Xbow® Blended Two Phase
“The Other Way To Use
Class II Springs”

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Conflict of Interest Declaration

I receive royalties from orthodontic labs that are licensed to fabricate the appliance discussed in this presentation.

Maxillary Expansion

• Cornerstone of Class II treatment
• Hyrax RME is the backbone of Xbow

Xbow® (Crossbow) Class II Corrector
US Patent No. 6,188,430 B1
Canadian Patent No. 2,393,021

Triple “L” Arch® (Lower Labial Lingual)
Xbow (Crossbow)

- Cross or hybrid appliance
- Lower labial and lingual bow

Two Phase Motto

Only place full edgewise appliances on Class I’s...

with adequate maxillary width.

Xbow Two Phase Treatment

Eruption Based Treatment Sequencing

- Foundation = Nasal Breathing and Adequate Maxillary Width

Xbow’s Target:

Class I first bicuspid bilaterally in phase one

???

- Does it make a clinically significant difference which inter-arch Class II appliance I use?
- Why not use an appliance with more asymmetric control?
- Do I really need stainless steel crowns?

Pancherz H. *AM J ORTHOD.* 1982;82:104-113
6+6+12=Blended Two Phase

- 4-6 months Class II springs on Xbow
- 1 month compensatory maxillary expansion + 5 months holding expansion = 6 months
- During expansion retention we test the Class II correction.
- Replace springs on one or both sides, if necessary
- R and R: Rebound and Periodontal Recovery
- Allow the Class II spring side effects to settle.
- 12 months phase two.

Xbow + RME X 6

RME X 6

2 months exp/align

Why bother with an extra appliance when I can do everything with a full edgewise appliance?

Does two phase treatment really shorten the time in a full edgewise appliance?

How does Xbow two phase treatment compare to Forsus™ to the arch wire single phase treatment?
Incisor inclination changes produced by two compliance-free Class II correction protocols for the treatment of mild to moderate Class II malocclusions.

Miller et al. Angle Orthod 2013

Conclusions

• The Xbow two phase protocol averaged 6 fewer months of overall treatment and 10 fewer months of fixed edgewise appliances compared to the Forsus to the archwire single phase protocol. (26.75 months for the Forsus to the archwire group vs 16.68 months for the Xbow group)

Conclusions (2)

• No differences in incisor inclination between treatment protocols were identified.
• Lower incisors proclined more the longer the treatment.

???

• How can single phase treatment take longer than two phase?
• Is there a better time to deal with the side effects of the Class II springs such as openbite?
Isolate the anterior teeth from the side effects of the Class II springs. Avoid anterior canting when a spring is used on one side only.

Allow settling of the side effects before phase two.

Studies

- University of Alberta
- Carlos Flores-Mir
- The following web page has links to the studies.
  - [http://www.crossboworthodontic.com/xbow.htm#research](http://www.crossboworthodontic.com/xbow.htm#research)

Ceph Studies


Ceph Studies (2)


Ceph Studies (3)

Ceph Studies (4)


Ceph Studies (5)


Ceph Studies (6)


Ceph Studies (7)


Lower Incisor Inclination during Class II Malocclusion Treatment with the Xbow Appliance followed by Fixed Appliances

Fern Leavens (4th year dental student)
Summer Research Project (2015)
Under the supervision of Dr. Flores-Mir
Unpublished

- 172 consecutively treated patients
- T1-T2 = phase one Xbow, T2-T3 = phase two full edgewise
- The mean lower incisor inclination changed from T1 (99.1°) to T2 (102.2°), with a mean difference of 3.1°. The change is statistically significant (p<0.001).
- The mean lower incisor inclination changed from T2 (102.2°) to T3 (103.7°), with a mean difference of 1.5°. The change is statistically significant (p=0.01). This may not be clinically significant.
- The mean lower incisor inclination changed from T1 (99.1°) to T3 (103.7°), with a mean difference of 4.6°. The change is statistically significant (p<0.001).
**Prediction Equation for Lower Incisor Inclination Based on Initial Overbite**

- Prediction equation is $L1IncDiff_{T1} = -2.2 + 1.3(OB)$. Or for every extra mm of OB (greater than the ideal overbite of 2mm) there is an increase in lower incisor inclination of $1.3^\circ$.

**Dental and Skeletal Variation Within the Range of Normal**

**JOHN S. CASKO, WALTER B. SHEPHERD**


Untreated Class II and Class III Skeletal Sample with Ideal Occlusion

(Naturally Compensated)

**Does orthodontic proclination of lower incisors in children and adolescents cause gingival recession?**

S Ruf, K Hansen, H Pancherz

“No interrelation was found between the amount of incisor proclination and the development of gingival recession.”

“This phenomenon may have been due to the fact that an approximately 80% spontaneous reversal of the incisor proclination after Herbst treatment occurs.”

**Orthodontic therapy and gingival recession: a systematic review**

Jose-Vassalli I, Grebenstein C, Topouzelis N, Sculean A, Katsanos C

The amount of recession found in studies with statistically significant differences between proclined and non-proclined incisors is small and the clinical consequence questionable.

Orthod Craniofac Res 2010;13:127–141

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**Table 2**

Ideal occlusion sample

Ranges, means, modes and standard deviations

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<thead>
<tr>
<th></th>
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<th>Mean/Mode</th>
<th>High</th>
<th>Range</th>
<th>S.D.</th>
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Immediate Skeletal and Dentoalveolar Effects of the Crown- or Banded Type Herbst Appliance on Class II division 1 Malocclusion
A Systematic Review
Barnett et al.
Angle Orthod 2008

The analysis of the effect of treatment with functional appliances vs an untreated control group showed that skeletal changes were statistically significant, but unlikely to be clinically significant.

(Am J Orthod Dentofacial Orthop 2011;139:24-36)

Effectiveness of orthodontic treatment with functional appliances on mandibular growth in the short term

The results are similar for all inter-arch Class II appliances. The differences are probably not clinically significant.