Wax, Goo or Eze?

Dental nurse **Emma Boca** presents the results of an audit at her practice to compare various patient applied methods of reducing trauma from lingual appliances.

I have been working at Thames Orthodontics in Teddington with Drs Paul Ward and Stephanie Giles for four years and became qualified as a general dental nurse through Guy's Hospital College in 2008.

I started dental nursing when I was 20 following five months spent travelling around the Greek Islands. When I got back from my travels I knew I wanted a job in health care and applied for a number of different positions. I had never thought of orthodontic nursing as a career before but I went for my interview and have not looked back.

Lingual orthodontics

My practice

Thames Orthodontics treats both adults and children. Both partners specialise in the use of invisible orthodontic techniques, particularly lingual orthodontics. Lingual means 'tongue' coming from the Latin *lingua*. Lingual braces are placed on the lingual or inside surface of the teeth. This means that they are totally invisible.

Lingual orthodontic treatment has become more popular over the past few years. It is a technique dating back to the 1970s but which has become more comfortable for patients with better appliances and knowledge. Lingual braces are very popular with adults as they provide the option of orthodontic treatment to those who want to improve their smile but do not want anyone to know they are having treatment.

There are many different lingual appliance systems available today. The one we use most at Thames Orthodontics is Incognito (pictured, page 29). The Incognito appliance comprises a low profile bracket system that is custom-made to fit each individual patient, pre-formed custom arch wires for each stage of the treatment and a custom fitted bonding tray for a more accurate and predictable application. Incognito is a fixed appliance so it can be used to correct a wide range of orthodontic cases and offers predictable, efficient, reliable and, most importantly for our patients, invisible treatments.

Over 50% of the patients treated at the practice are adults who may not have otherwise considered conventional orthodontic treatment. As a result of this we have become one of the largest users of the Incognito appliance in the UK.

The study

A common complaint for the first few days after a lingual appliance fitting is trauma to the soft tissue inside the mouth that is in contact with the appliance; particularly the tongue. It is important that we provide our patients with a method of alleviating this trauma that is quick, simple, effective and can be administered to them.

There are many substances available which claim to be the best for this purpose but no data to support these claims.

Aim

To evaluate the effectiveness of four materials applied to the lingual appliance to improve patient comfort.

We wanted to evaluate feedback from our patients on their views on the various products we had given them to evaluate. We wanted to find out if they thought each one was effective when being used on a lingual brace, and wondered if there was a product that gave the best overall protection for our patients with respect to ease of application, comfort and effectiveness. This would hopefully give us a product that we could give to our lingual patients to make adapting to their appliances as comfortable as possible.

Upper Incognito appliance

Method

Sixty-five consecutive patients in treatment with lingual appliances were chosen for the study.

Patients were given a pack with the four assessment materials in. Verbal instructions on the use of each material were given and this was reinforced with a printed instruction sheet (Fig. 1).

The material was evaluated using a visual analogue scale (Fig. 2). This was to be completed by the patient after they had assessed each material. The assessment pack was to be given at the patient's next visit and the data sheets were returned in a stamped addressed envelope within seven days.

A list of participants was kept so that they could be reminded by phone if the assessment sheets were not returned in the timeframe.

Statistical analysis

The four materials used were:

1. Brace Eze (Ortho Care)
2. Brace Wax (3M Unitek)
3. Red wax (Kendent)
4. Gishy Goo (Torque Orthodontics).

Parameters assessed

The parameters assessed were:

- Ease of use
- Retention of the material on the lingual appliance
- Effectiveness of protection
- Overall score of material.

Evaluation questions

The four questions used to evaluate each material were:

1. How easy was the material to use?
2. How well did the material stay on the brace?
3. How effective was the product?
4. Overall score of the material.

There was also a section for free text to allow 'any comments' about each material.

The question sheet had instructions on the use of the visual analogue scale and a worked example. This was to reduce the number of incorrectly filled out, and hence void, response sheets. If the results were not returned in the stamped addressed envelope after one week, the patients were contacted to remind them to return the completed forms.

The visual analogue scales on the completed forms were converted to numerical data and put into an Excel spreadsheet for statistical analysis.

To assess the effectiveness of four patient-applied methods of alleviating trauma from lingual appliances

Thank you for agreeing to take part in this study.

Aim

The aim of this study is to establish the best form of 'self-help' to alleviate problems caused by rough or sharp areas on a lingual fixed brace.

We have supplied you with four products:

- Brace-Eze
  Squeeze a pea-sized 'drop' of the material onto your finger. Mould over the sharp area and allow to set
- Braze Wax
  Pinch a small amount of the material and roll into a ball. Press over the sharp area
- Red Wax
  Pinch a small amount of the material and roll into a ball. Press over the sharp area
- Gishy Goo
  Squeeze a half pea-sized 'drop' of the material from each tube from the syringe onto your finger. Mix the materials together. Mould over the sharp area and allow to set.

Assessment

Once you have tried each material, please complete the assessment sheet for each material with any additional comments.

Please return the four assessment sheets in the envelope within **seven days.**

Thanks again for your help with this.

The Thames Orthodontics Team

Fig. 1 The printed instruction sheet

Trauma study assessment sheet

ID .....

Material name .....

Please mark at any point on the line below in a position which indicates your answer: eg Q: How much did it hurt when you fell over?

If your answer was 'quite a lot' or 7/10 then you would mark the line as below

Minimum maximum

Q: How easy was the material to use?

Q: How well does the material stay on the brace?

Q: How effective was the protection?

Q: Overall score of material?

Comments:

.....

.....

Fig. 2 The visual analogue scale

Results

Twenty-two completed forms were returned. One assessment sheet was void.

The results can be seen in Figure 3.

Each colour represents a different material (Blue is Gishy Goo, Red is Brace Wax, Green is Brace Eze and Purple is Red Wax).

The X axis shows the score that patients gave each material and the Y axis shows the question each set of results relates to (the evaluation questions listed earlier). The line running through each bar represents one standard deviation.

Discussion

Despite all of our attempts, giving stamped addressed envelopes with each pack and calling around each patient numerous times, we only received 22 results sheets back. One of the sheets received was void

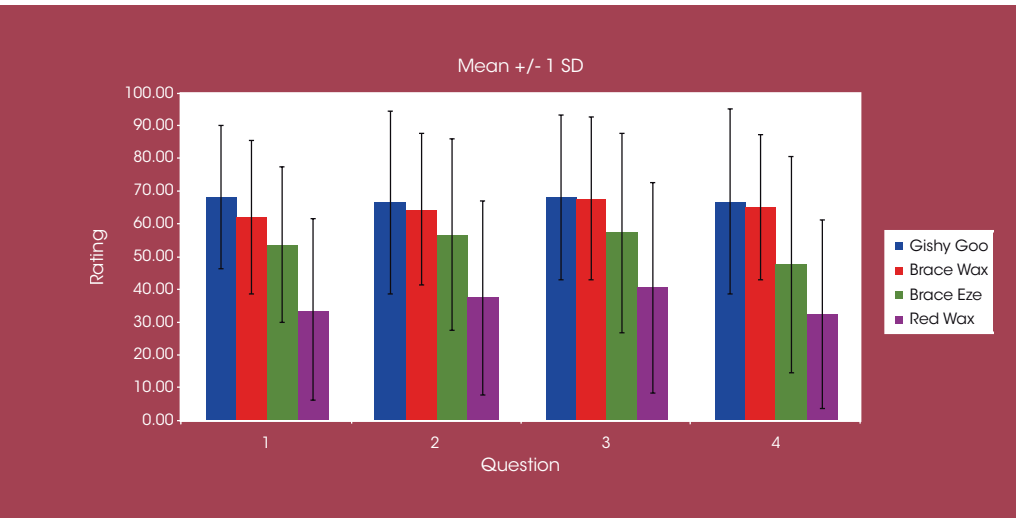


Fig. 3 The results of the study

as the visual analogue scale was filled out incorrectly.

Standard deviation is a measure of the variance of the answers ie the variability of the responses (some people loved the material, others disliked it; there was a broad spread of responses). The standard deviation allows us to measure this variability.

If sample sizes are small, it is not possible to use conventional statistics to analyse the data. This is particularly true if the standard deviation is high. In our study, the combination of the small sample size and high standard deviation meant that we could not use a complex statistical analysis with any degree of accuracy. There would have been too much error. In this situation, it is important not to discard the data as useless but to use a very simple method to try to get something useful out of the study. We therefore just looked at the mean (average) values of all the answers obtained.

There does appear to be a pattern to all the answers if we consider the mean values. The Gishy Goo and Brace Wax represented by the blue and red bars seem to perform almost equally well if we look at just the mean average values. The Brace Eze (in green) performs slightly less well and the red wax (in purple) is the least preferred.

However, the standard deviation bar shows how much variability there was in the answers for all four products.

Key points

So, can we actually learn anything from this study? Although we were unable to analyse the data statistically we can still take away some key points from the results. Different methods of trauma relief suit different people. One might find a material easy to use which another may find difficult. It was also apparent from the general comments that different materials were suitable for different problems. For example, Brace Wax may be useful for slight rubbing of the appliance whereas it may be no use for a sharp wire.

It is important to give our patients more than one option for lingual appliance trauma relief. Red wax on its own appears to be an inappropriate method.

'The Gishy Goo and Brace Wax represented by the blue and red bars seem to perform almost equally well...'

To illustrate this further, below are four conflicting examples of patient comments about each of the four materials.

Patient comments

'Really poor material. It hardened too fast and did not stick to the brace.'

'Nice flavour and perfect texture, my favourite of the four!'

'Horrible taste! Did not like this product at all. The double syringe is large and clumsy and is a very awkward size to keep in my handbag. Not at all practical.'

'Easy to apply, stayed on the brace well and gave good protection.'

'Really easy to use, only problem is that it is red!'

'Hard to mould and get to stay on; I had to try a few times.'

'Too dry, flaky and hard to mould. I gave up.'

'Very easy to use and very effective. I was surprised at how well it stayed on the brace as it did not look like a very effective product. Overall this was the best out of the lot!'

'Very easy to apply and remove. Handy pack to keep in pocket or handbag.'

'Although this product was easy to use the protection wasn't great and it didn't stay on very well.'

'Easy to use, works well and stays on, great!!'

'This product fell off too easily.'

'My favourite product although not enough in tubes.'

'Best one I would say! It has a nice milky taste, very easy to mould and holds its shape well. Less cumbersome in the mouth but still does the job well. Finally a great, clean and easy to use material. Winner!!'

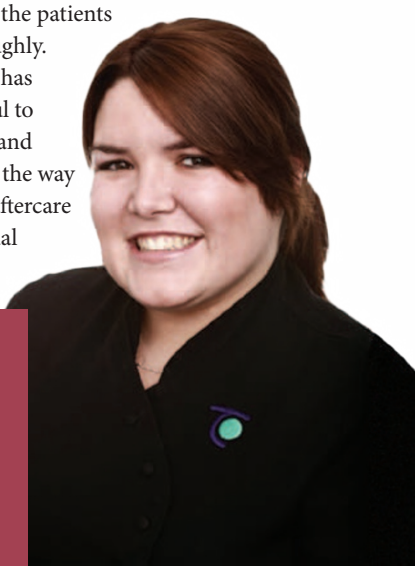
'Seems to be unnecessarily complicated to use, I gave up.'

'Easy to get off the brackets with no residue. Really good for night time use, I will continue to use this product.'

On reflection

Questionnaire based assessments are prone to poor response rates and hence are prone to the problems we have encountered. Methods to solve this could be to increase the sample size significantly or to follow up the patients more thoroughly.

The study has proved useful to the practice and has changed the way we provide aftercare for our lingual patients.



* *In November 2010, Emma Boca presented this study to the annual British Lingual Orthodontic Society (BLOS) meeting in Birmingham. It was the first time a dental nurse had presented at one of these meetings. BLOS are always looking for dental nurses to present audits and studies like this. For more information visit the BLOS website at www.blos.co.uk.*