New study: 7 percent of children in orthodontic care at risk for sleep disorders

Photograph: Africa Studio/Shutterstock

By DT

CLEVELAND, Ohio, U.S.: Researchers at Case Western Reserve University’s School of Dental Medicine have found that about 7 percent of children between ages 9 and 17 in orthodontic care are at a high risk for sleep-disordered breathing. This disorder can lead to restlessness, hyperactivity and concentration problems.

The study, titled “Sleep disordered breathing in children seeking orthodontic care,” was published in the July 2018 issue of the American Journal of Orthodontics and Dentofacial Orthopedics.

The study, led by Dr. J. Martin Palomo, professor in the Department of Orthodontics at the dental school, and senior author of the study. The researchers note that sleep-disordered breathing in children may be underrecognized and underreported. They also suggest that the same portion of adolescents in orthodontic care in the general population could similarly be at risk.

However, according to Palomo, orthodontists are well-positioned to help affected patients because they see children whose facial development or jaw alignment has been impacted by breathing problems.

Sleep is a tightly regulated and well-organized biologic process affecting daily functioning as well as physical and mental health,” Palomo said. “Sleep, or a lack of sleep, affects adults and children differently.”

Sleep-disordered breathing describes several conditions—including apneas—characterized by abnormal breathing patterns.

When adults get tired, they typically show signs of sleepiness yawning, heavy eyelids and sitting down to rest. In contrast, children tend to get hyperactive. They also might snore, breathe through the mouth during rest. In contrast, children tend to get hyperactive. They also might snore, become easily distracted.

Palomo hopes the study will help educate both the public and orthodontists. He also believes, based on published reports, that many children with sleep disorders are misdiagnosed with attention deficit hyperactivity disorder (ADHD), given that the symptoms of both are strikingly similar. “I think it’s important to rule out sleep disorders before a patient is medicated for ADHD,” he added.

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For the study, 303 children or their parents completed a questionnaire about sleep and symptoms. About 7 percent responded with enough “yes” answers to put them at a high risk for sleep-disordered breathing.

“The rate is higher than we expected,” said Palomo, a specialist. “I think it’s important to rule out the symptoms of both are strikingly similar. “I think it’s important to rule out sleep disorders before a patient is medicated for ADHD,” he added.

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Insignia Resolves Adult Open Bite with Straight-Wire Finishing

Case study

By Dr. David González Zamora, Spain

Pretreatment Diagnosis
Adult female, mesofacial, skeletal class I, open bite. Patient suffered from frequent headaches.

Treatment Plan Objectives
Close her open bite while maintaining vertical relationship of upper anterior incisors.

Appliance Used
Insignia SL

Treatment plan notes submitted with this case:
- Insignia Archform
- Laterals should be shorter than centrals
- Align marginal ridges
- 3mm of overbite
- Expansion through molars and premolars
- IPR between premolars

Treatment Discussion
The patient had a complete open bite due to the habit of atypical swallowing.

To perform a bite closure, it is necessary to achieve perfect alignment and leveling of the teeth as well as obtaining accurate torque. Only then can we face the upper and lower occlusal planes. In addition, the two arches have been expanded at premolars and molars. The key to making a bite close quickly and easily is applying forces mesial to the arcade center of resistance, just so get a rotation of both occlusal planes.

Despite using an extrusive mechanics with previous elastics, you can see in the photo finish smile that the relationship of the upper incisors has not worsened, thanks to the relative position of the brackets at the time of cementation. The patient also followed a rehabilitation treatment neuromuscular speech pathologist, to ensure the future stability of the case.

Finishing Notes
No debonds, no wire bends. Just occlusal adjustment.

Appointment photos featured in this case study

TREATMENT SEQUENCE

<table>
<thead>
<tr>
<th>Appointment</th>
<th>Archwire</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 1           | U: .014 Damon CuNi-Ti  
             L: .014 Damon CuNi-Ti | Bonding |
| 2           | U: .016 x .022 CuNi-Ti  
             L: .014 x .022 CuNi-Ti | Triangle elastics |
| Week 10     | U: .016 x .022 CuNi-Ti  
             L: .014 x .022 CuNi-Ti | Triangle elastics |
| Week 22     | U: .018 x .025 CuNi-Ti  
             L: .016 x .025 CuNi-Ti | Triangle elastics |
| Week 34     | U: .018 x .025 CuNi-Ti  
             L: .016 x .025 CuNi-Ti | Triangle elastics |
| Week 36     | U: .018 x .025 CuNi-Ti  
             L: .016 x .025 CuNi-Ti | Triangle elastics |
| Week 46     | U: .019 x .025 SS  
             L: .017 x .025 SS | Anterior box elastics |
| Week 57     | U: .019 x .025 SS  
             L: .017 x .025 SS | Anterior box elastics |
| Week 62     | U: .019 x .025 SS  
             L: .017 x .025 SS | Anterior box elastics |

* Stock round wire

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INITIAL

APPOINTMENT 3 | 2 WEEKS

FINAL 62 WEEKS

APPOINTMENT 7 | 57 WEEKS

FINAL
Use of diode laser in the treatment of gingival enlargement during orthodontic treatment

Case report

By Prof. Carlo Formanli, Drs Aldo Oppici, Luigi Cella & Elisabetta Merigo, Italy

Introduction

In recent decades, we have witnessed the substantial development and expansion of the use of fixed orthodontic appliances. While their application has many advantages, several problems related to the health of the soft tissue may sometimes appear during treatment. In fact, the use of fixed orthodontic appliances may provoke labial desquamations, erythema multiforme, gingivitis, gingival enlargement.

Several clinical studies suggest that orthodontic treatment may be associated with a decrease in periodontal health, causing a hypertrophic form of gingivitis. However, the actual pathogenesis of gingival enlargement is not yet completely understood, although probably involves increased production by fibroblasts of amorphous ground substance with a high level of glycosaminoglycans. Increases in mRNA expression of Type I collagen and up-regulation of keratinocyte growth factor receptor could play an important role in excessive proliferation of epithelial cells and increased development of gingival enlargement, on the basis of some studies, in cases of poor oral hygiene status. However, there is no clear definition on its aetiology, although probably involves the fast closure of the spaces associated with very poor oral hygiene due to bleeding during toothbrushing, just after the removal of the appliance, a topical anaesthetic (EMLA, AstraZeneca) was applied to the gingivae (Fig. 2) and a gingivectomy was performed using a diode laser (2000 Hz, 808 nm, 320 μm fibre in contact mode). The intervention had a duration of 375 seconds, and the patient did not feel any pain (Fig. 4). After the intervention, the patient did not take any kind of pain medication, and the healing process was completed in five days (Fig. 5).

Diodes, the last generation of laser used in dentistry, have several advantages, such as reduced cost and size, and offer the operator the possibility to work both in continuous and chopped mode. Based on our experience, we can confirm that this technology may represent a new approach to the resolution of gingival enlargement during orthodontic treatment, with better comfort for the patient during and after surgery.

Discussion

The first laser appliance was built by Maiman in 1960, and some years later, it was successfully employed in medicine and in oral surgery with several advantages. It may provide excellent incision performance with sealing of small blood and lymphatic vessels, resulting in haemostasis and reduced postoperative oedema. Furthermore, target tissues are disinfectant as a result of local heating and production of an eschar layer, which results in a decreased amount of scarring owing to decreased postoperative tissue shrinkage, allowing one to avoid the use of sutures.

The treatment of these conditions is surgical. Histological and histochemical studies have demonstrated that the removal of the gingival papilla can promote the formation of normal connective tissue. Because the classic intervention performed by scalpel has some disadvantages, mainly linked to the discomfort for the patient (e.g. anaesthesia by injection and sutures), there has been great interest in the utilisation of laser technology.

Case report

A 14-year-old female patient was referred to our department by the orthodontics unit because, at the end of fixed orthodontic treatment, she had developed gingival enlargement in the upper arch (Fig. 1), probably related to the fast closure of the spaces associated with very poor oral hygiene due to bleeding during toothbrushing just after the removal of the appliance. The treatment of these conditions is surgical. Histological and histochemical studies have demonstrated that the removal of the gingival papilla can promote the formation of normal connective tissue.

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