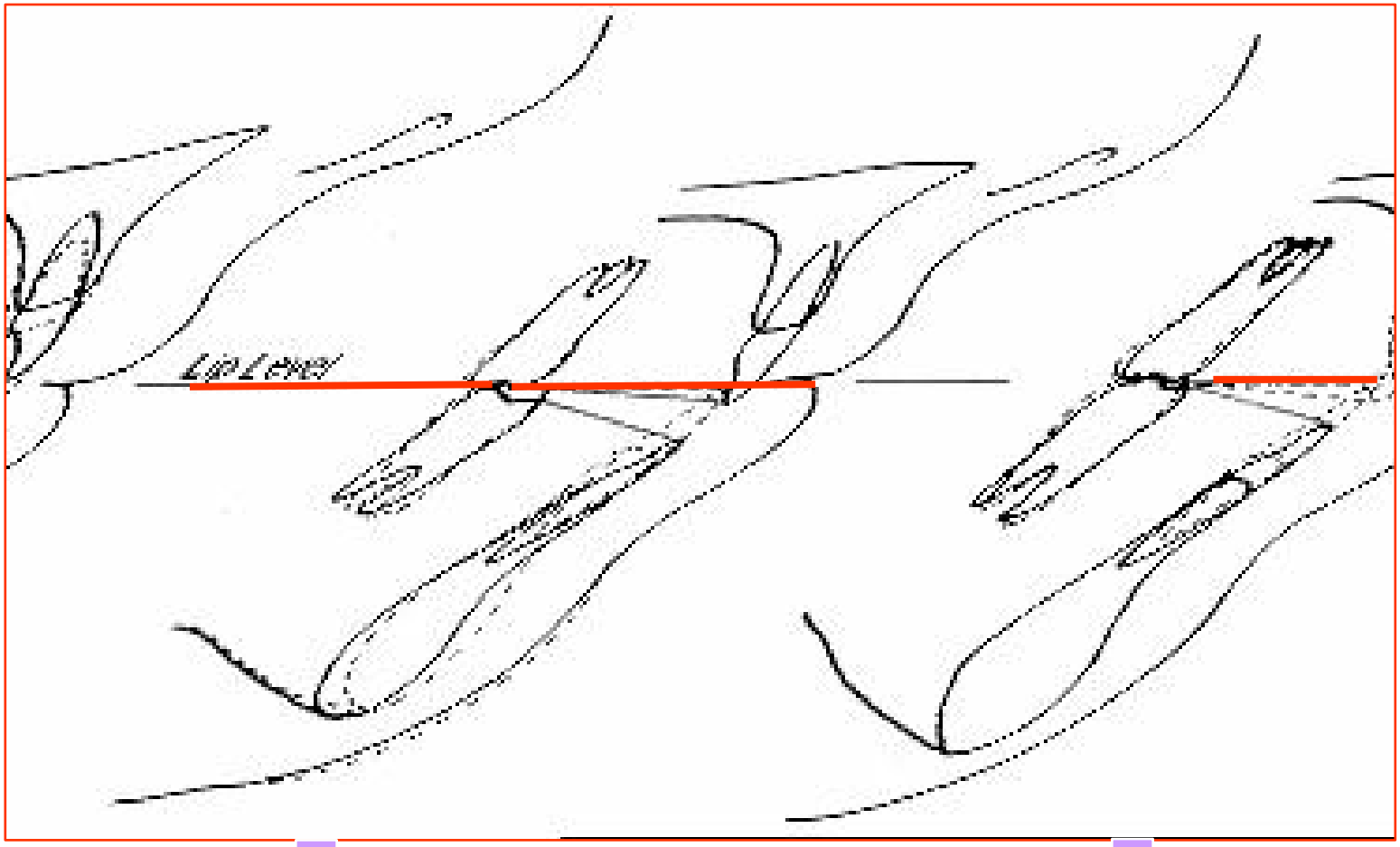
- Deveria ser a criação de uma relação anterior com trespasse.
- A posição do ICS em relação a linha do lábio deve ser de 4 mm.
- As margens incisais dos incisivos deveriam ser o gui para o limte anterior do plano oclusal



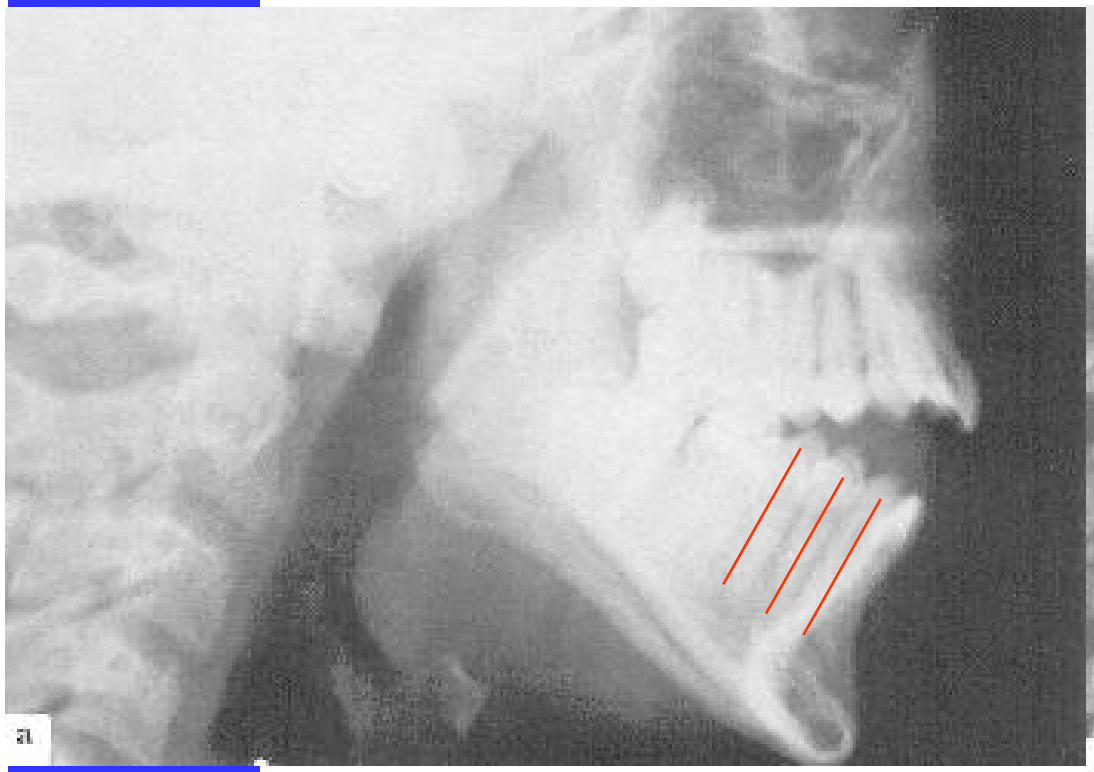
Exposição do ICS com o lábio em repouso

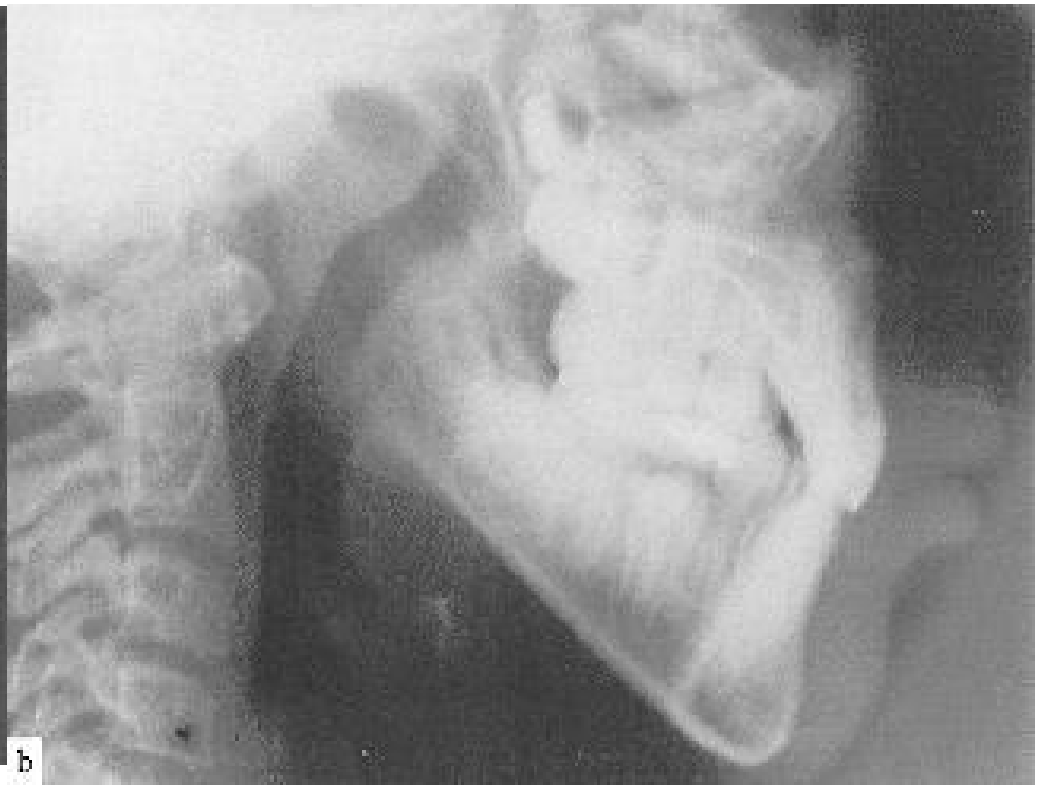
Norma = 4 ± 2,0



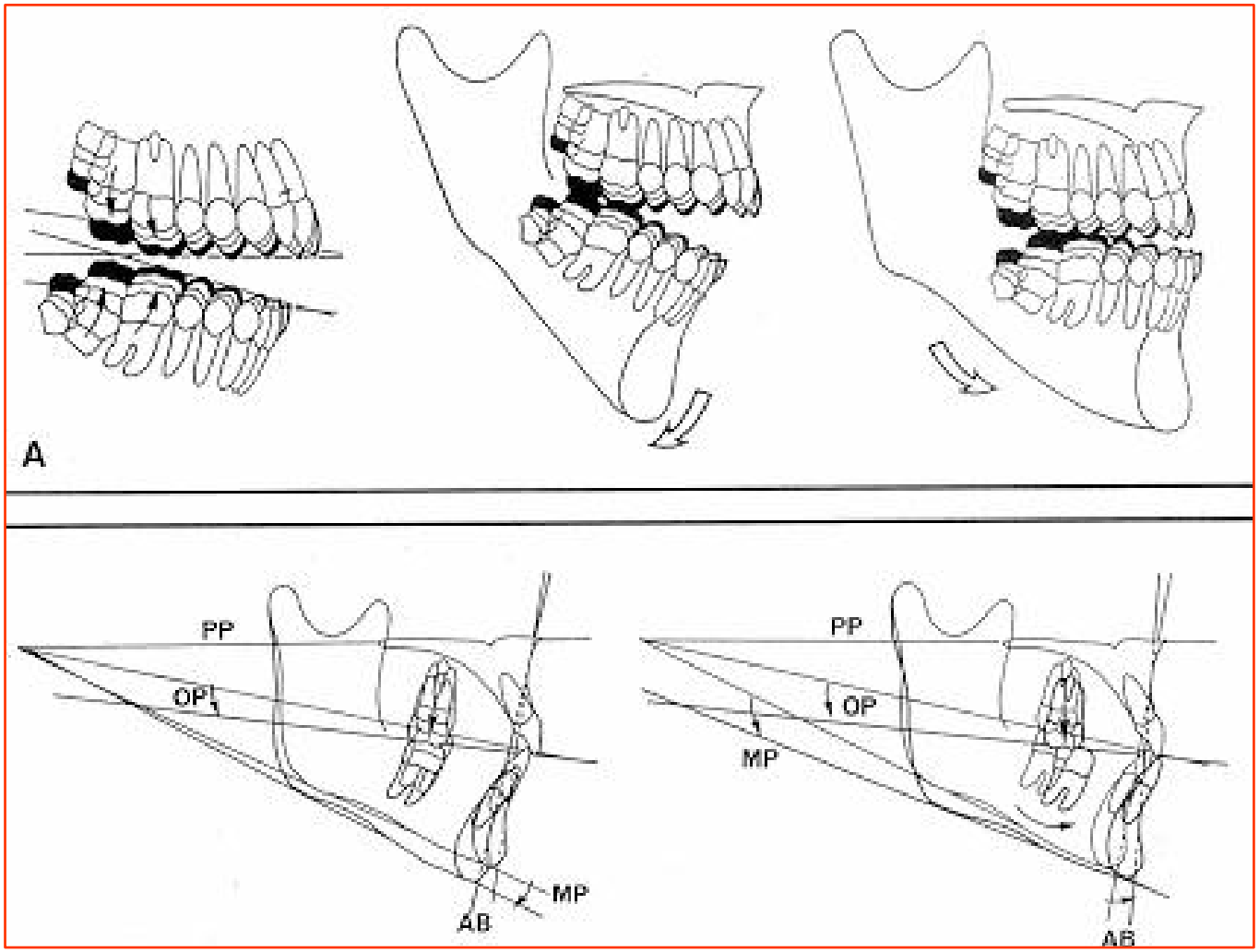


- Requer a correção dos planos oclusais superior e inferior
- Requer a correção do plano oclusal inferior apenas





- Dentes inclinados mesialmente.
- Quanto maior a inclinação do FMA, maior a inclinação dos dentes



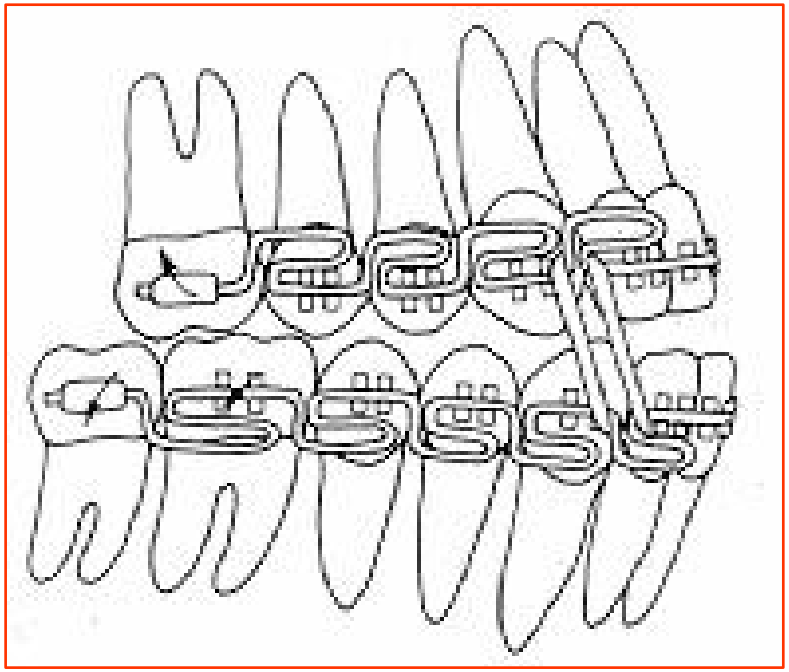
As inclinações individuais dos planos oclusais devem ser corrigidas e os dentes devem ser verticalizados em relação ao plano oclusal médio para garantir a estabilidade e função.

Exodontia dos 2º molares

- Elimina o bloqueio à distalização do 1º
- Elimina a resistência cortical à verticalização do 1º
- Elimina o apinhamento posterior que é comum nos casos com mordida aberta.

Técnica

- Preparao da dentição:
  - Eliminação das rotações, espaços, apinhamento, bráquetes mal posicionados.
- Slot .018”
- Não recomenda:
  - Bráquetes estreitos, slot .022”, bráquetes pré-torqueados



- Nivelar antes com um fio .018".
- Consiste num arco ideal com alças.
- São incorporados degraus distais de acordo com a necessita de inclinação, a partir dos 1os pré-molares com 3º a 5º.
- O arco superior apresentará uma curva de Spee e o inferior uma curva reversa.
- O elástico vertical anterior conterá a força intrusiva nos incisivos

Fig 1. Intraoral photographs of a 33-year-old man (case 25) with a severe anterior openbite malocclusion. Pretreatment (**A**), MEAW mechanism in place (**B**), posttreatment (**C**), and 23 months after appliance removal (**D**).

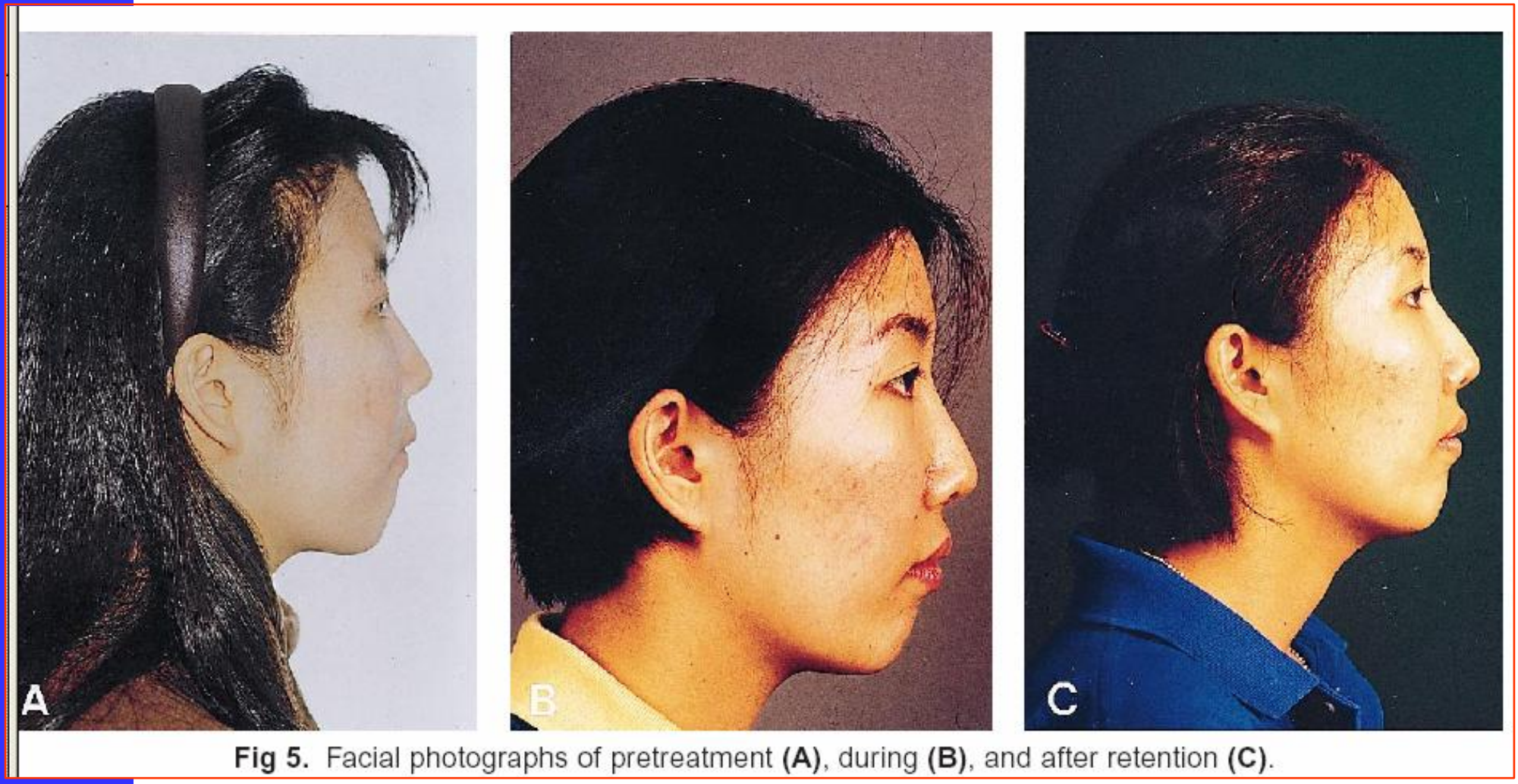


Fig 5. Facial photographs of pretreatment **(A)**, during **(B)**, and after retention **(C)**.

Fig 6. Intraoral photographs of pretreatment (A), during (B and C), postorthodontic treatment (D), and after retention (E).

CONTINUING EDUCATION ARTICLE

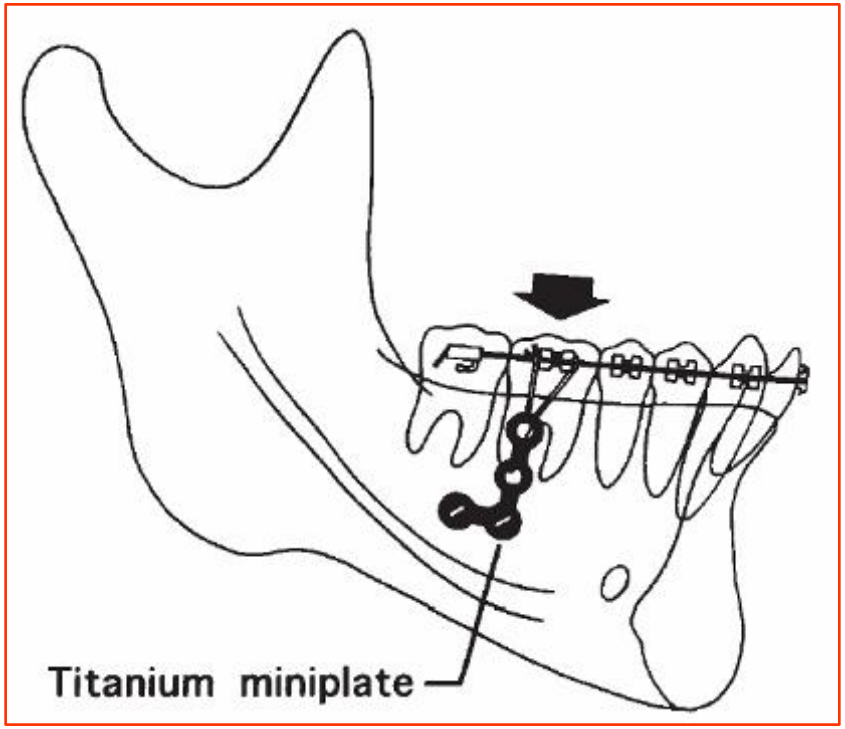
Skeletal anchorage system for open-bite correction

Mikako Umemori, DDS, DDSc,[a] Junji Sugawara, DDS, DDSc,[b] Hideo Mitani, DDS, MS, DDSc,[c] Hiroshi Nagasaka, DDS, DDSc,[d] and Hiroshi Kawamura, DDS, DDSc[e]

Sendai, Japan

A skeletal anchorage system was developed for tooth movements. It consists of a titanium miniplate that is temporarily implanted in the maxilla or the mandible as an immobile anchorage. In this article, we introduce the skeletal anchorage system to intrude the lower molars in open-bite malocclusion and evaluate the results of treatment in two severe open-bite cases that underwent orthodontic treatment with the system. Titanium miniplates were fixed at the buccal cortical bone around the apical regions of the lower first and second molars on both the right and left sides. Elastic threads were used as a source of orthodontic force to reduce excessive molar height. The lower molars were intruded about 3 to 5 mm, and open-bite was significantly improved with little if any extrusion of the lower incisors. No serious side-effects were observed during the orthodontic treatment. The system was also very effective for controlling the cant and level of the occlusal plane during orthodontic open-bite correction. (Am J Orthod Dentofacial Orthop 1999;115:166-74)

It is very important for vertical correction of skeletal open-bite to control the height of the posterior dentoalveolar regions. However, traditional biomechanical techniques, such as the use of a multibracket appliance, an extraoral anchorage, an active vertical corrector with magnets, a vertical-pull chincap, etc, cannot cases. To obtain a rigid anchorage, dental implants and bone screws have been reported as orthodontic and orthopedic anchors.[1-20] Some new types of implants have been designed to provide anchorage for orthodontic tooth movements.[21,22] For example, Jenner and Fitzpatrick[23] reported a clinical case in which surgical bone



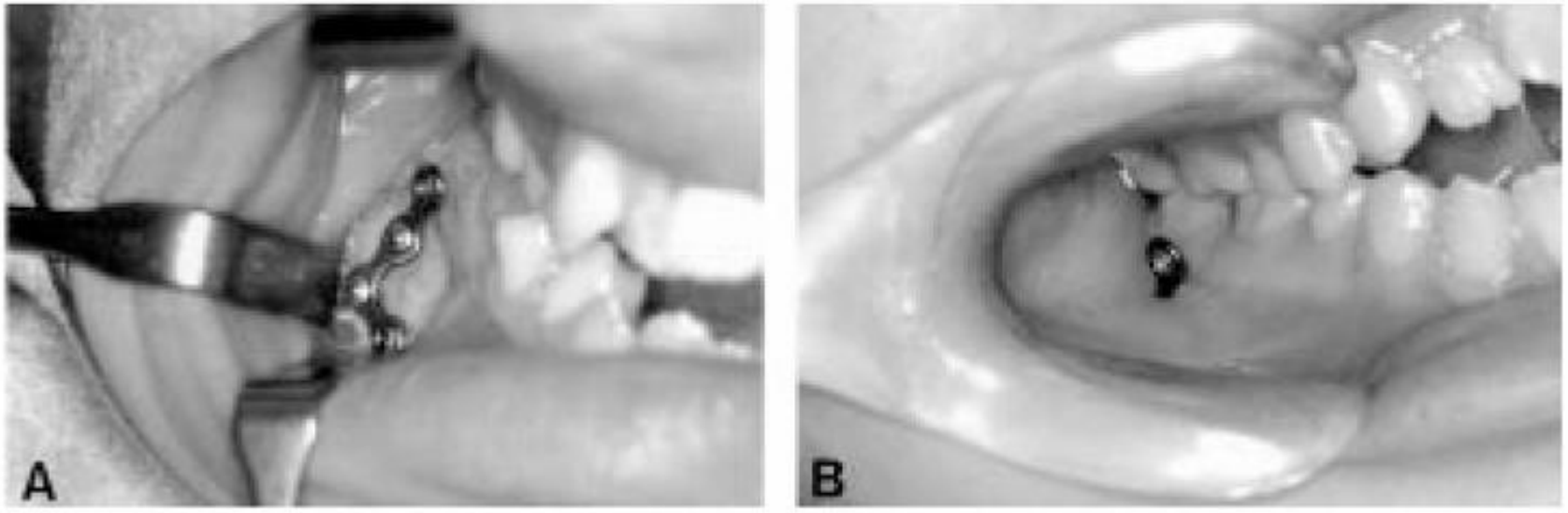


Fig 1. Implantation of a titanium miniplate. **A**, Surgical procedure, **B**, after healing of the wound.

Nonextraction treatment of an open bite with microscrew implant anchorage

Hyo-Sang Park,[a] Oh-Won Kwon,[b] and Jae-Hyun Sung[c]
Daegu, South Korea

A 16-year-old girl with an anterior open bite was treated with nonextraction therapy that included intrusion of the maxillary and mandibular posterior teeth with microscrew implants. Implants (diameter, 1.2 mm; length, 8 or 6 mm) were placed into alveolar bone near the posterior teeth and used as anchorage for intrusive force. To prevent adverse side effects of buccoversion or linguoversion of the posterior teeth during intrusion, a transpalatal bar and a lingual arch were placed. The 3-mm anterior open bite was corrected in 11 months of treatment, after intrusion of the maxillary and mandibular posterior teeth and autorotation of the mandible. The posterior intrusion relapsed in the early stage of retention, at 8 months; thereafter, no obvious relapse was evident in the vertical position of the molars and the FMA. The treatment mechanics of anterior open bite with posterior intrusion by using microscrew implants were effective but still require a proper retention protocol. (Am J Orthod Dentofacial Orthop 2006;130:391-402)

Open bite malocclusion has long been considered one of the most difficult orthodontic problems to correct because its etiology is complicated and multifactorial.[1,2] Therapies include modification of functional or habitual aberrations, orthopedic treatment, orthognathic surgery, and orthodontic treatment with extrusion of the anterior teeth or intrusion of the posterior teeth.

Until recently, orthognathic surgery was considered the treatment of choice for a severe skeletal open bite.[3] The advent of skeletal anchorage has expanded the boundaries of orthodontic treatment.[4,5] Skeletal anchorage can produce treatment outcomes that cannot be obtained by conventional orthodontic treatment but only from orthognathic surgery. In an earlier report, we showed that the maxillary incisors can be retracted 14 mm against microscrew implants. This is beyond the limit of orthodontic treatment.[6]

Molar intrusion was challenging to orthodontists before the development of skeletal anchorage. Skelsion of molars with skeletal anchorage produces autorotation of the mandible; this resembles the treatment results of maxillary surgical impaction.

In terms of surgical procedure and costs, microscrew implants are superior to dental implants and the miniplate system. Microscrew implants are small enough to be placed into the alveolar bone, easy to place and remove surgically, and economical compared with other products. These advantages have expanded their clinical applications to many clinical situations.[9-15] Treatment of anterior open bite after intrusion of molars with miniplates has been reported[5,8] but not with microscrew implants.

This case report describes the treatment mechanics for anterior open bite with microscrew implants, treatment planning, treatment procedure, and retention.

DIAGNOSIS

A 16-year-old girl with an anterior open bite and a

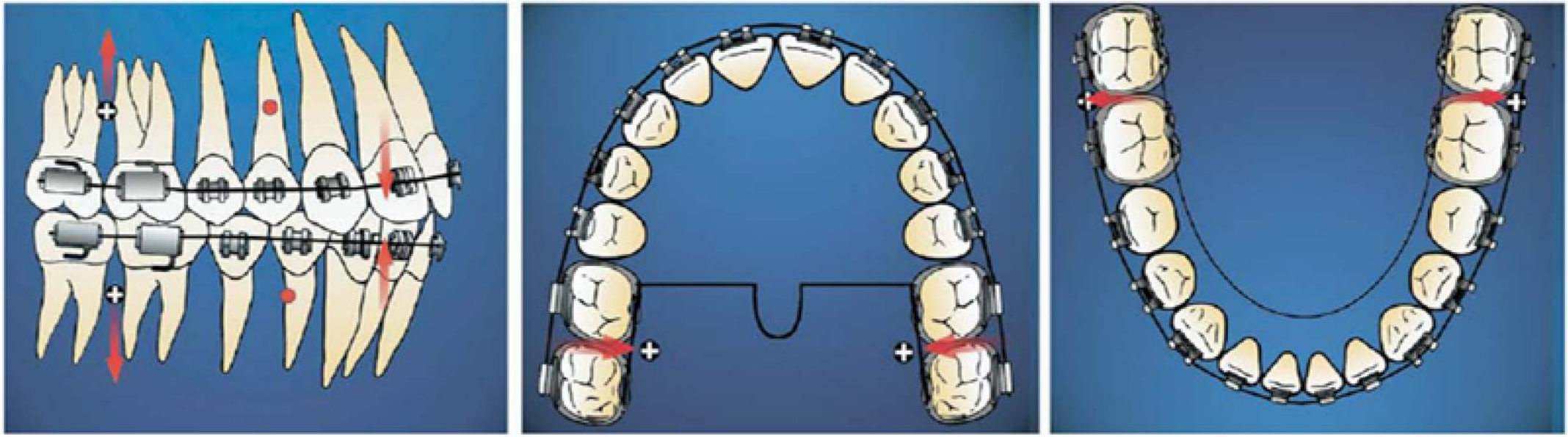
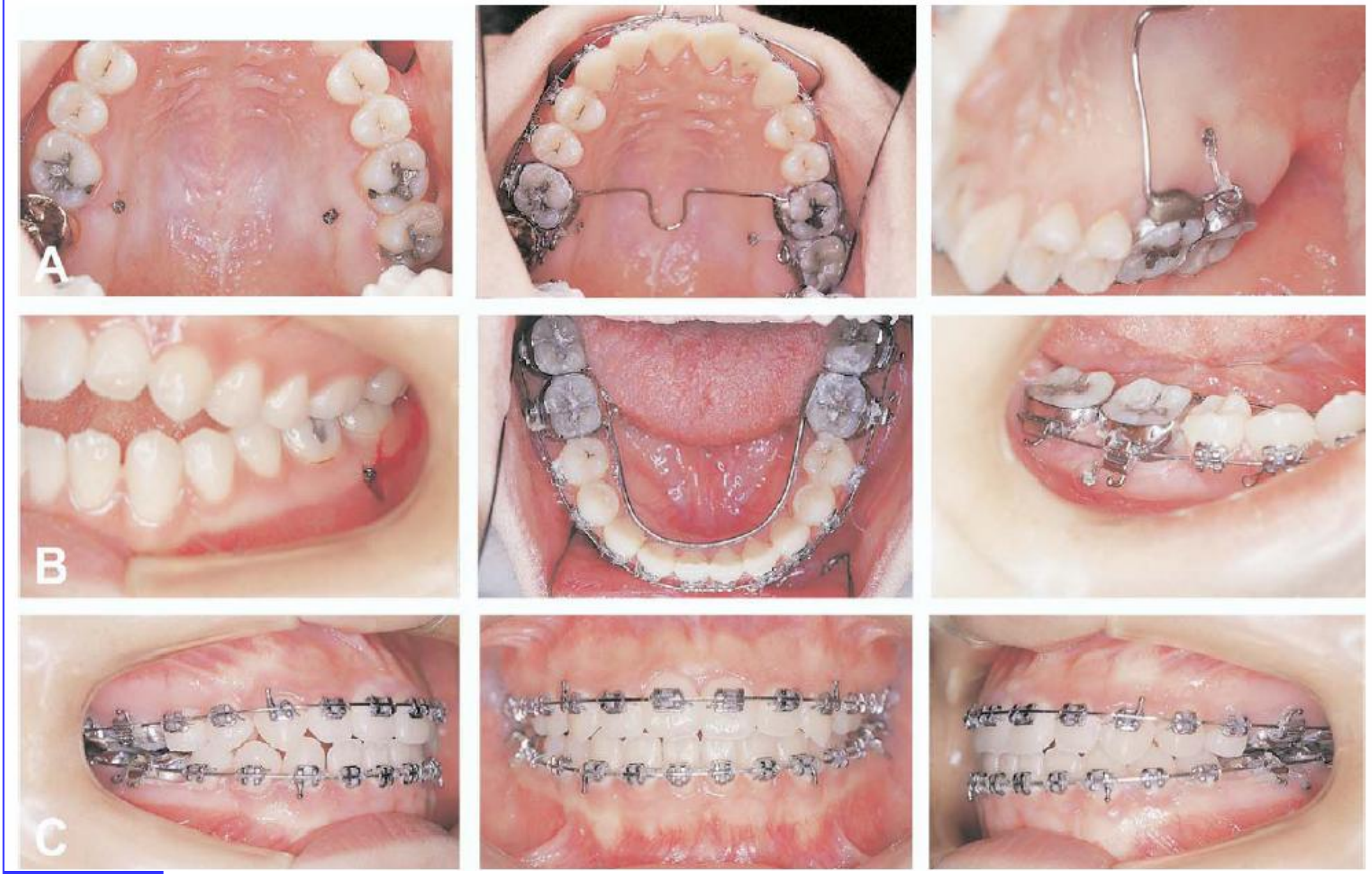


Fig 4. Biomechancis showing closing of anterior open bite after intrusion force at molars.


A
B
C

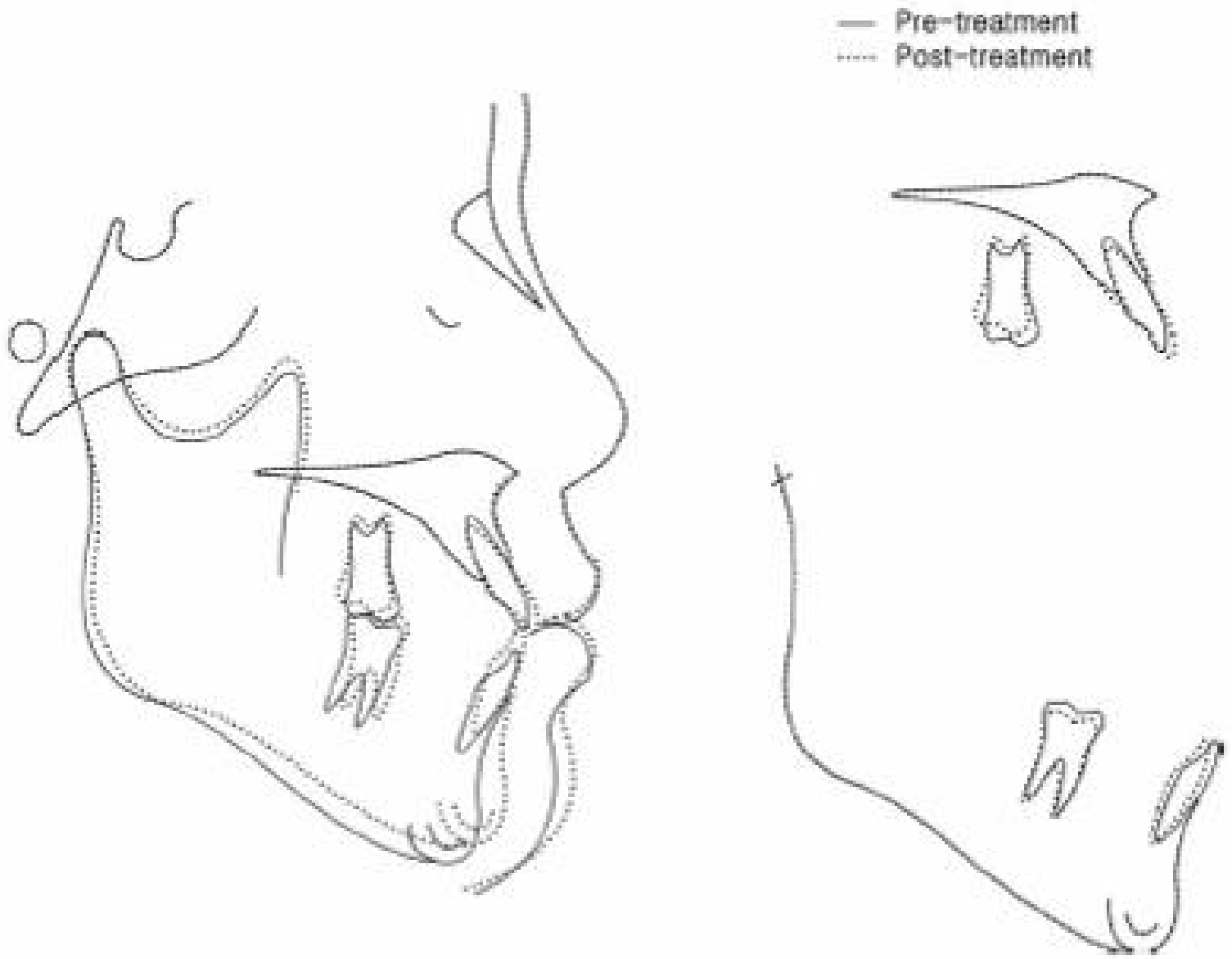
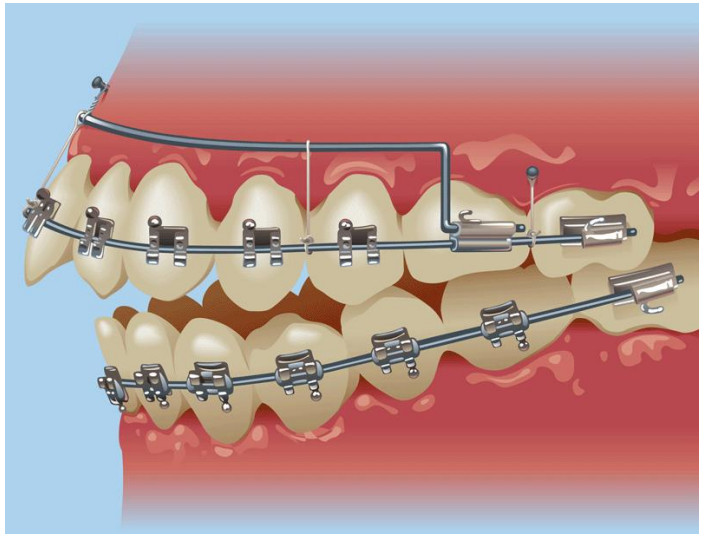


Fig 11. Pretreatment and posttreatment cephalometric superimposition.

Corretor vertical ajustável John Devincenzo



- Arco .040”
- 300 a 450g de força inicial

Fig. 2 Buccal bars in place.

Fig. 3 Trans-arch stabilizing appliances used with VAC. A. Maxillary. B. Mandibular. C. Rapid palatal expander later used for five months; note impaction of posterior teeth into alveolar process.

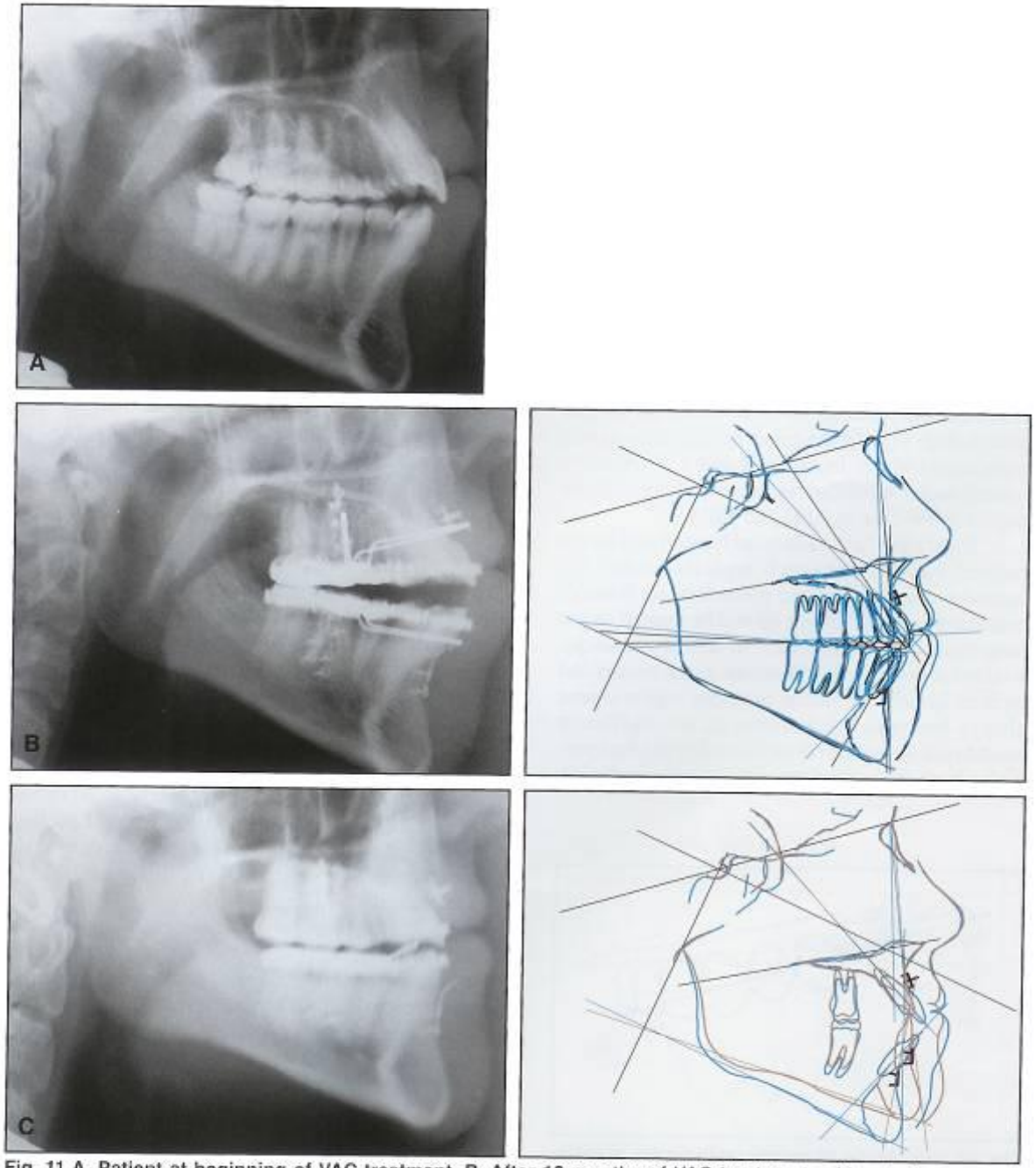


Fig. 11 A. Patient at beginning of VAC treatment. B. After 10 months of VAC treatment, with anterior moment arm much greater than posterior moment arm. C. After 17 more months of VAC treatment, with more balance between anterior and posterior moment arms, showing vertical translation of occlusal plane.

Figure 2
→
11 mo
Mand. Plane A.
(SNGoGn)
51 → 46.5

Ant Face Height
(Me-Ref. Line)
66.5 → 57.5

Incisor Intrusion
(⊥to Ref. Line)
24 → 13

Figure 3
→
8.5 mo
Mand. Plane A.
(SNGoGn)
53 → 46.5

Ant Face Height
(Me-Ref. Line)
65 → 55.5

Incisor Intrusion
(⊥to Ref. Line)
16.5 → 12.5

Figure 4
→
10 mo
Mand. Plane A.
(SNGoGn)
44 → 41.5

Ant Face Height
(Me-Ref. Line)
71.5 → 66.5

Incisor Intrusion
(⊥to Ref. Line)
22.5 → 17