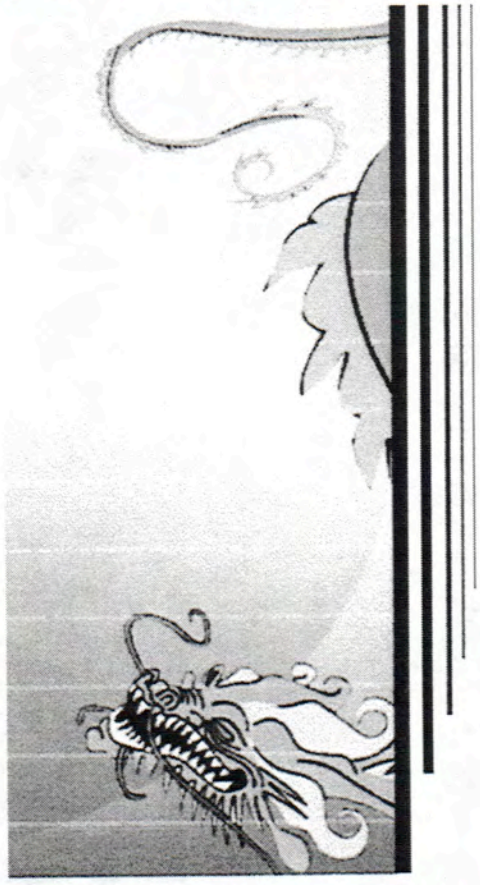
Entering the era of:

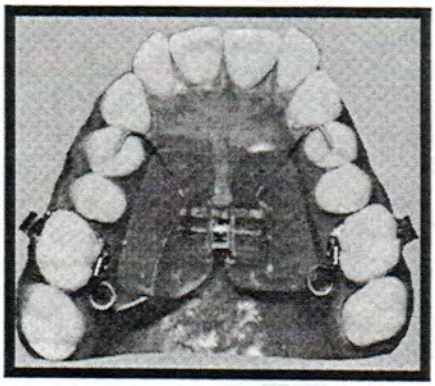
Hyper-efficient Orthodontics

A Primer on Noncompliance Therapy in Class II Nonextraction Cases Using Tandem Treatment

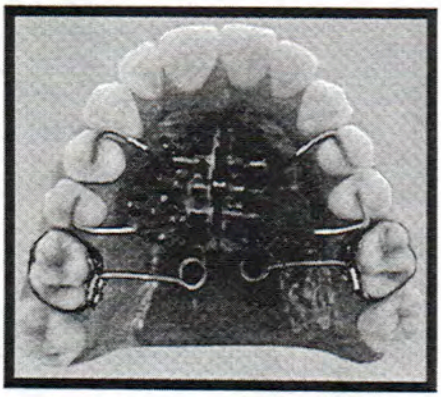


James J. Hilgers, D.D.S.,M.S.
Mission Viejo, California
U.S.A.

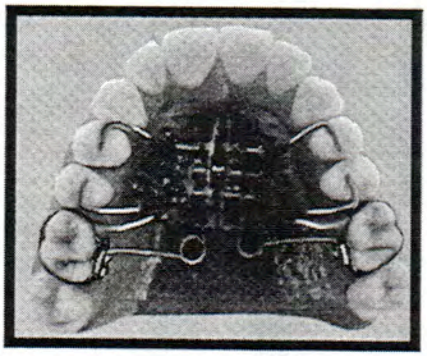
Definition of Appliances



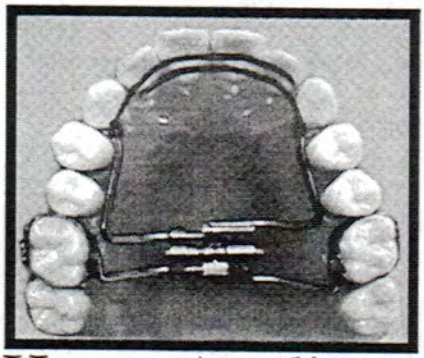
HEX Appliance



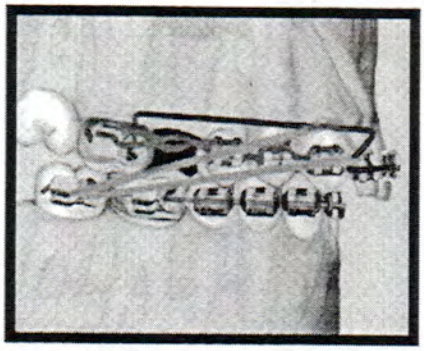
Pendex Appliance



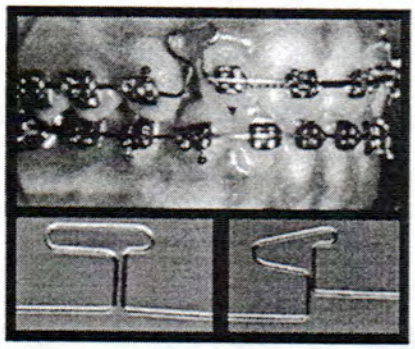
T-Rex Appliance



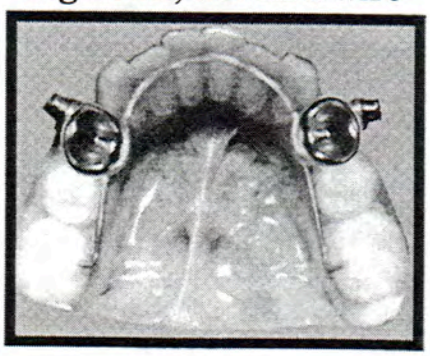
Hyrax Appliance
with "sweep springs"



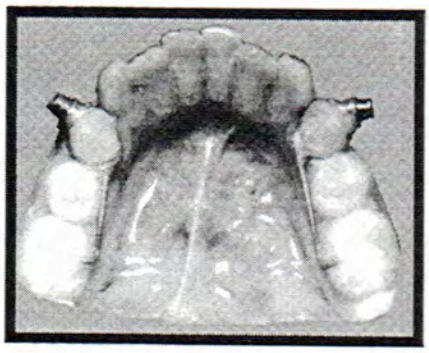
"Floating"
Retracting upper buccal segments, not on a wire



Reverse Curve (TMA)
"T Loop" archwire™



Functional Herbst™



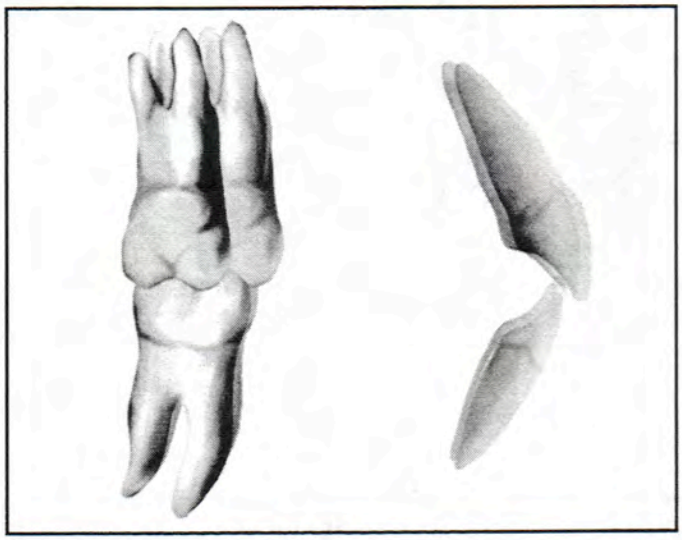
Anchorage Herbst™

Case Type 1
Diagnostic and treatment criteria

Summary Description of problem:

Mesofacial to brachyfacial type
Cl II caused by narrow maxillary arch
and mesial rotation of upper molars
Ideally positioned lower arch, good mandible

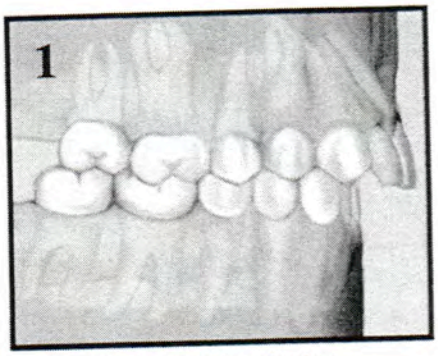
Visual Treatment Objective:



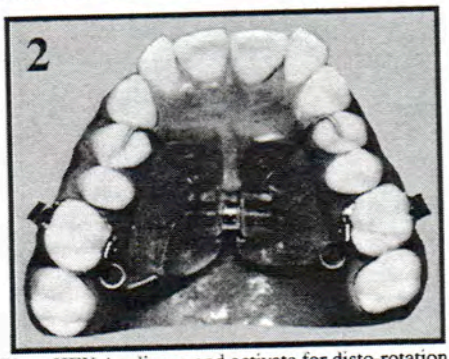
Treatment Sequence:

1. ***HEX appliance, disto-rotate upper molars.***
2. ***Expand maxillary arch; molars rotate into Cl I occlusion.***
3. ***Direct bond upper arch.***
4. ***Sever anterior stabilizing wires on HEX appliance to free the upper buccal segments for retraction.***
5. ***Leave the HEX appliance in situ for anchorage.***
6. ***"Float" the upper buccal segments into CL I occlusion.***
7. ***Align upper incisors with segment, then continuous archwire.***
8. ***Remove HEX; direct bond, align lower arch.***
9. ***Retract upper incisors with Reverse Curve "T loop"™ archwire.***
10. ***Place upper and lower ideal archwires.***
11. ***Functionally finish using upper Force 9™ and vertical seating elastics.***
12. ***Retention.***

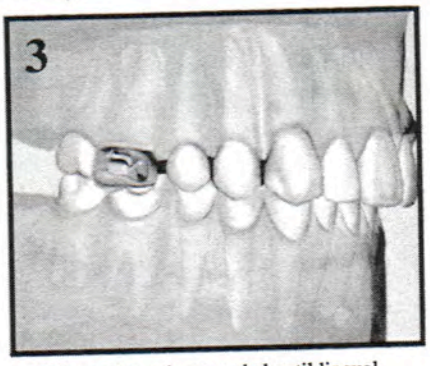
Case Type 1
Virtual Visual Treatment (V.V.T.)



Beginning Malocclusion
Cl II, DI Deep Bite



Place HEX Appliance and activate for disto-rotation of upper molars. Activate one turn every other day for slow expansion. Place double the amount of molar rotation desired. The anterior bicuspid occlusal rests are severed to allow retraction of the buccal segments.

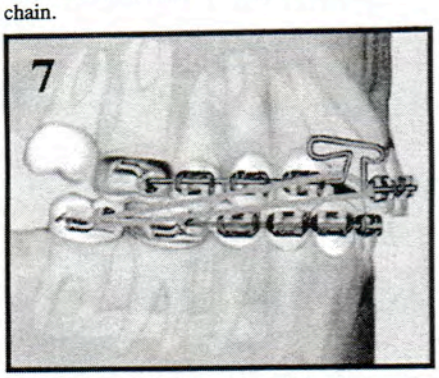


HEX appliance is expanded until lingual cusps of upper molars rest on buccal incline of lower molars. Upper molars are rotated into a Cl I relationship.

Upper arch is bonded and the buccal segments are retracted using the HEX appliance for anchorage. An .016 X .016 upper utility arch can also be placed to enhance anchorage. The upper buccal segments are "floated" distally with elastic chain.

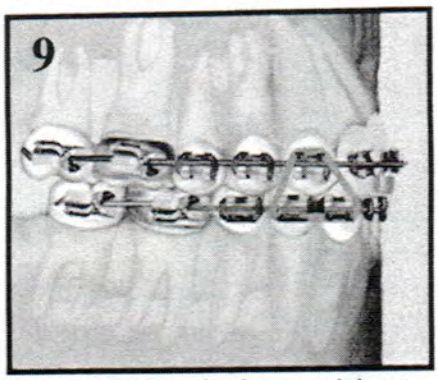
Complete "floating" back to the upper molars using elastic chain. There will be some slight tipping and possibly rotation in the buccal segments. This will be alleviated later with a continuous upper archwire.

Once the upper buccal segments have been completely retracted, a continuous leveling arch is used to align and rotate the upper arch as necessary; eg. .014 Australian, .016 NiTi™, or .016 Reverse Curve NiTi™.

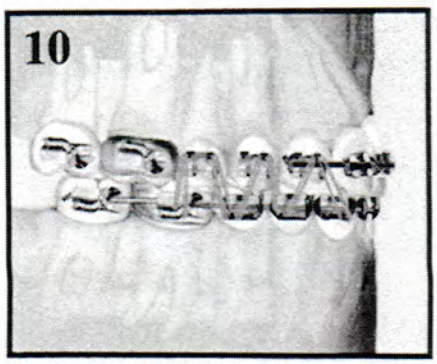


A .016 X .022 TMA reverse curve "T Loop" archwire is placed to intrude, retract and torque the upper incisors. Cl II elastics are continued as needed to retract the upper incisors.

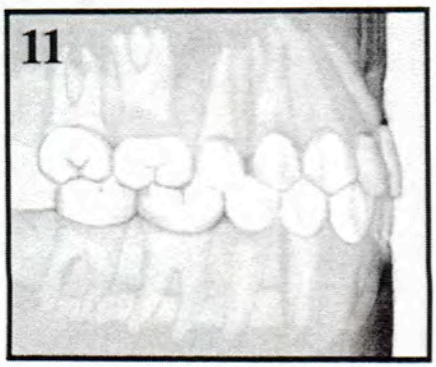
Finish retracting and overcorrecting overbite-overjet relationship with .016 X .022 TMA reverse curve "T Loop" archwire.



Band or bond upper second molars as needed, start triangular seating elastics using a Force 9 flexion arch in the upper and a .016 X .022 TMA or .016 X .022 stainless steel Orthos™ ideal in the lower arch.



Continue functional finishing process using short triangle elastics. Utilize ideal arch on the lower, eg. .016 X .022 Orthos™ or .016 X.022 TMA™



Final, functionally finished
Cl I Occlusion

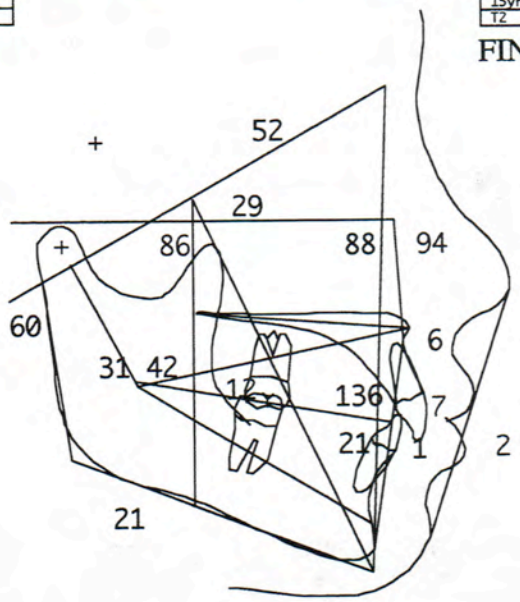
Clinical Example Case Type 1

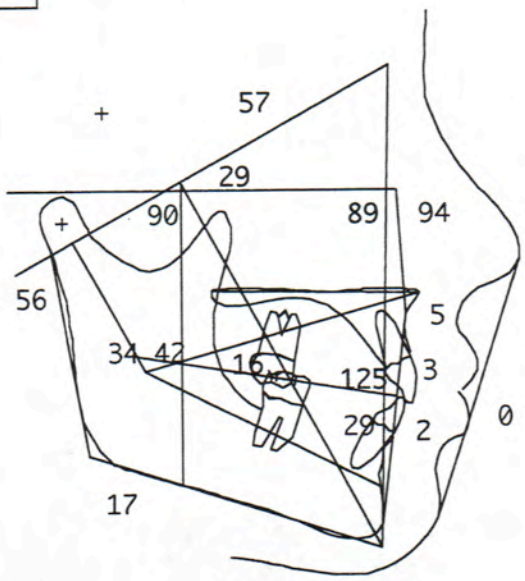
3/14/79	6/17/92
13yr 3mo	female
T1	

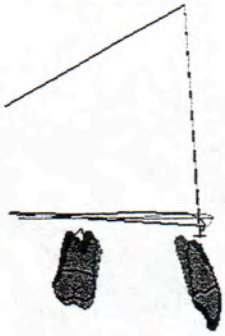
BEGINNING

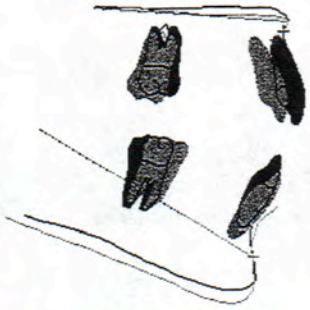
3/14/79	9/15/94
15yr 6mo	female
T2	

FINAL



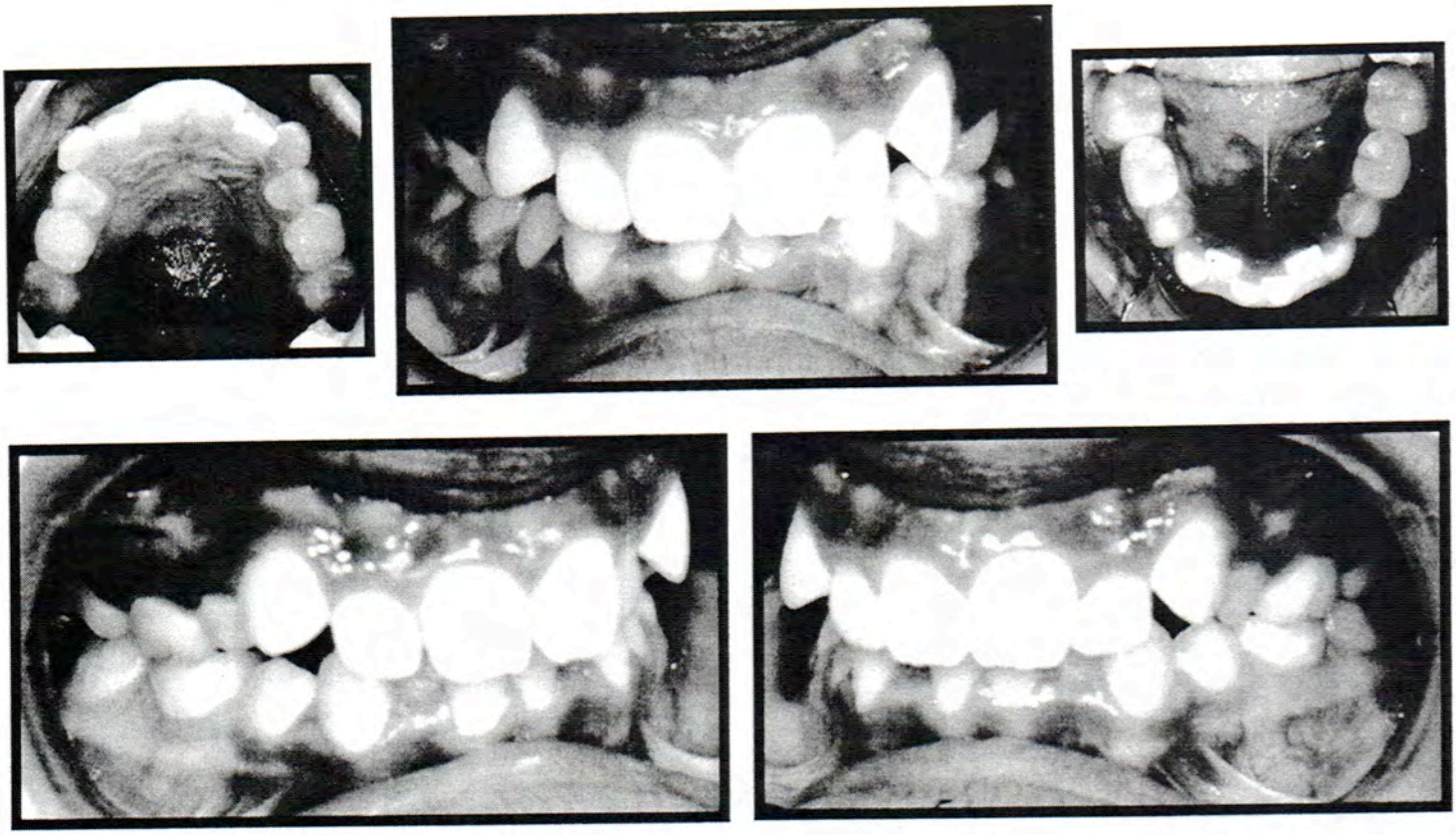




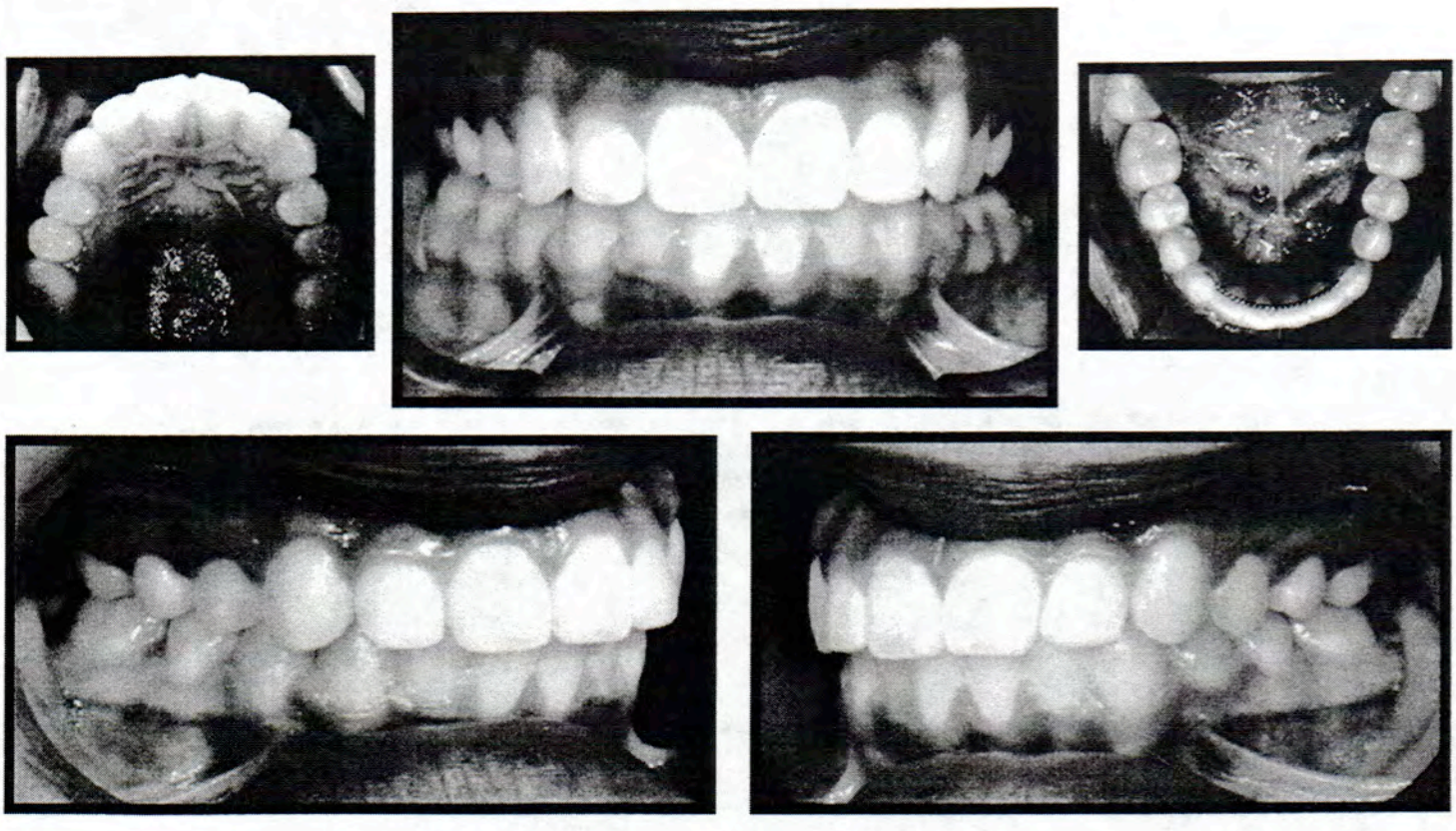


Clinical Example Case Type 1

Beginning Intraoral Photographs



Final Intraoral Photographs

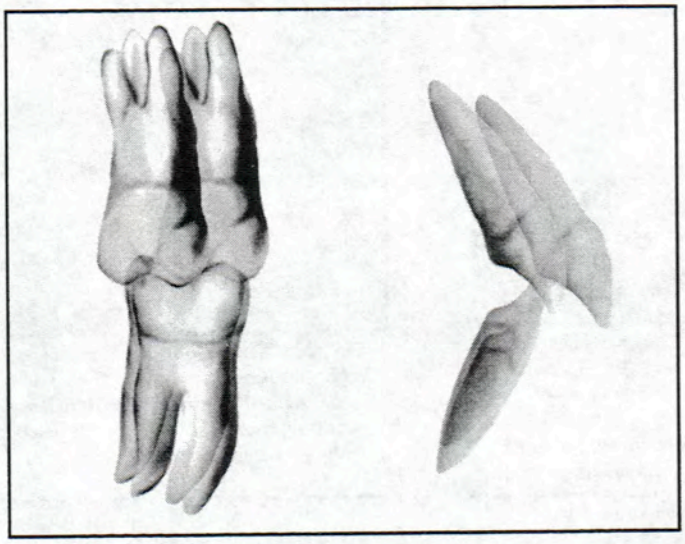


Case Type 2
Diagnostic and treatment criteria

Summary Description of problem:

Mesofacial to brachyfacial type
Cl II caused by maxillary dental protrusion
Narrow maxillary arch, mesial rotation of molars
Ideally positioned lower arch, good mandible

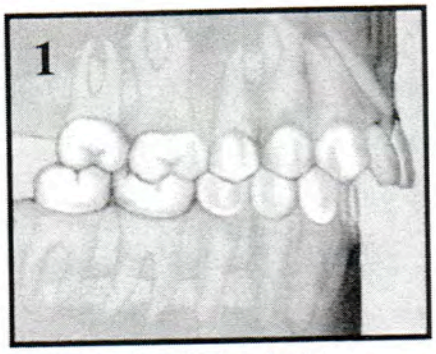
Visual Treatment Objective:



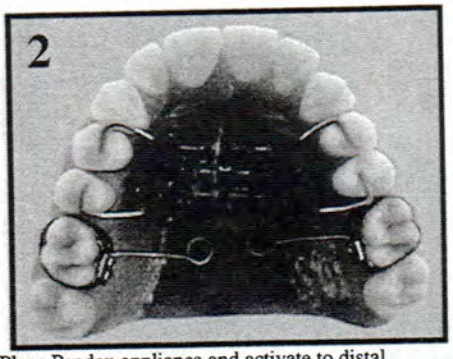
Treatment Sequence:

1. ***Pendex appliance; expand, distally drive molars; overcorrect.***
2. ***Place Quick-Nance™ appliance.***
3. ***Direct bond upper arch early.***
4. ***"Float" the upper buccal segments back to molars.***
5. ***Use upper utility arch to increase anchorage.***
6. ***Retract upper incisors with asymmetic "T" loop archwire.***
7. ***Reband molars and direct bond lower arch; align and level.***
8. ***Watch use of Cl II elastics due to good lower arch position.***
9. ***Place upper and lower ideal archwires.***
10. ***Functionally finish using upper Force 9™ and vertical seating elastics.***
11. ***Retention.***

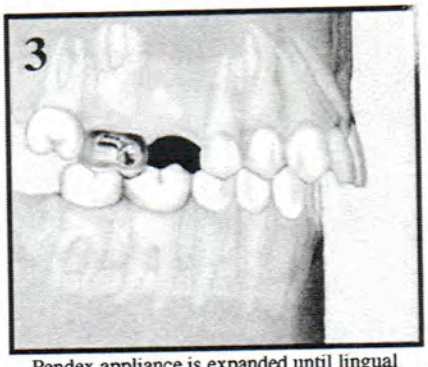
Case Type 2
Virtual Visual Treatment (V.V.T.)



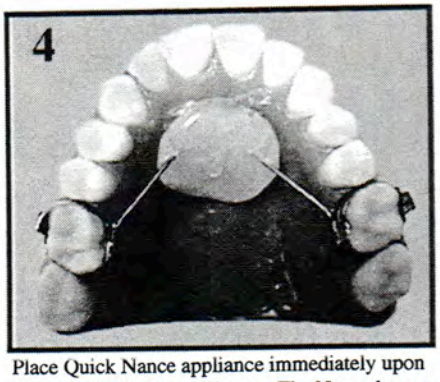
Beginning Malocclusion
Cl II, DI Deep Bite



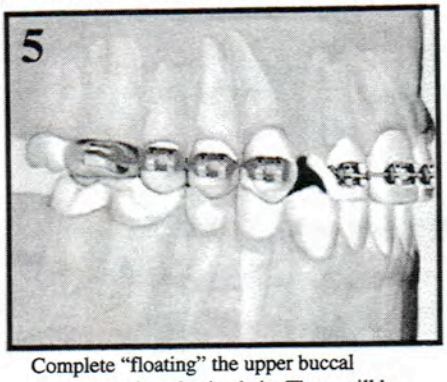
Place Pendex appliance and activate to distal drive upper molars. Activate one turn every other day until to broaden narrow upper arch. The Pendex appliance is anchored by bonding in at least four sites to increase the anchorage footprint.



Pendex appliance is expanded until lingual cusps of upper molars rest on buccal incline of lower molars. Upper molars overcorrected into super-Cl I relationship. Upper arch can be bonded early to increase anchorage.

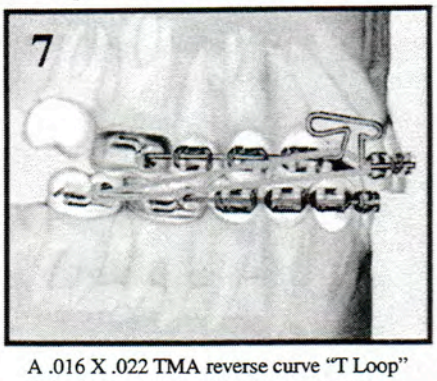


Place Quick Nance appliance immediately upon removal of Pendex appliance. The Nance button should be the size of a quarter and smoothed for patient comfort. This anchorage unit, along with overcorrection and early bonding of the upper arch improve molar stabilization during retraction

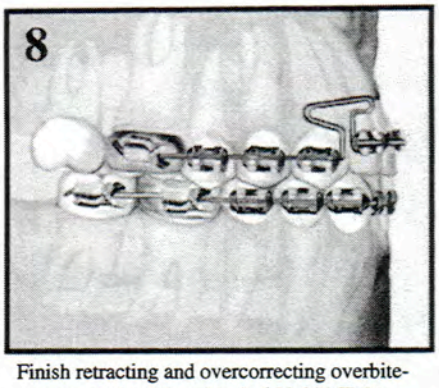


Complete "floating" the upper buccal segments using elastic chain. There will be some slight tipping and rotation in the buccal segments. This will be alleviated later with a continuous upper archwire.

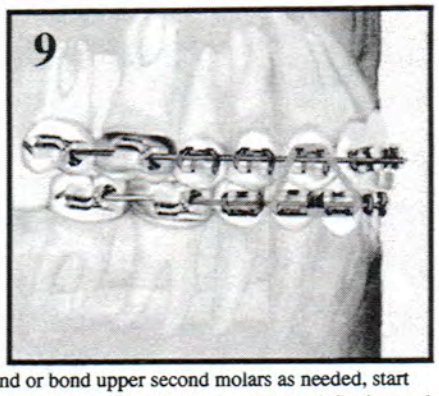
Once the upper buccal segments have been completely retracted, a continuous leveling arch is used to align and rotate the upper arch as necessary; eg. .014 Australian, .016 NiTi, or .016 Reverse Curve NiTi.



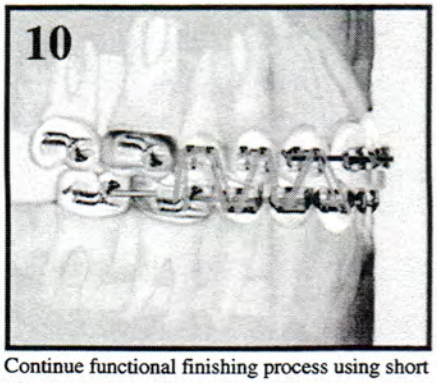
A .016 X .022 TMA reverse curve "T Loop" archwire is placed to intrude, retract and torque the upper incisors. Cl II elastics are continued to support the retraction of the upper incisors.



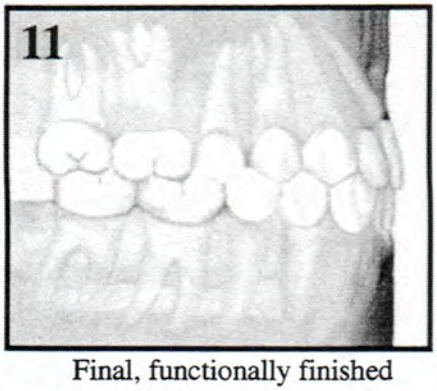
Finish retracting and overcorrecting overbite-overjet relationship with .016 X .022 TMA reverse curve "T Loop" archwire.



Band or bond upper second molars as needed, start triangular seating elastics using a Force 9 flexion arch in the upper and a .016 X .022 TMA or .016 X .022 stainless steelOrthos ideal in the lower arch.



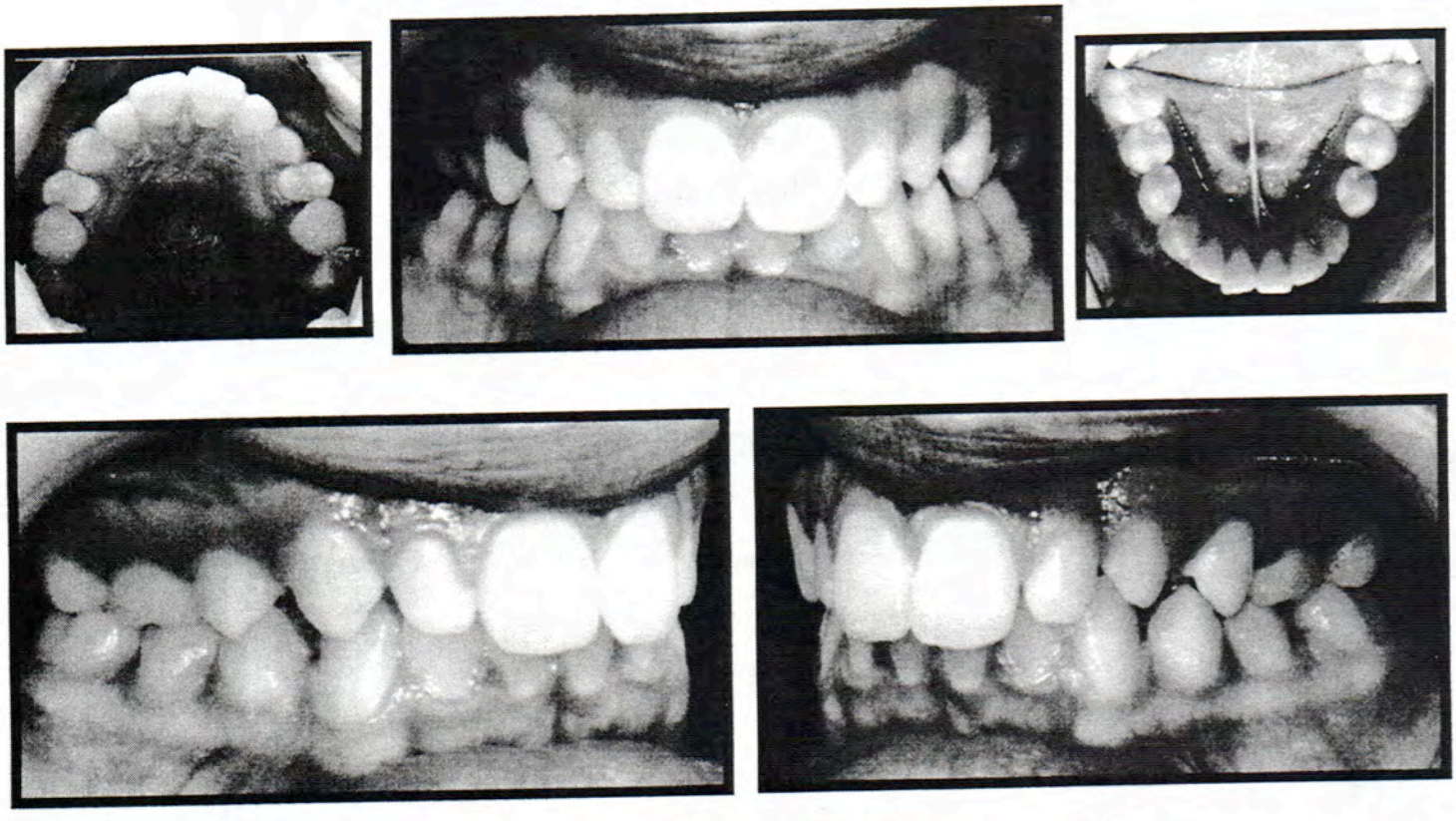
Continue functional finishing process using short triangle elastics. Utilize ideal arch on the lower, eg. .016 X .022 Orthos™ or .016 X.022 TMA



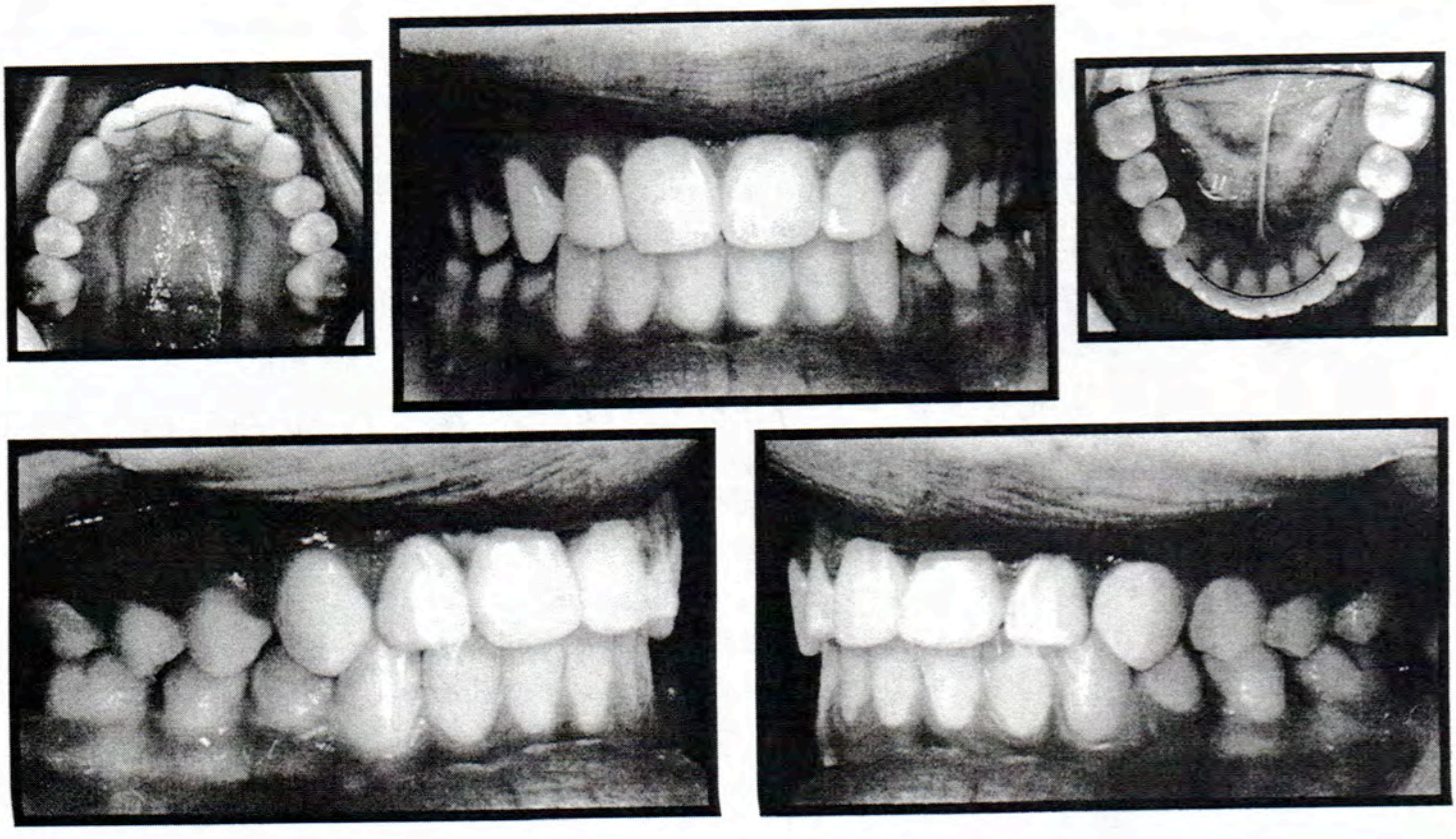
Final, functionally finished
Cl I Occlusion

Clinical Example Case Type 2

Beginning Intraoral Photographs



Final Intraoral Photographs

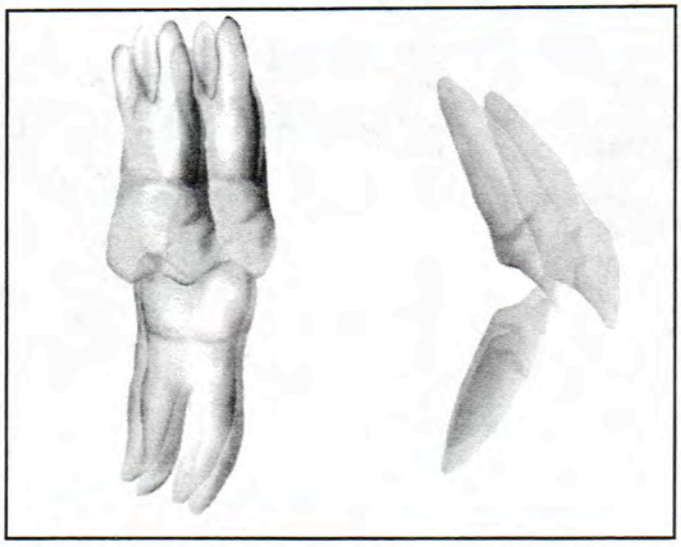


Case Type 3
Diagnostic and treatment criteria

Summary Description of problem:

Mesofacial to brachyfacial type
Cl II caused by maxillary dental protrusion and mandibular dental retrusion (combination)
Slightly retrusive mandible

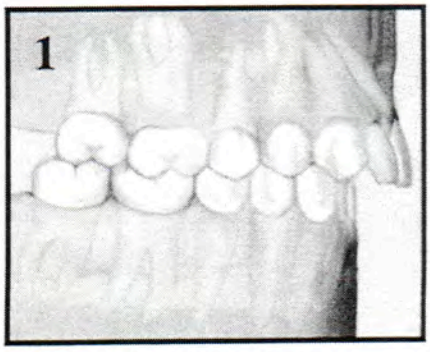
Visual Treatment Objective:



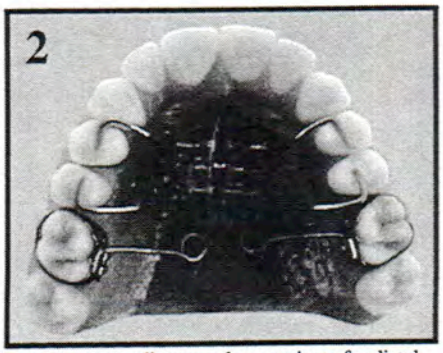
Treatment Sequence:

1. ***Pendex appliance, distal drive upper molars slightly (2-4mm).***
2. ***Upper molar band has previously soldered Herbst™ axel and small, Mini-peerless™ tube.***
3. ***Direct bond upper arch early.***
4. ***Place lower unit of Anchorage Herbst™ appliance.***
5. ***Place Herbst™ rods and sheaths, advance mandible but leave some overjet.***
6. ***"Float" the upper buccal segments into overcorrected CL I.***
7. ***Align upper incisors with segment, then continuous archwire.***
8. ***Retract upper incisors with reverse curve "T loop"™ archwire.***
9. ***Remove Herbst appliance, reband molars and direct bond lower arch; align and level.***
10. ***Place upper and lower ideal archwires.***
11. ***Functionally finish using upper Force 9™ and vertical seating elastics.***
12. ***Retention.***

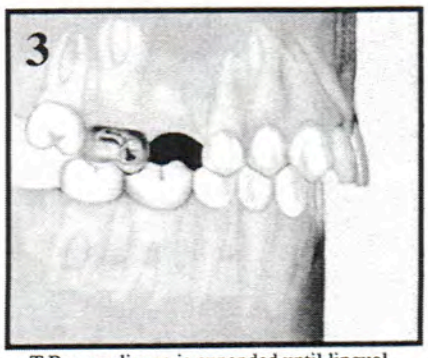
Case Type 3
Virtual Visual Treatment (V.V.T.)



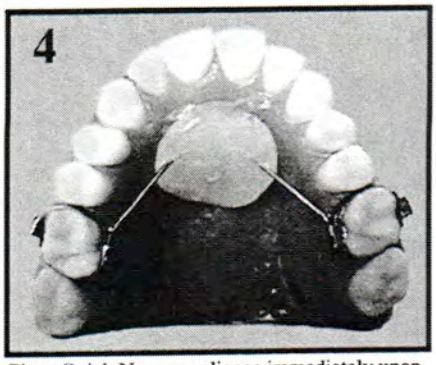
Beginning Malocclusion
Cl II, DI Deep Bite



Place T-Rex Appliance and pre-activate for distal driving upper molars. Activate one turn every other day until crossbite is overcorrected. Sever the soldered stabilizing arms with a 557 fissure bur, releasing the molars for distal overcorrection.

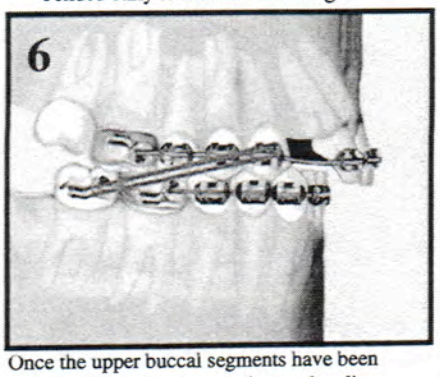


T-Rex appliance is expanded until lingual cusps of upper molars rest on buccal incline of lower molars. Upper molars are moved into a Cl I relationship. Upper arch can be bonded early to increase anchorage.



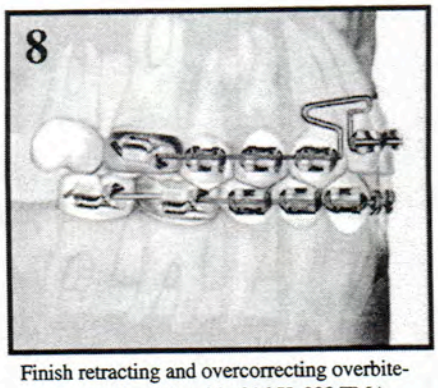
Place Quick Nance appliance immediately upon removal of T-Rex appliance. The Nance button should be the size of a quarter and smoothed for patient comfort. This anchorage unit, along with overcorrection and early bonding of the upper arch improve molar stabilization during retraction

Complete "floating" back to the upper molars using elastic chain. There will be some slight tipping and rotation in the buccal segments. This will be alleviated later with a continuous upper archwire.

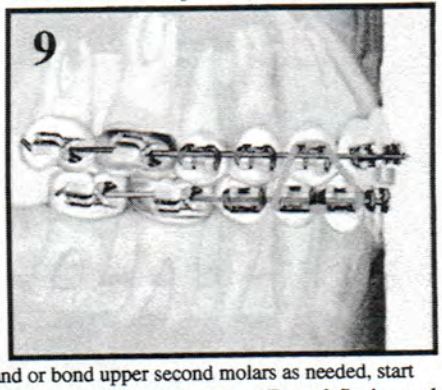


Once the upper buccal segments have been completely retracted, a continuous leveling arch is used to align and rotate the upper arch as necessary; eg. .014 Australian, .016 NiTi, or .016 Reverse Curve NiTi.; Cl II elastics are continued to develope the lower arch forward.

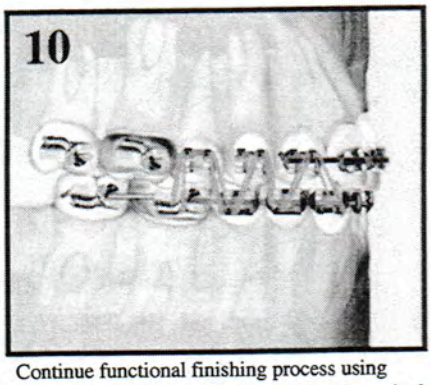
A .016 X .022 TMA reverse curve "T Loop"™ archwire is placed to intrude, retract and torque the upper incisors. Cl II elastics are continued as needed during retraction of the upper incisors.



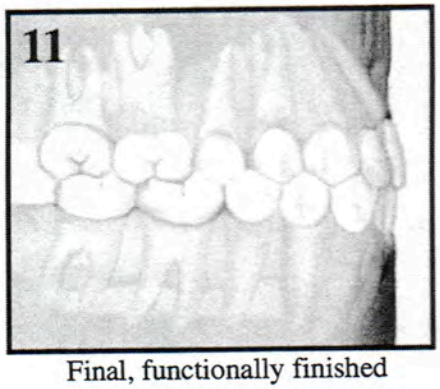
Finish retracting and overcorrecting overbite-overjet relationship with .016 X .022 TMA reverse curve "T Loop" archwire.



Band or bond upper second molars as needed, start triangular seating elastics using a Force 9 flexion arch in the upper and a .016 X .022 TMA or .016 X .022 stainless steelOrthos ideal in the lower arch.



Continue functional finishing process using short triangle elastics. Utilize ideal arch on the lower, eg. .016 X .022 Orthos™ or .016 X.022 TMA



Final, functionally finished
Cl I Occlusion

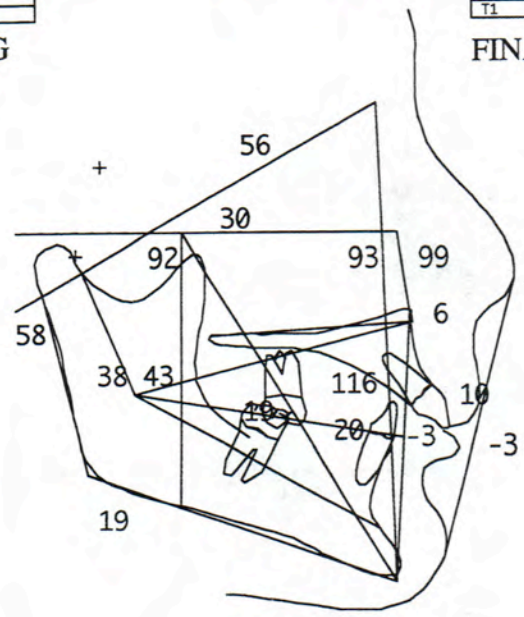
Clinical Example Case Type 3

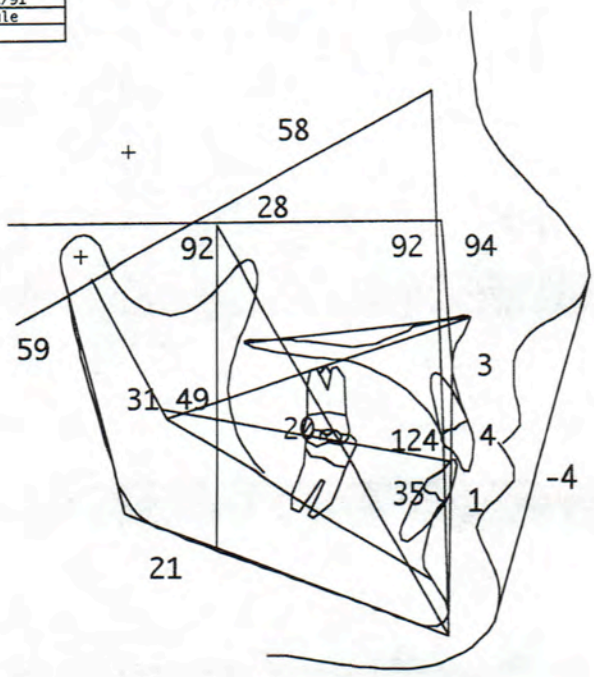
8/23/78	3/24/89
10yr 7mo	female
T1	

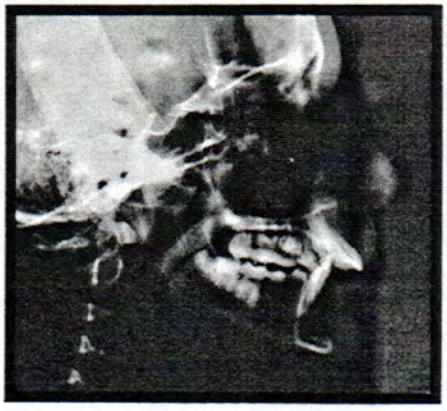
BEGINNING

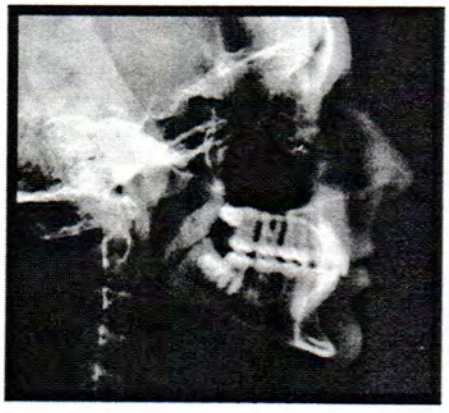
8/23/78	11/1/91
13yr 2mo	female
T1	

FINAL



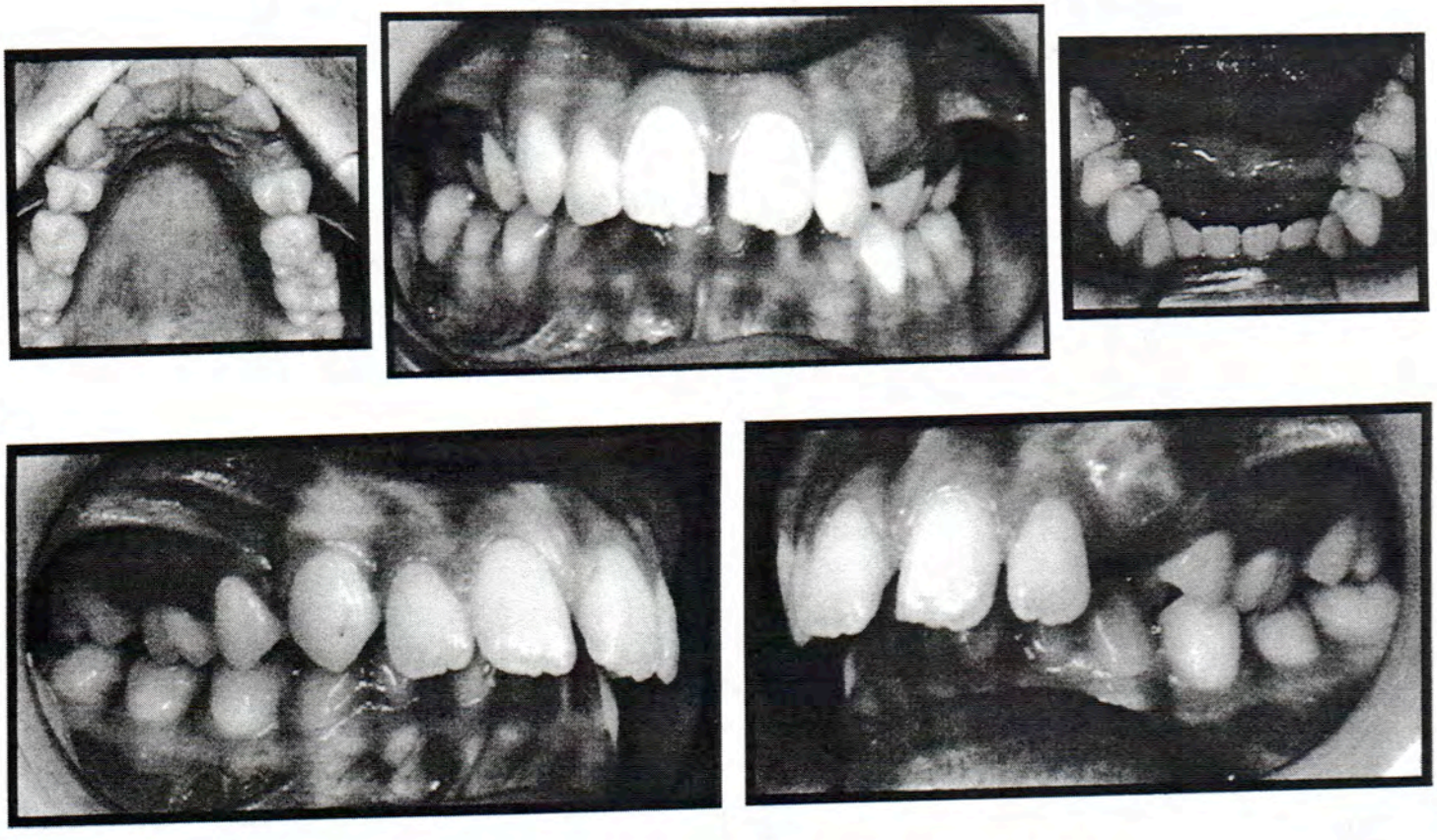




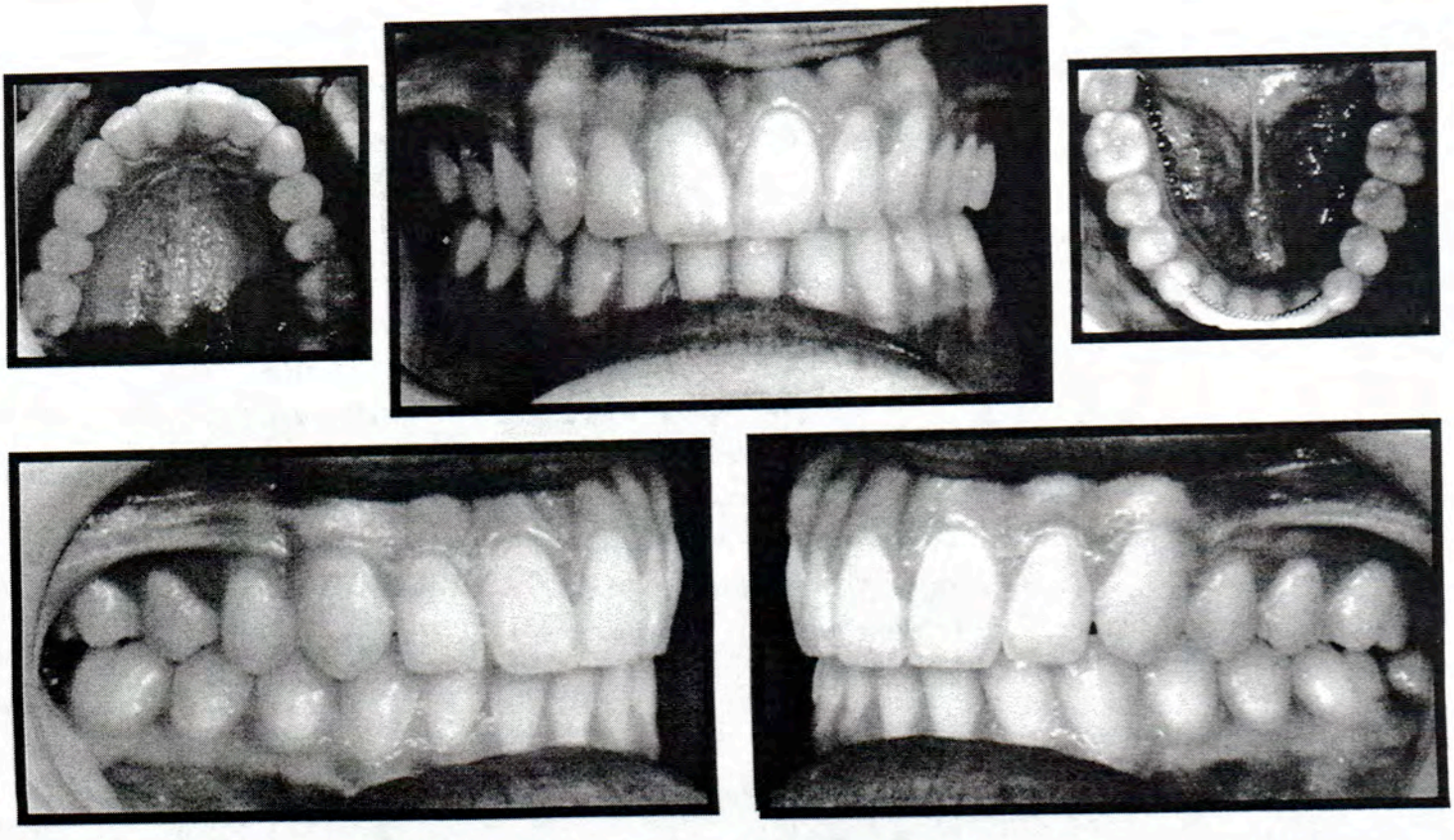


Clinical Example Case Type 3

Beginning Intraoral Photographs



Final Intraoral Photographs

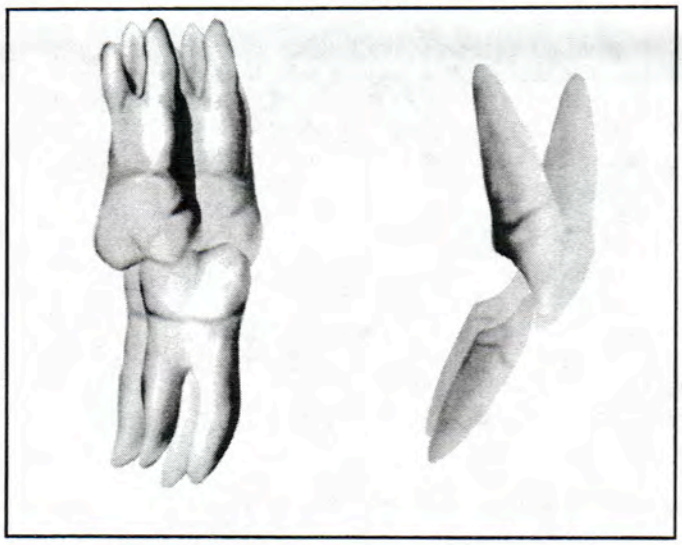


Case Type 4
Diagnostic and treatment criteria

Summary Description of problem:

Mesofacial to brachyfacial type
Cl II caused by mandibular dental retrusion
Upper incisors in lingu-version, locking lower arch
Retrusive lower arch but good mandible

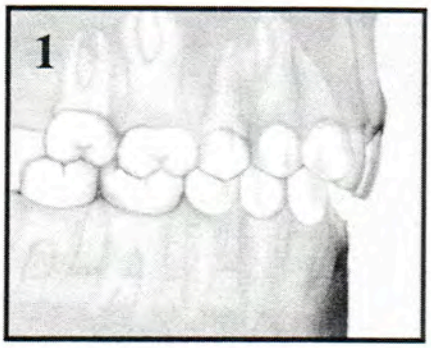
Visual Treatment Objective:



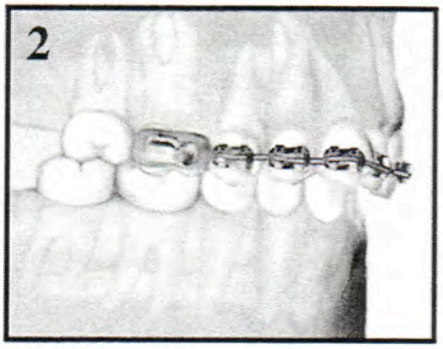
Treatment Sequence:

1. Pendex appliance; expand maxillae and distal drive molars.
2. Direct bond upper arch early (at placement of Pendex).
3. Distal drive molars into over corrected Cl I;
advance upper incisors
4. Clear the lower arch; band and bond lower arch early.
5. "Float" the upper buccal segments back to molar.
6. Wear Cl II elastics to the upper utility arch while
"floating" the upper buccal segments distally.
8. Retract upper incisors with asymmetic "T" loop archwire.
9. Level the upper arch with a reverse curve archwire.
10. Accentuate torque in upper incisor retraction by loop alteration.
11.. Place upper and lower ideal archwires.
12. Functionally finish using upper Force 9 and vertical
seating elastics.
13. Retention.

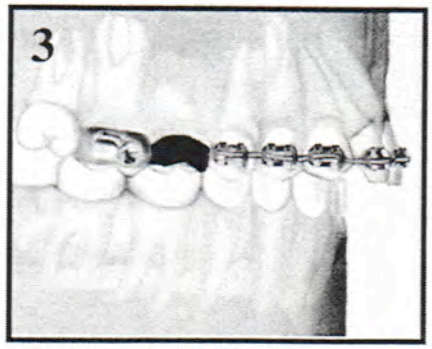
Case Type 4
Virtual Visual Treatment (V.V.T.)



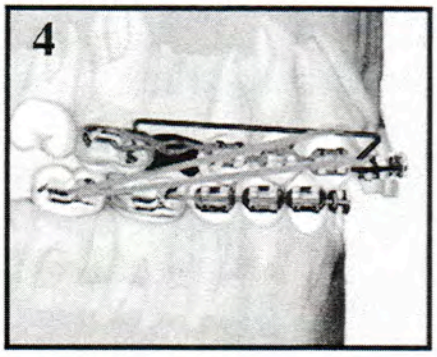
Beginning Malocclusion
Cl II, DI Deep Bite



Place Pendex Appliance and activate for slow expansion and distal driving upper molars. Bond the upper arch early to advance and align the upper incisors. This clears the lower arch for early bonding (needed for Cl II elastics)>



Pendex is expanded until lingual cusps of upper molars are on buccal incline of lower molars. Upper molars are distally driven into super Cl I relationship.



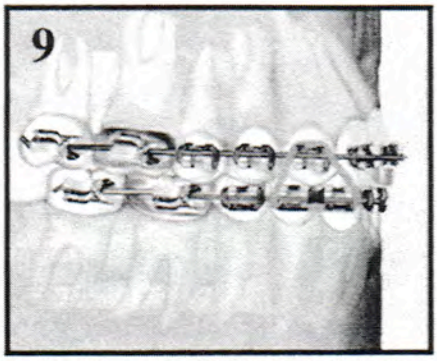
A .016 X .016 or .016 X .022 upper utility arch is placed. The upper buccal segments are "floated" distally and Cl II elastics to the utility arch are used for anchorage. Don't start Cl II elastics until at least a .016 X .022 TMA torque control wire is in place.

Complete "floating" back to the upper molars using elastic chain. There will be some slight tipping and possibly rotation in the buccal segments. This will be alleviated later with a continuous upper archwire.

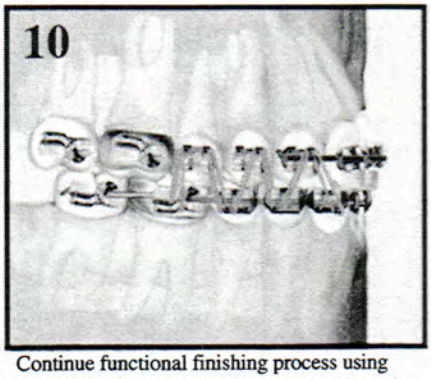
Once the upper buccal segments have been completely retracted, a continuous leveling arch is used to align and rotate the upper arch as necessary; eg. .014 Australian, .016 NiTi, or .016 Reverse Curve NiTi.

A .016 X .022 TMA reverse curve "T Loop" archwire is placed to intrude, retract and torque the upper incisors. Cl II elastics are continued as needed to retract the upper incisors.

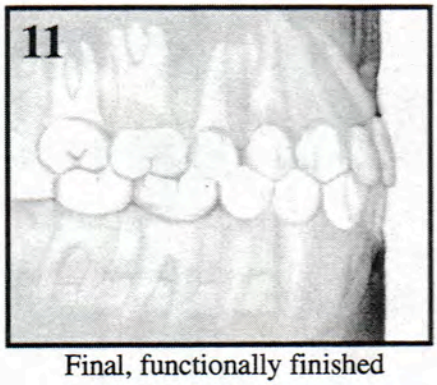
Finish retracting and overcorrecting overbite-overjet relationship with .016 X .022 TMA reverse curve "T Loop" archwire.



Band or bond upper second molars as needed, start triangular seating elastics using a Force 9 flexion arch in the upper and a .016 X .022 TMA or .016 X .022 stainless steelOrthos ideal in the lower arch.



Continue functional finishing process using short triangle elastics. Utilize ideal arch on the lower. eg. .016 X .022 Orthos or .016 X.022 TMA



Final, functionally finished
Cl I Occlusion

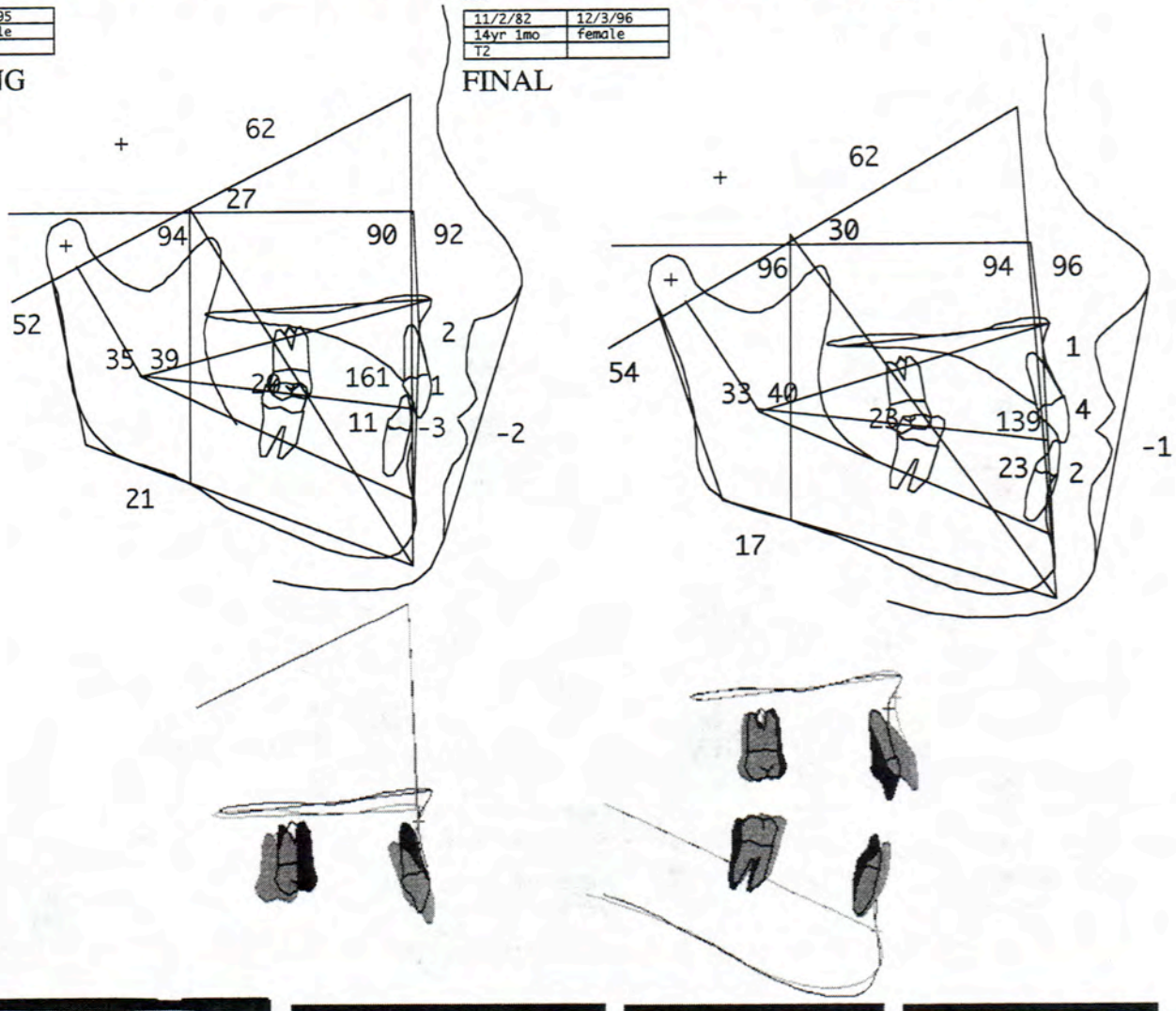
Clinical Example Case Type 4

11/2/82	4/4/95
12yr 5mo	female
T1	

BEGINNING

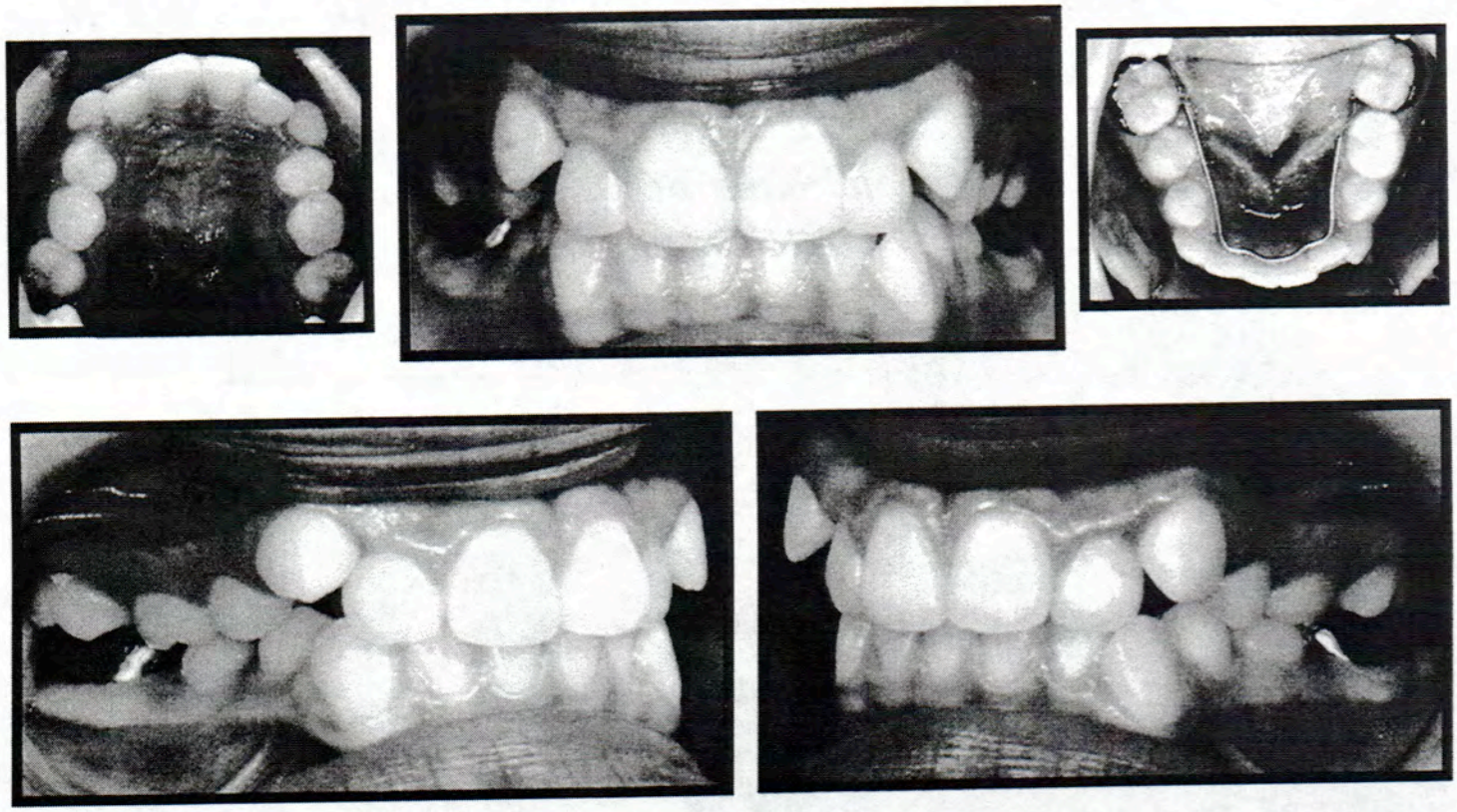
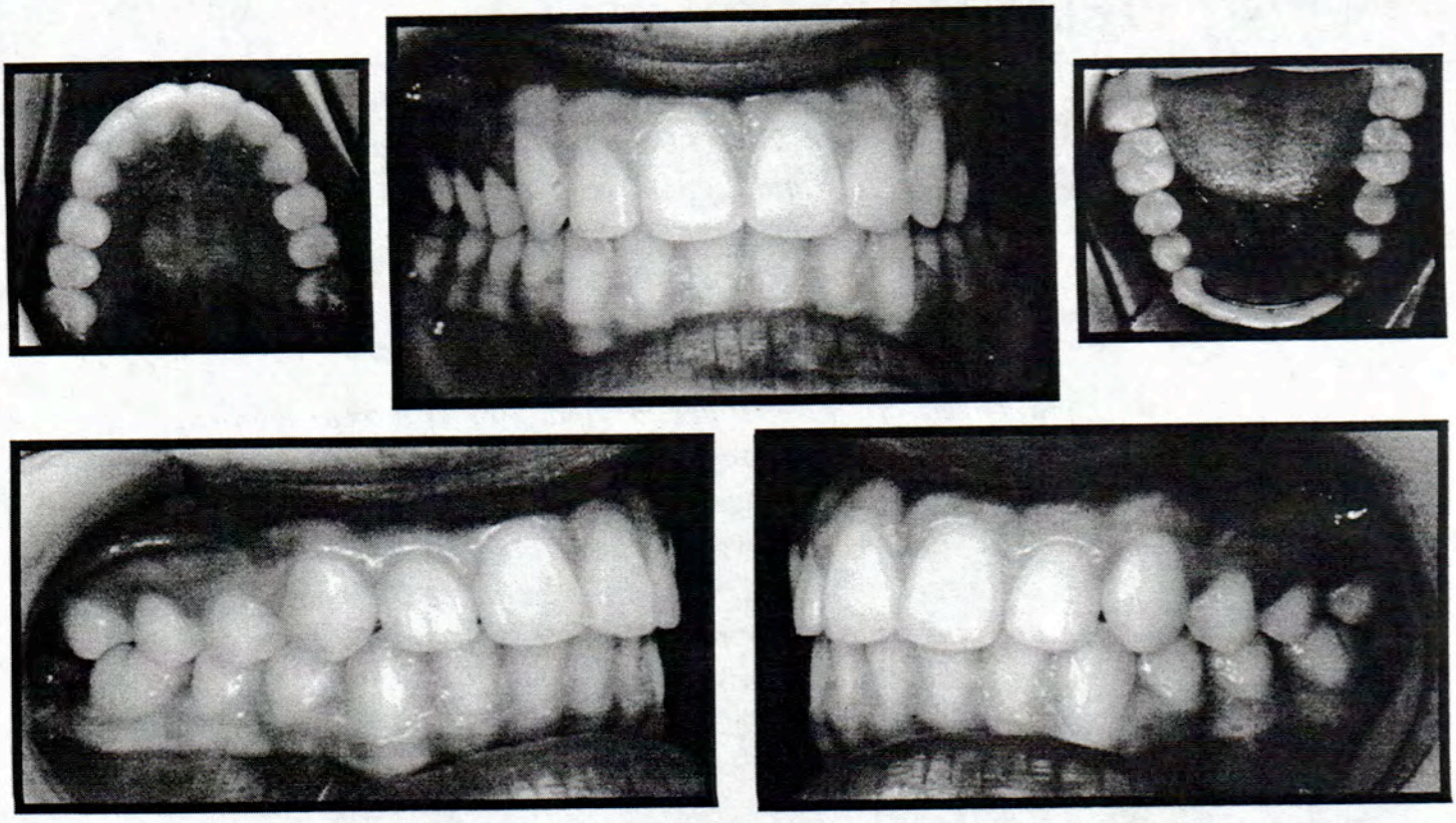
11/2/82	12/3/96
14yr 1mo	female
T2	

FINAL



Clinical Example Case Type 4

Beginning Intraoral Photographs



Final Intraoral Photographs