ESLO Athens 2016

Let's talk about ‘Torque’...
Before we can look closely at this subject it might be interesting to know why I am so interested in it!

Paris 2004

I was invited to Dr. Fillion’s lab ELOS, to buy the Modified TARG and learn how to use it for Lingual Indirect Bonding.
I thought, “oh that’s great two weeks in Paris!!!…BUT

What on Earth is Lingual Orthodontics and who is Dr. Fillion?”
Oh well I have a 12 hr flight, I suppose I can read up on the plane…

I could only find one book!

But inside was Chapter 16 😊
Thanks Rafi for making that book, you saved my life! 😊
Critical Thinking

IDEA A

IDEA B

IN-tendo
precise indirect bonding system
But one thing leads to another and if we keep trying, thinking, innovating, we can make something nice:-

The NEW Bracket Positioning Instrument or B.P.I.
The NEW Tip & Torque Surveyor...or T.T.S
What happens to Lingual bracket positioning, when Torque changes on the same tooth?

In the following slide I will show a Central Upper Incisor at 0 degrees torque, 7 degrees (Andrews), 12 degrees (Roth) and 17 degrees torque (MBT). The full poster is outside for review in the poster area.
This series of photos shows how much the incisal edge moves when we change only torque.
Fitting the blade for Torque (above) And Tip (left), we also look at the ‘space between blade and tooth for Torque!
Zero degrees Torque, 2 degrees Tip

ORG Upper Incisor with base angle 55
Torque 7 degrees and Tip 2 degrees, Like an Andrews prescription.
Torque 12 degrees, Tip 3 degrees similar to Roth ( accept Tip is less ). Note the visual space for Torque of the labial surface below.
At 12 degrees the bracket is lower down the lingual surface at the same vertical height of 3.5 mm, still a good fit!

This would be a nice bracket position
Torque 17 degrees, Tip 4 degrees…MBT

Moving the tooth to the High torque setting of 17 degrees
So we can see the effect of high torque at exactly the same vertical measurement from the incisal edge.

The bracket is more gingival
And the thickness increased.
Results:

1. Lingual depth of the bracket position changes more between 0 and 7 degrees of torque at just over 1 mm.

2. Lingual depth changed the least in the ‘Mid-Torque’ settings, with only just over 0.5 mm for 5 degrees of torque change.

3. The depth again changes more at the mid to high torque range, with around a 0.8 mm change. These amounts are all dependent on tooth morphology and the Hypotenuse of the triangle 😊

4. Bracket base to tooth relationship on the 55 degree brackets, is best in the mid torque range.

5. For every 5 degrees of torque change the incisal edge dropped 0.6 mm further down.

6. The distance from the slot to the labial surface changed each time and not evenly.
Conclusions :-

1. The Lingual height of the bracket slot clearly changes with torque changes.

2. The relationship of the bracket base to the tooth’s surface changes also, but can and should be compensated with composite resin.

3. The labio-palatal distance of the slot from the vestibular face increases as the torque increases at the same vertical height setting, thus positioning of the brackets needs to be considered to avoid either excessive thickness of the composite base on certain teeth, or bending the wires.

4. Maybe there is a need to have different sets of brackets for different types of cases. Example would be to have variable slot/ base angles for Low, Medium and High torque.
Don’t worry if you're confused...

- You're not the only one! 😊😊😊
But apart from the small study done with the Central incisor, armed with this knowledge we can then look at all the teeth in the arch and the possible effects of getting torque wrong!

For example I am a firm believer that Adult Ortho needs customized bonding charts.

What would happen if we get it wrong on a Molar or Premolar for example? What if we apply torque for the ‘sake of torque?’

Here’s an example for your perusal.
What one CAD / CAM system ended up doing ...?

The Torque applied probably wasn’t suitable for that patient. A narrow basal arch would probably require a more + torque values -14 to -5 for example.
The Lab... Chiang Mai, Thailand
Acknowledgements

- Anterior Morphology and it’s effect on Torque.
  EJO 27, 2005 M.van Leonen, J Degrieck, G. Depauw, L.Dermaut.
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- Silvia Geron, Rafi Romano and Tamar Brosh.
- Prescription based Precision Full Arch Indirect Bonding, Dr John T Kalange 2007 Elsevier.
- Changes In Third Order Inclination resulting from Vertical Variation in Lingual bracket Placements, Michael Knosel, Klaus Jung et al.
- Normal torque of the buccal surface of mandibular teeth and it’s relationship with bracket positioning. A Study In Normal Occlusion, Brazil 2006.
- Marcel Antoonio Mestriner, C. Enoki, and J. Mucha
- Selecting custom torque prescriptions for the straight -wire appliance, AJO-DO 2013 Earl Johnson.
As Dr. Proffitt said in 2005…”Unfortunately the sales people have become the new gurus of Orthodontics”…so should we go back to basics? Should we be evaluating all new systems and what makes them ‘tick’. Are there some basic rules we should not forget and demand detailed information as to how these systems actually work?

I hope we will inspire you all to think about your work, after all this is a “Scientific Congress” and not a dental show 😊
Thank You!

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