

Dr. Bob Miller gave a great lecture on Xbow at the 2019 AAO meeting. The following is one of the cases he presented.



Initial



Xbow Phase



Inbrace Phase



Final

This patient was treated by Dr. Steven Hearne, one of the first orthodontists to use Xbow after learning about it from Drs. Higgins, Miller, and Hughes.



Initial

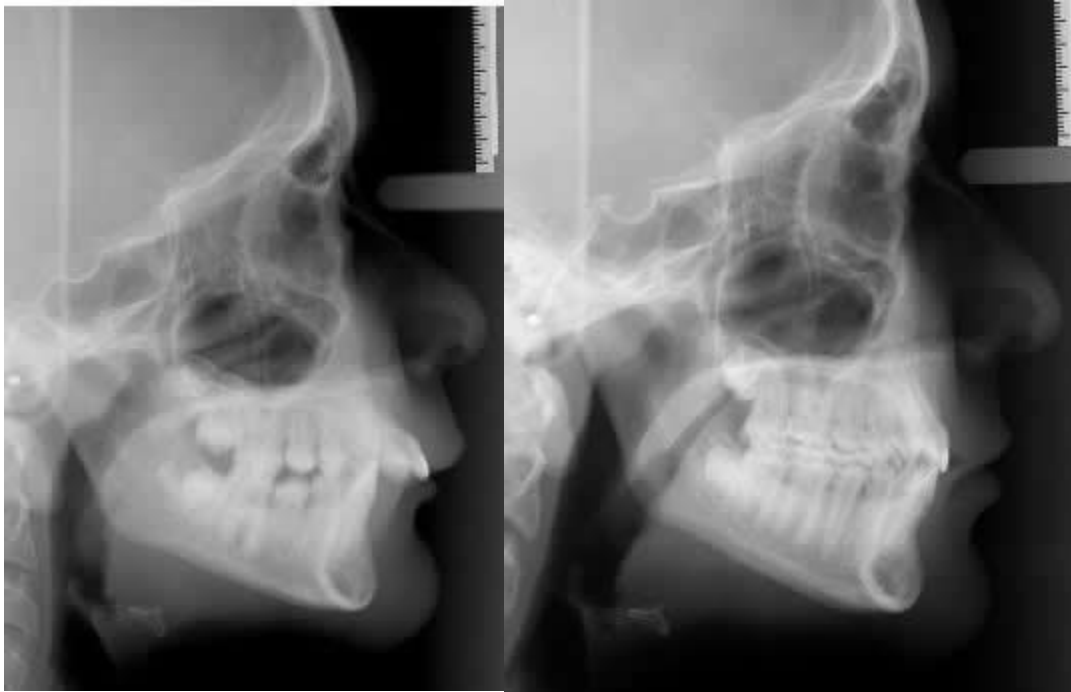


With Xbow





After Xbow and Full Braces



Before and After Cephs showing incisor control and airway improvement

The following two phase Xbow patient is one of Dr. Herb Hughes' first Xbow cases so he has four year follow up photos.

Dr. Hughes is known as the Magic Man of Orthodontics, not just for his superior orthodontic skills, but for the magic he performs in his office for his patients every day. This is what he says about the Crossbow appliance:

" The Crossbow gets the blue ribbon for the best-most efficient method to correct class II relationships."



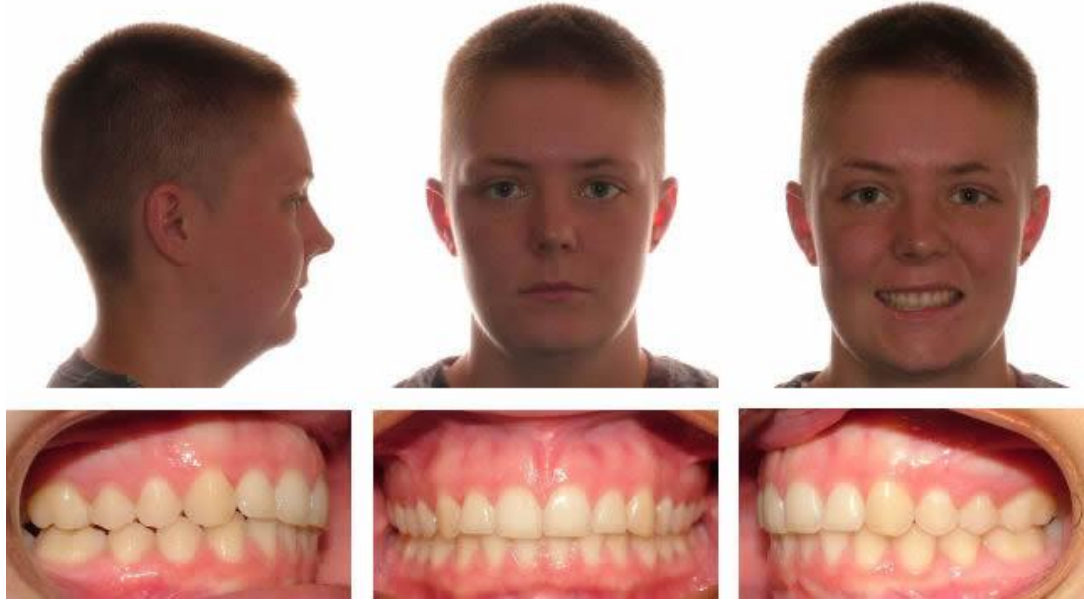
Initial



After 5 months Xbow



After braces



After 5 years



Initial



After Xbow and braces



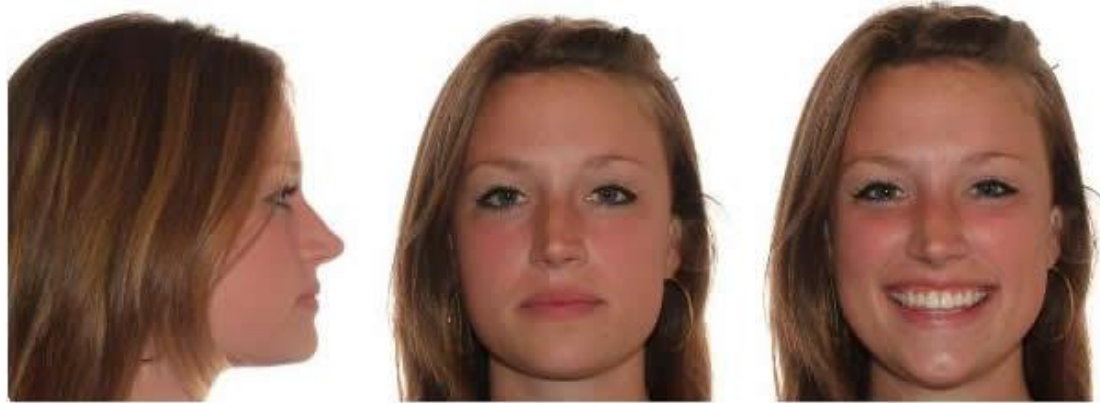
After 4 years



Initial



After Xbow and braces



After 5 years



Initial



Phase one Xbow – 5 months treatment time



Phase two – 4 months into braces phase



Final- Xbow 5 months + Braces 11 months = Total Treatment Time 16 months



Four year follow-up

The following patient was treated by Dr. Hughes with Xbow followed by full braces.



Before



After Xbow. Left spring removed after 6 months. Right spring removed after 7 months.



Early Class II elastics to help the canines distalize



After

Dr. Anthony Mair is well known for his lectures on non-surgical Class III treatment, treatment planning around the position of the root apices, and his Doppelganger theory.

Crossbow and Upper Second Molar Extraction by Dr. Anthony Mair.

The Forsus spring is an indiscriminate pusher. It pushes the upper teeth back and the lower teeth forward.

In patients where the doctor desires to “tilt the balance of the correction” towards the upper arch removal of upper second molars is a reasonable option.

Possible advantages include:

1. reduction of the anchorage load on the lower arch
2. more rapid distal movement and posterior intrusion of the upper arch
3. Reduced mesial relapse pressure on the upper arch.

In Nonextraction cases the upper second molar crowns can be distally tipped and thus prone to upright mesially

4. In patients with limited facial growth remaining removal of upper second molars makes distal upper arch accommodation more straightforward.

The ideal candidate is a child in their mid teens with a class II requiring x-bow correction.

The upper second molars would exhibit distal crown tip – ie apices more class II than crowns.

Upper third molars are present and with the eruption follicle sitting up against the distal roots of the second molars.

Growth potential could be reduced or the posterior maxillary alveolar bone is limited.

The lower arch is fairly ideally positioned in the face so minimal compensation is required.

The upper anterior teeth are crowded requiring distal movement of the upper buccal segments.

A study by Donihue and Harris (AJODO 2001:120 608-13) looked at 50 low angle class II patients.

Half were treated “nonextraction” the other half with upper second molar removal.

As expected, the second molar group corrected with more distal movement of the upper dentition and less proclination of the lower anteriors.

As an added benefit the extraction group finished 7 months sooner on average..

In cases of nonextraction class II correction I liken distally tipped second molars to an “Elephant in an Elevator”.

They occupy the ideal standing space that the first molar needs to be “comfortably class I” with the lower.

Removing the elephant makes the elevator ride more “uneventful” than squeezing in there with it!



The following two phase Xbow patients were treated by Dr. Mair.

This next patient was 15 years, 1 month when he started
Upper incisors were proclined and lower incisors were well related
He required significant correction in the maxilla and upper 8s were sitting hard up
against the roots of the upper sevens.



Initial



Final. Note 18/28 can be seen erupting on occlusal photo
12 total appointments (including start and deband); 22 months total treatment time – 10 months Xbow,
including maxillary expansion and 6 months of springs, 12 months braces.



Initial

Xbow progress

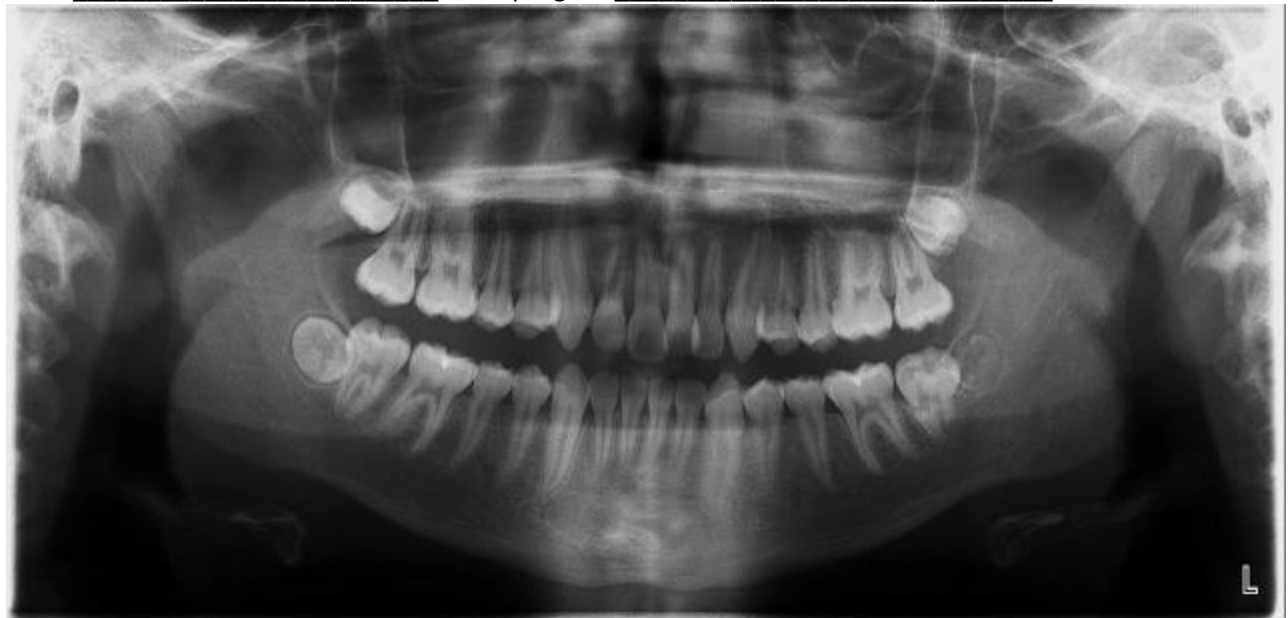
Final



Initial

Xbow progress

Final



Initial pan



final pan



Initial ceph

Progress ceph

The next patient presented as a skeletally mature (16, 5) teenage girl with a class II division 2 malocclusion, characterized by bimaxillary crowding with retrusive upper and lower incisors.

The right bicuspid was 4.5 mm class II, left side was 3.5 mm class II.

The crossbow was the only nonsurgical treatment option considered.

Due to the lack of available facial growth the decision was made to remove 17/27 (along with 38/48) to allow more dental correction to occur in the upper arch.

This was especially important given the thin attached tissue at 31 and 41.

April 10 - x bow goes in – start expansion

June 10- bracket 12-22 to create overjet prior to forsus springs

November 10 – Forsus springs both sides

March 11- Forsus springs removed and full fixed appliances placed (NB +5 torque used at 31 and 41 to **torque the roots lingual** and thicken the labial tissue)

April 12- Deband (note wire retainer at 46-47 to prevent over-eruption of 47 before eruption of 18)

24 months total treatment time; 4 months in Forsus springs; 15 total appointments including start and deband ; no emergencies



Initial



Progress (Xbow made by Extreme Lab in Toronto)



final



Initial pan



Progress pan

The next patient presented for a consult at age 15-6.

The records show a Dolico-facial skeletal class II pattern with a 2 mm class II on the right and a 5 mm class II on the left, the difference being primarily due to a maxillary asymmetry.

Given that the upper third molars were sitting up against the second molar roots, and the prospects for significant horizontal growth was questionable, treatment with Crossbow and removal of upper second molars was recommended.

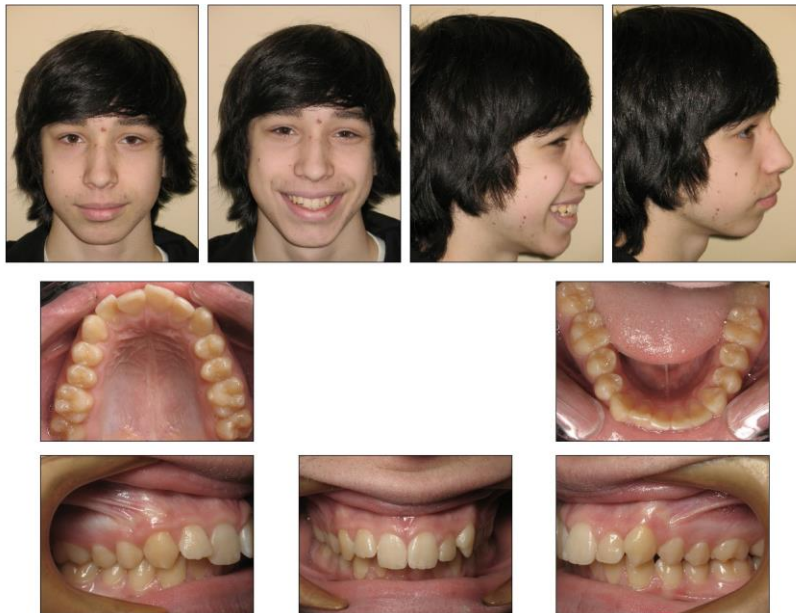
The right Forsus spring was in place for 2 months, the left for 4 months.

Crossbow was replaced with full edgewise appliances at 7 months.

Treatment completed in 21 months with 14 active appointments (including start and debond) plus 3 comfort visits.

Passive tubes and wires were left in place on the lower molars until eruption of the upper second molars was complete.

These were removed 8 months into retention once the upper third molars had erupted into functional occlusion.



Initial



Post Xbow



Final



8 months into retention, upper third molars have erupted into occlusion



Initial



Final

This is another example of a mature patient where Dr. Mair chose to extract upper second molars where third molars were developing.



Initial



Final. The patient was in treatment a total of 23 months, including phase one Xbow with springs for 6 months. The total number of appointments was 13.

The following patient was treated by Dr. Bob Miller. Dr. Miller is known for the Flip-Lock Herbst Appliance and for developing the pushrod used in the Forsus spring. He lectures across the US and Canada on Xbow, bonding, TADs, and lasers.

This patient presented with early loss of the upper left primary second molar and impaction of the second bicuspid wearing a Nance space maintainer.

Dr. Miller designed a modified Xbow with a three band RME to open space for the second bicuspid and correct the Class II.



Initial



1. Maxillary expansion for 6 weeks before springs. Right side spring removed after 3 months.



Partial maxillary fixed appliances with unilateral Xbow anchorage. Left spring removed after 6 months.



American Orthodontics version of CAAPP using Empower SL brackets on canines and bicuspids, 15 months.



Final, total treatment time 22 months.





1 year post debond.



Before and after panorex.

Below is another two phase Xbow patient treated by Dr. Bob Miller.



Before



Xbow over-correction after 3 weeks maxillary expansion followed by 4.5 months springs, note passive canine retraction by trans-septal fiber tension.



Initial upper bracket placement by indirect bonding





After 12 months full braces



1 year post debond



Initial and final cephs