PRODUCT REVIEW & CASE EXAMPLES:

NUSTAR GEN2'S SELF LITIGATING PASSIVE SYSTEM

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Fig. 1

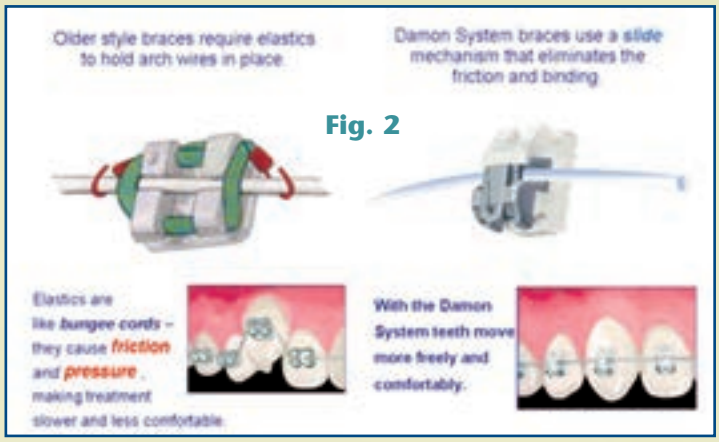

Fig. 2

There is probably no perfect orthodontic bracket system. In my view, there are pros and cons to them all. The treating dentist must pick which bracket system works the best for them.

I have really liked using self-ligating bracket systems; the overall advantages seem to be shorter treatment time, easier mechanics, plus less chair time as outlined by the Lambert textbook (Fig. 1). Like anything else, there are a lot of self-ligating brackets out there. I am reviewing the NuStar system from Ortho Arch.

Dr. Dwight Damon introduced his self-ligating brackets to the market in 1996. He proposed that the elastic tie created too much friction which slowed down tooth movement. To eliminate this problem, Dr. Damon designed a door to replace the elastic tie. (Fig. 2)

BRACKET SYSTEMS

Let's look at pros and cons of bracket systems. For brackets with elastic ties, the pros are costing less and can get mini twin brackets from most orthodontic vendors.

The cons of include: 1) elastic ties lose about 50% of pull in first day, 2) elastic ties completely worn out within a month so teeth move where you want them to be and than start to move back, 3) elastic ties harbor more bacteria; it takes 3-4 months longer to treat an orthodontic case according research, and 5) they have to be adjusted monthly and appointments take longer.

SELF-LIGATING BRACKETS

The pros of using self-litigating brackets include shorter treatment times (3-4 months less), which means less chair time and the main cost of orthodontics. Another pro is that they only have to be adjusted every two months.

The cons of using self-ligating brackets are that they can cost 2-4 times as much as a ligating bracket.

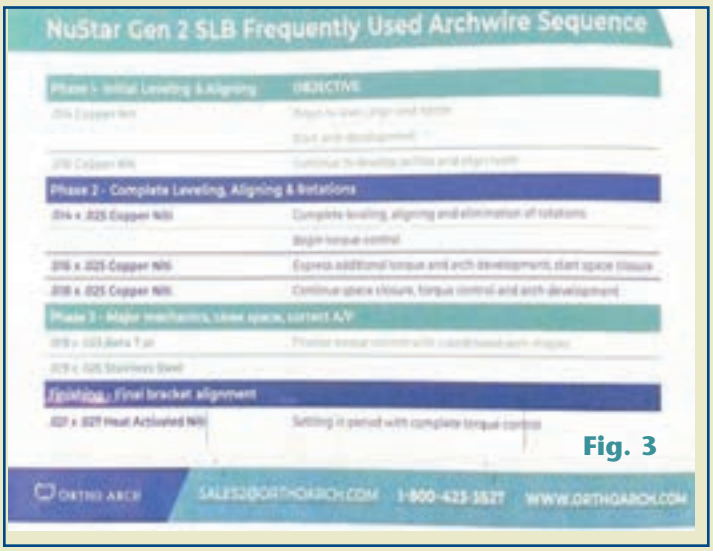

Fig. 3

Fig. 4


Fig. 5


Fig. 6

The brackets have very little friction so the wire can slide around. We use a wire with a dimple so that it does not slide so much. Another option is to do a long clench distal to the molar tube or place crimp able stops on mesial and distal of one of the front teeth. And lastly, self-ligating brackets can have a higher profile so it's easier for the patient to hit on.

WIRE SEQUENCING

The wire sequence we prefer: Stage I is to level and align teeth. Start with a .014 niti. When the wire is about straight, we go to a .016 x .016 niti to start torque. Can also use a .020 straight leg, reverse curve niti if more bite opening is needed. That is used mainly in the lower arch.

For Stage II extraction cases, use a .016 x .025 niti. To close space, can use elastic chains, e-links or closed coiled springs.

Stage III is finishing. We finish most of our cases in .019 x .025 TMA wires. Can also use .019 x 025 braided wires with boxing elastics if you need more bite settling. If there's a tooth posterior crossbite, can use a .019 x .025 stainless steel wire and expand it to correct crossbite.

The wire sequence from Ortho Arch is listed in Fig. 3.

NUSTAR2 REVIEW

The NuStar2 bracket which was introduced to the orthodontic market in 2017. (Fig. 4) Using the bracket, this is what we have found:

1. Ortho Arch is easy to work with; products are good and prices are great.

2. The door on the bracket functions well. Keep in mind, do not switch wires too quickly. If you have problems opening or closing the door, it is probably because you went up in wire size too quickly.

3. Get the bracketing opening tool. It's easy to use.

CASES TREATED WITH NUSTAR2

I was treating each of these four cases about the same time. I had problems with my Ceph at the time, so picture quality often not that great. I used the Tweed total discrepancy formula to help determine if extractions are needed.

A. Total a positive number indicates non-extraction unless taking teeth out to camouflage a skeletal problem and patient does not want orthognathic surgery.

B. -1 to –4 same thing as A.

C. Total discrepancy of -5 to –8 bubble case. May extract teeth or do IPR.

D. Total discrepancy of –9 and more. Often extract 4 bicuspids

Case #1 (Fig. 5)

Witts is –2, so skeletal Class I
Total discrepancy
Lower 1 to apo +1
Correct to +3 +2
X2 +4
Model discrepancy –4
Total 0 (Indicating non extraction)

Facial profile is concave indicating non-extraction.

In Stage I, we started with a slim line palatal expander to correct posterior crossbite (Fig .6). Once


Fig. 7


Fig. 8


Fig. 9


Fig. 10


Fig. 11


Fig. 12


Fig. 13


Fig. 14


Fig. 15


Fig. 16


Fig. 17

corrected, we used a pendulum distalizing appliance to move the UL6 into a Class I (not pictured).

Braces were then put on and started with 14 niti wires. The bicuspids were badly rotated so placed buttons on teeth and rotated with elastic chains (Fig. 7). Room for UR3 so dropping into place. I used open-coiled spring to make room for LL3 and rotating into place with a button (Fig. 8).

Stage III included finishing in 19 x 25 TMA wires, The finish is Lower 1 to apo now +2.4 and Witts –2.2. (Figs. 9 -10)

Case #2 (Fig. 11)

Case #2 was the first bicuspid extraction case.

Witts +3.2 so Class I skeletal
Total discrepancy
Lower 1 to apo +2.9
Correct to +4 +1.1
X2 +2.2
Model -9
Total of -6 (possible extraction)

Very crowded, so cannot procline front teeth enough to correct crowding, so had first bicuspids extracted.

Braces were then put on and started with upper 14 niti wires. Sectionally moving canines off of laterals, no wire just an elastic chain (Fig. 12).

Stage II was closing space. Once front teeth aligned, went to 16 x 25 niti. We used elastic chains to close any remaining space (Fig. 13).

The finish included 19 x 25 TMA wires. Final ceph measurements were Lower 1 to apo +2.4, Witts +1.9. (Fig.14)

Case #3 (Fig. 15)

Case #3 involved congenitally missing upper 5s of Class II patient.

Witts +11.7

Congenitally missing upper 5's, retained upper E's
Total discrepancy
Lower 1 to apo +0.4
Correct to +4 +3.6 (Hispanic +4)
X2 +7.2
Model disc. -7
Total +0.2 (indicating non-extraction)

For braces, we had the upper E's removed and wisdom teeth by oral surgeon at our office and started case in 14 niti wire. (Fig. 16)

Stage II was closing space using

elastic chain to move molar to a full-step Class II. V-vends placed distal to the upper 4's. (Fig .17)

Stage III finishing included 19 x 25 TMA wires. Final ceph measurement were Lower I to apo +3, Witts +14.7. Some space opened in upper because patient was not wearing retainer like instructed, so we made 4 aligners to try to close space using Blue Skybio software and 3d printers. (Fig. 18)

Case #4 (Fig. 19)

Case #4 involved an adult Class III dental and Class I skeletal non-extraction patient.

Witts –2.4
Total discrepancy
Lower 1 to apo +6.7
Correct to +3 -3.7 (Asian so +3)
X2 -7.4
Model disc. +5
Total -2.4 (indicating non-extraction)

The first goal was to align bicuspids to use them as anchors to move anterior teeth distally. (Fig. 20)

Stage II of treatment was using bicuspids to move canines into a Class I and have V-bends on mesial of lower 4's so back teeth will not go mesial. (Fig. 21)

Stage III finishing included upper 19 x 25 braided wire, lower 19 x 25 TMA wire and boxing elastics at night to settle bite. (Fig. 22)

The patient is now ready for lower implants at our office by our staff oral surgeon. Final ceph measurements: Witts –3.4, Lower 1 to apo +3.5. (Fig. 23)

CONCLUSION

We have been very happy with the NuStar2 self-ligating brackets at our practice. They are easy to use and requires less chair time. It is also easy to teach students in our 10-session, 20-month hands-on orthodontic class because mechanics are easier than bracket systems I have used in the past. Hopefully easier means, less frustrating and shorter treatment times which makes the higher cost of self-ligating brackets worth their cost. Remember, your main cost of orthodontics is not your supply cost, it is your chair time and final results.


Fig. 18


Fig. 20


Fig. 21