



The Damon System

- **When to extract?**
 - **To improve bone/tissue**
 - **To satisfy A-P occlusions**
 - **Pre-surgery**
 - **Extreme midline discrepancies**

When should you consider extracting teeth?

1. When you have extremely malposed teeth with weak supporting bone and soft tissues, consider extracting teeth *only if there will not be an adverse impact on the patient's profile*
2. When there are no other ways to do it otherwise, consider extractions to help improve your anteroposterior occlusion requirements
3. In surgical cases, extractions may totally appropriate and necessary
4. When there are no other means to correct a *severe* midline discrepancy, extraction(s) may be needed

Caveats of Extraction
with the Damon System

1. Working with the cuspids alone can have detrimental effects on the supporting bone.
2. Use +7 degree (high torque) brackets on all 3s (U & L)
3. Hook closing springs distal to 6s, not the 7s (including the 7s flares them!)
4. For maximum anchorage, ligate the 6s and 7s together
5. Retract anterior teeth together in blocks (*en masse*).

En masse retraction is a method of space closure whereby the six anterior teeth are ligated together and moved as a unit closing the extraction site:

1. The anterior space is first consolidated via elastic C-chains (under the archwire if large spaces) on a .016 x .025 or .014 x .025 CuNi-Ti or Ni-Ti SE archwires.
2. After anterior space closure, this segment is ligated from cuspid to cuspid with .008 stainless steel ligature wire behind the archwire to prevent anterior spaces from opening.
3. Posterior spaces are closed utilizing Ni-Ti coils or Pletcher stainless steel coils on a preposted .019 x .025 Stainless Steel archwire.
4. The coil springs are placed over the end of the archwire cut distal to the first molar while the other end is activated with ligature wire to the hook on the archwire placed mesial to the cuspids.

Pletcher coil springs are typically used in adult cases as well as those cases where the space desired to be closed has been evident for long periods of time (previous extraction spaces).

They are made of stainless steel, as opposed to NiTi), and are used for space closure. They are attached to the mesial hook of the posted .019 x .025 archwire and extended distal to the first molar. These deliver a greater force than Ni-Ti coils and All other mechanics are identical for space closure.

Extraction Mechanics

The orbicularis oris and mentalis muscles maintain the AP (anterior-posterior) position of the anterior teeth while the crowding seeks the path of least resistance, which is into the extraction sites. This is a very significant mechanical advantage since the crowding is alleviated without any demand on posterior anchorage. Taking advantage of these mechanics eliminates need for individual cuspid retraction. Moving the anterior teeth *en masse* appears to have a positive long-term periodontal impact particularly around the cuspids.

In extraction cases

- **Space closure**
- **Space consolidation**

Space Consolidation is the process of gathering anterior space between teeth prior to en masse retraction. Chain elastics are used from lateral to lateral or cuspid to cuspid, depending on the amount of space needed to close. If major space is present, care is given not to round trip the cuspids. In this situation, space would be closed lateral to lateral.

Only close anterior space on .014 x .025 or .016 x .025 Ni-Ti archwires in the second phase of archwire sequencing. Closing space on round archwires will cause rotations. If major anterior space is involved, the chain elastics are placed before insertion of the archwire, thus minimizing friction. Occasionally, elastic thread is utilized to control the force of the space closure. It is preferable to consolidate space distal to the cuspids prior to *en masse* retraction of the anterior segment. Space closure is easier if the forces vectors are parallel to the major mechanics posterior archwire. All rotations should have been corrected before posterior space closure.

Space Closure

Following anterior space consolidation in the High-Tech edgewise phase of archwire sequencing, the six anterior teeth are ligated together under the archwire with .008 stainless steel ligature wire. A pre-posted .019 x .025 Stainless Steel archwire is inserted with the hooks placed between the laterals and cuspids. Medium Ni-Ti (9 or 12 mm) springs are placed over the end of the slightly protruding archwire clipped distal of the first molars. The other end of the spring is attached to the hook on the archwire with ligature wire. The springs are usually activated approximately 2/3 of their original length.

Space creation

- **Conversion of crowding into nonextraction case**
- **Late mixed-dentition stage**
- **With Herbst, *prn***

Space Creation is the process of altering the course of treatment by changing an extremely crowded situation into a nonextraction case. Ideally, this is performed in the late mixed dentition stage before the eruption of the cuspids.

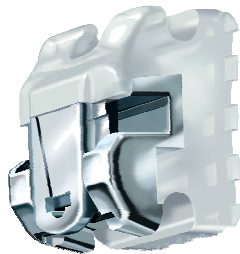
1. A four tooth sectional .014 wire is placed in the anterior segment to align and control severe rotations.
2. Following the initial phase, a .014 x .025 or .016 x .025 Ni-Ti wire is placed with a compressed Ni-Ti coil spring extending from the lateral incisor to the first molar. Great care is given to only activating the spring approximately 1X times the width of the bracket. Too much activation will overpower the lip bumper effect of the orbicularis oris and mentalis muscles.
3. Crimpable stops are placed on either side of a central bracket to prevent the archwire from sliding.
4. The patient is reappointed at an appointment interval, usually 10 weeks, so the archwires do not have time to slide out of the first molar tube.

NOTE: This procedure can be performed in conjunction with Herbst® therapy by welding a wire tube to the maxillary stainless steel crown and aligning the anteriors as described above. It is also advisable to weld a long molar tube in an attempt to prevent the archwire and spring from becoming dislodged from the molar tube between appointments.



THE DAMON SYSTEM

Class II Therapy



By including the face fully in the treatment planning phase, Damon mechanics provides straight-forward means to correct Class II malocclusions.

As a general rule, it is recommended that you:

- Treat Class II with good face using Damon System and elastics
- Treat Class II poor profile use Damon System and Herbst®
- Start fixed Herbst® Treatment in mixed dentitions when the patient's growth just begins to accelerate:
 - Begin girls by ~10.5 - 11 yrs old
 - Begin boys by ~11.5 - 12 yrs old

We will address patients with the poorest of profiles and investigate the use of the Herbst® appliance in a minute, but let's first look at the torques that are available for Class II patients.



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Class II Torques

Damon System Prescriptions

D2 D3 MX Tandem A/W Non-Tandem A/W
 Patient _____ Patient # _____
 Doctor _____ Location _____
 Start Date _____

UR7	UR6	UR5	UR4	UR3	UR2	UR1		UL1	UL2	UL3	UL4	UL5	UL6	UL7
				+7	+10	+17	High	+17	+10	+7				
-27	-18	-7	-7	0	+8	+12	Std	+12	+8	0	-7	-7	-18	-27
				+3	+7		Low	+7	+3					
				+7			High			+7				
-10	-28	-17	-12	0	-1	-1	Std	-1	-1	0	-12	-17	-28	-10
				-6	-6		Low	-6	-6					
LR7	LR6	LR5	LR4	LR3	LR2	LR1		LL1	LL2	LL3	LL4	LL5	LL6	LL7

TIPS: Indicate inverted brackets by marking an "I" beside the torque being used. When using more than one type of Damon bracket, write the bracket type used (2, 3, M) over the box containing the torque prescription...

Comments _____

Damon System educational materials for orthodontists & staff. 706.255.4499 - www.intellident.org
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Consider the following torques in Class II cases:

Damon Brackets -- Torque Selections						
	U1s	U2s	U3s	L1s	L2s	L3s
Class I						
non-XT	Std	Std	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class II						
non-XT protrusion	Std/Low	Std/Low	Std	Low	Low	Std
Div 2	High	High	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class III	Low	Low	Std	Std	Std	Std



U1s: UPPER CENTRAL INCISORS

Damon Brackets -- Torque Selections						
	U1s	U2s	U3s	L1s	L2s	L3s
Class I						
non-XT	Std	Std	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class II						
non-XT protrusion	Std/Low	Std/Low	Std	Low	Low	Std
Div 2	High	High	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class III						
	Low	Low	Std	Std	Std	Std

HIGH TORQUE BRACKET: +17 TORQUE

Selected for:

- Division 2 cases
- Cases needing extensive Class II elastics (prevents loss of torque control that might otherwise result from wearing elastics)
- Most extraction cases (prevents loss of torque control when extracting anterior teeth)



U2s: UPPER LATERAL INCISORS

Damon Brackets -- Torque Selections						
	U1s	U2s	U3s	L1s	L2s	L3s
Class I						
non-XT	Std	Std	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class II						
non-XT protrusion	Std/Low	Std/Low	Std	Low	Low	Std
Div 2	High	High	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class III	Low	Low	Std	Std	Std	Std

HIGH TORQUE BRACKET: +10 TORQUE

Selected for:

- Division 2 cases
- Cases needing extensive Class II elastics (prevents loss of torque control that might otherwise result from wearing elastics)
- Most extraction cases (prevents loss of torque control when extracting anterior teeth)

U3s: UPPER CUSPIDS

Damon Brackets -- Torque Selections						
	U1s	U2s	U3s	L1s	L2s	L3s
Class I						
non-XT	Std	Std	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class II						
non-XT protrusion	Std/Low	Std/Low	Std	Low	Low	Std
Div 2	High	High	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class III	Low	Low	Std	Std	Std	Std

HIGH TORQUE BRACKET: +7 TORQUE

Selected for:

- Any cuspid needing uprighting
- Most extraction cases requiring 1st bicuspid space closure
 - prevents lingual tipping of the cuspid's crown during space closure
 - helps position the root in medullary bone and away from the cortical plate



L1s & L2s: LOWER CENTRAL & LATERAL INCISORS

Damon Brackets -- Torque Selections						
	U1s	U2s	U3s	L1s	L2s	L3s
Class I						
non-XT	Std	Std	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class II						
non-XT protrusion	Std/Low	Std/Low	Std	Low	Low	Std
Div 2	High	High	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class III	Low	Low	Std	Std	Std	Std

LOW TORQUE BRACKET: -6 TORQUE

Selected for:

- Extreme crowding in the lower anterior sextant
- Cases needing extensive Class II elastics (prevents the loss of torque control resulting from wearing elastics)
 - The mentalis and orbicularis oris muscles also aid in controlling the torque of the lower anterior teeth
- Any incisor locked lingually with labial root position
- Cases with the Herbst attached to the archwire

L3s: LOWER CUSPIDS

Damon Brackets -- Torque Selections						
	U1s	U2s	U3s	L1s	L2s	L3s
Class I						
non-XT	Std	Std	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class II						
non-XT protrusion	Std/Low	Std/Low	Std	Low	Low	Std
Div 2	High	High	Std	Std	Std	Std
XT	High	High	High	Low	Low	High
Class III	Low	Low	Std	Std	Std	Std

HIGH TORQUE BRACKET: +7 TORQUE

Selected for:

- Any cuspid needing coronal uprighting
- Most extraction cases requiring first bicuspids space closure
 - prevents lingual tipping of the cuspid's crown during space closure
 - helps position the root in medullary bone and away from the cortical plate

The Herbst Appliance



Management of the Herbst appliance involves:

1. 4-5mm initial advancement and hold for 3-6 months
2. Advance 3 mm every 3-4 months until an edge-to-edge relationship is achieved. Dr. Terry Dischinger advocates even positioning the edges of the mandibular teeth *in front of* the maxillary anterior teeth's edges (i.e., overcorrecting).
3. Keep the teeth edge-to-edge for *at least* 6 months
4. When using a Herbst, do not place brackets on the lower arch until Class II treatment is completed and the Herbst is removed.
5. The total Total Herbst treatment time can be expected 15-18+ months (longer if Class II is severe).

Use Damon Retention and Tongue Trainer at night for one year after treatment or until ready for 2nd phase of treatment



Flip Lock Herbst Mechanism:

1. Ball Joint Base
2. Soldered to Upper Crown
3. Tube and Piston

Why this mechanism?

- No screws
- Ease of assembly
- Ease of activation
- Patient comfort
- Frankel effect of mechanism in the cheek area

Tube socket Color Coded (inset):

- Red/Left
- Green/Right
- Piston Coded with Circle: Labial Surface



Ball Hinge Free Socket Design

(Upper Right) Upper Tube and Socket

(Lower Left) Lower piston properly oriented

Note that the embossed round circle on the lower piston faces out to the buccal.

(Lower Right) Advance Mechanism using C-Spacers

- No need to disengage piston to advance
- Slip C-Spacer over piston and crimp in place

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Placement of Upper and Lower Ball Hinge Bases:

1. An .012 ligature tie back wire is placed from the hook on the upper 2nd molar to the post on the upper archwire
2. Another tie back is placed on the lower from the hook on 1st molar to a post on the lower archwire

These act to keep spaces from opening in the posterior during Herbst treatment

Case provided by Dr. Dwight Damon

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Above you can see the “Flip Lock On-The-Archwire Herbst” appliance fully engaged. The teeth are positioned end-to-end.

Of course, you would provide a 4-5 mm initial advancement first (*shown below*), holding it for 3-6 months, and work toward the edge-to-edge position by advancing the lower jaw 3 mm every 3-4 months until the edge-to-edge relationship is achieved.

Do not advance the “On-the-Archwire Herbst” more than 3mm initially, and only 2mm at each advancement until teeth are edge to edge. Too much force will cause loose brackets.

Patients teeth should be in an edge to edge relationship by the sixth month of treatment. The appliance is kept in about 10 months.



