



Lingual Orthodontics: though you can't see it, you can do what you have never seen before

• *Vicente Sada Garralda D.D.S., M.S.D.* •

Master in Orthodontics by the UIC. (Mexico)
Active Member of the European Society of Lingual Orthodontics and World Society of Lingual Orthodontics
Private practice in orthodontics in Pamplona (Spain)
vicente@topdental.es

Near the end of the first decade of the twenty-first century, technological advances are present in all aspects of everyday life. Fortunately, dentistry has not been left behind and has incorporated all these developments. It has applied these to material design and instruments in their various specialties, to allow treatment with a more conservative and less invasive approach.

After a few years of practicing lingual orthodontics, I have witnessed great changes in this technique regarding these advances.

A few years ago, most of treatments were carried out with the seventh generation Kurtz (Ormco) lingual brackets, in the market for over 10 years without any technical developments. After a long time of freelance designing of the appliance, Dr. Kurtz introduced in 1981 to Ormco his research and they decided to support the project. After gathering a group of reknown

orthodontists (Lingual Task Force), they were requested to try and improve the system. Six months later, this development was leaked to the press and had no choice but to go public at a crowded press conference.

The impact was so great that in one year, more than 2000 orthodontists from U.S.A. and Europe were testing the technique.

The members of the task force took only a few months ahead over the new users, and the mechanical problems of the system were only partially solved.

Consequently, around mid-80s a great number of these users had given up using the technique, mainly due to the difficulty in finishing the cases. Moreover, at the same time the emergence of aesthetic labial appliances took place, which were not invisible but much easier to control.

Only a very small group of orthodontists from different coun-

tries continued to work on the technique and improved it to the point that in the late 90's, they could treat all kinds of malocclusions.

In those years, I was introduced into this world and found I was able to treat very severe orthodontic cases but to test my skills. It was necessary much more effort than the labial technique and it was also more uncomfortable to the patient.

In an orthodontic practice committed to positive results, it becomes almost impossible to treat many of this kind of patients, so I was close to quit. Before I could give up, I decided to keep looking and shortly found what I was looking for.

After testing different methods of lingual orthodontics, I chose a company that offered me a nearly perfect system. It was not only the type bracket or the accurate set-up method of brackets into the original malocclusion. In addition to making the set-up in wax to see the orthodontic objectives this company also



offered a wire-bending robot in the three planes of space to move teeth in an accurate manner.

This system integrated the work of lab technicians with new technologies like the wire-bending robot.

All this improved the finishing of cases, which was the most problematic part and since then, cases were more accurate and faster.

In previous systems, the problem of the difference in thicknesses of the teeth was resolved by adding a wedge of resin between the thinner teeth and the brackets bases, this way matching the width with thicker teeth. In this way, the wire can go straight and can be bent manually more easily. However, the distance between the teeth and brackets is larger and this encourages the irritation of the tongue.

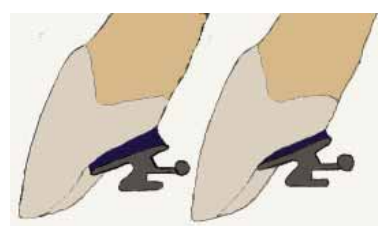
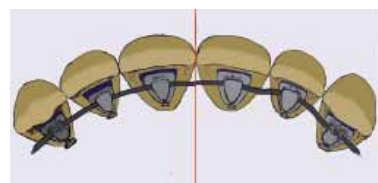
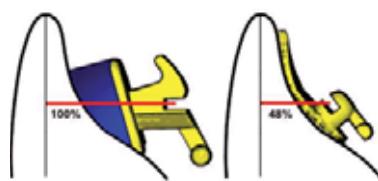
The robot could compensate for these differences in thickness very accurately by bending the wire. Now it was possible to bond the brackets flat to the teeth without a resin wedge and by reducing this distance between brackets and teeth tongue irritation is less painful.

Treatments were shortened and this improvement was enough to keep on practicing lingual orthodontics; but much remains to be improved.

The same size of lingual bracket continued to be used and patients still suffered of irritation of the tongue; besides speech impediment with the “r” and “s” pronunciation.

In late 2004 and after a long trial period, the same company introduced to the public the new Incognito system, which shared the same advantages of previous designs and was implemented to resolve the drawbacks of the past. Bracket design was the main feature of the system mainly due to a significant smaller size than previous designs and therefore more comfortable for patients.

Speech problems were resolved and tongue discomfort was reduced significantly. These were the main unresolved issues improved with



the advent of this bracket, but they were not the only improvements.

The new bracket is customized and suited perfectly to the lingual surface of the tooth making bonding much better. One of the main pitfalls of previous systems was a higher bonding failure rate than labial technique and a cumbersome rebonding protocol. An indirect bonding tray was needed for accuracy. The position of the teeth had changed since the beginning of treatment and rebonding was a complex time-consuming procedure. Now, the bonding failure rate is very low and the rebonding procedure is as easy as in the labial technique due to lingual bracket design. There is not the need to keep the initial bonding tray.

Brackets are cast in gold using state-of-the-art CAD/CAM technology, you can choose between a vertical or a horizontal slot and, a combined option which is the ideal choice. You may select a vertical slot in the anterior brackets and a horizontal slot in the posterior brackets with the additional biomechanical advantages and ease of use for the operator.

You may also have other options as hooks or bite planes in the brackets of your choice or the selection of custom made archwires.

With all these improvements the system finally resolves all the problems of the lingual technique and is a much easier technique to use. Even so, we should not forget that the system would work if the orthodontist has the proper training because he/she is in charge of delivering the final result of treatment. We should not lose perspective and think that anyone can use this system without having proper knowledge of orthodontics. It is the orthodontist who directs the treatment and appliances are just a vehicle to reach the desired result.

It can't be compared with the labial technique because the brackets are still lagging behind of the teeth, and access is more complicated. Doing this technique requires an effort that has its rewards of personal and professional satisfaction. It means leaving the daily routine to meet new challenges that stimulate creativity and make the professional grow, who over the years and the demands of running a practice may lose the enthusiasm to do the same things every day. It is also a way to differentiate ourselves from others who do not do invisible orthodontics and can not meet the needs of their patients who demand primarily aesthetics. In the medium term, lingual technique is a strategy which can give economic benefits if handled correctly.