

ADVICE SHEET

ADVICE FOR ORTHODONTISTS PROVIDING TREATMENT FOR WIND INSTRUMENTALISTS



Information and advice within this document may be explained to wind instrumentalists upon discussing whether to proceed with orthodontic treatment. It also discusses possible implications of orthodontic treatment on performance and comfort with playing a wind instrument and therefore may be used during the informed consent process.

Playing a wind instrument

The term wind instrument describes both brass and woodwind instruments. Playing a wind instrument is a complex neuromuscular task that requires increased ventilation and increased orofacial muscle activity. An embouchure must be formed whereby the lips, tongue and teeth are applied to the mouthpiece to act as both a seal and a funnel for the air. The different mouthpiece on each wind instrument requires a unique muscular pattern to form the embouchure. When learning to play, the embouchure is developed in a precise manner, which then becomes habitual. Any disturbance to this habit, such as alteration in the oral environment, may interfere with playing.

Should the musician's occlusion influence the selection of a wind instrument?

Ease of sound production and embouchure formation as a child samples which instrument to learn/play, may have an early bearing on their selection decision. There is some evidence that tooth position can influence musical performance and embouchure comfort of wind instrumentalists. A class 1 relationship without malocclusion seems to be most appropriate for every type of wind instrument. (Van der Weijden et al, 2018)

Does playing an instrument have an effect on the position or alignment of teeth?

Although there is a popular belief among wind instrument players and teachers that playing a wind instrument regularly may influence the position and the alignment of the teeth and some previous research (Pang 1976, Gualtieri 1979, Brattstrom et al. 1989) supported this thought, a more recent research study showed that playing a wind instrument has very little or no effect on the position of the teeth (Grammatopoulos et al. 2012).

The majority of orthodontic patients will spend a relatively short time each day playing a wind instrument; it is highly unlikely to affect the position of the teeth because the forces exerted are not high enough and/or are not acting for a sufficient duration of time. Other reasons may be that the forces are not continuously applied, the forces themselves may be balanced or the lips cushion the forces exerted by the mouthpiece on the teeth.

Is playing a wind instrument a risk factor for the development of alveolar bone loss?

Stamatakis et al. (1999) carried out longitudinal observational and cross-sectional observational studies comparing radiographically the periodontal bone height of subjects who played a wind instrument, with a control group. The authors found no differences and therefore it was concluded that playing a wind instrument is not an aetiological factor in the development of periodontal bone loss.

Is playing a wind instrument a risk factor in root resorption during orthodontic treatment?

It could be speculated that wind instrument players who have been playing or practising over many years produce vibratory forces within the periodontium. This mimics oscillating movements increasing the risk of root resorption. Therefore additional questioning about wind instrument playing during history taking may be prudent. Careful monitoring of these patients during orthodontic treatment would also be wise(Shafi, 2015).

Dental implications for wind instrumentalists

- Herpes labialis may be more common in wind instrument players (Yeo et al, 2002). Woodwind players tend to have more outbreaks on the lower lip and brass instrument players more on the upper lip. Outbreaks are more common during times of stress such as before an exam or concert performance.
- It is common for wind musicians to experience a dry mouth whilst playing, which can interfere with performance. Water should be recommended as the preferred drink for rehydration during practice. Acidic, fizzy and sugary drinks should be avoided to reduce the risk of erosion and caries.
- Sharp edges on teeth or restorations may cause lip trauma and hinder playing. Restorative intervention is indicated in such cases. A vacuum formed retainer worn over the anterior teeth can act as a lip shield to prevent chronic lip irritation.
- Due to the increased intraoral pressure generated by playing a wind instrument, there may be an increased risk of an oro-antral fistula following an extraction in the maxillary arch close to the maxillary sinus. In such circumstances, musicians should be advised to refrain from playing for at least three weeks following a simple extraction in the maxillary arch and for a month following surgical removal of impacted third molars.

Orthodontic treatment and wind instrumentalists

The problems an orthodontic patient may encounter whilst playing a wind instrument will depend on the type of orthodontic appliance being worn, the instrument played, the musical ability of the player and his/her motivation.

Removable appliances and wind instrumentalists

Functional and removable appliances can be removed for playing if necessary. The orthodontist should ensure that the patient is instructed to keep the appliance safe when not in the mouth.

Fixed appliances and wind instrumentalists

Treatment with a fixed orthodontic appliance may cause a disruption to the playing ability of wind instrumentalists. The majority of patients who present for orthodontic treatment are relatively inexperienced. Fixed appliance therapy may temporarily affect their performance, but implications are unlikely to be significant in the long term. Professional musicians and experienced, skilled amateurs who start fixed appliance treatment may find this has a transient but minor impact on their playing ability.

Once orthodontic treatment is complete there will also be a period of adjustment to playing without an appliance. Wind instrument players wearing fixed appliances (particularly brass instrument players) often experience discomfort to the inside of the lips due to the pressure of the instrument.

Can a wind instrument player have fixed appliance treatment?

The orthodontist, patients and their parents should take the following factors into account upon deciding whether to commence a course of orthodontic treatment:

- How talented is the musician?
 - If the adolescent is considering pursuing their music as a career, perhaps err on the side of not carrying out orthodontic treatment.

- What type of instrument is the patient playing?
 - Brass instruments may possibly cause more discomfort and may tend to interfere with the embouchure and performance to a greater extent than woodwind instruments.
- How severe is the malocclusion?
 - How much of a concern is it to the patient?
 - Is music and performance more of a priority? If yes, then again err on the side of not carrying out orthodontic treatment.
- The orthodontist may place brackets on the anterior teeth to test the patient's tolerance before taking the irreversible step of extracting permanent teeth and placing full fixed appliances. If the patient finds the brackets intolerable they can easily be removed.
- A quadhelix or a transpalatal bar may interfere with tongue movement and hence sound production with reed instruments. Alternatives should be considered if possible.
- Anecdotally, wind instrument players may be more likely to suffer from cold sores and therefore should be advised to cancel an appointment if they have a cold sore.

Before the patient and their parents decide to go ahead with orthodontic treatment it is important to warn patients and parents that performance may deteriorate either during the treatment, as the fixed appliances may be uncomfortable and therefore may interfere with the correct embouchure, or after treatment, as changes in the alignment of teeth may also interfere with the embouchure with which the musician is familiar. However with practice, the musician can usually overcome any issues.

The following advice may be helpful:

- The patient should seek advice from the teacher about the most appropriate time to commence orthodontic treatment and to avoid orthodontic adjustment appointments before important musical examinations or auditions.
- The more a patient practises, the quicker he/she may adjust to the fixed appliances.
- In some cases, the music teacher may be able to suggest changes to the mouthpiece of an instrument to aid playing. For example, increasing the size of the cup-shaped mouthpiece of the cornet and trumpet may spread the load more evenly over the lips, thereby reducing the pressure on the anterior teeth and irritation to the lips from the brackets. Trombone and tuba mouthpieces are much larger and cause fewer problems with fixed braces.
- Low profile brackets with smooth edges and small tie wings can reduce the potential for trauma to the inside of the lips. Large, thick elastomeric modules or even separating elastics instead of modules can also help to smooth the bracket contours and may be useful on anterior teeth to reduce lip irritation.
- Consider lingual appliances for brass players due to the type of embouchure used which pushes the lips against the teeth. Advise the use of plenty of wax.
- Advise wind instrument players to practise for no more than 10 to 15 minutes at a time and to take regular breaks to drink plenty of water during the practice sessions or performances.
- Focus on lower notes/longer notes as they often require less pressure.
- Sectional mechanics may be useful at the start of orthodontic treatment. Avoiding brackets on the anterior teeth for as long as possible reduces disruption to playing and discomfort and allows a period of gradual adaptation. Anterior brackets can be placed at a time convenient for both clinician and musician.

- Wax or silicone materials used to cover brackets can help reduce discomfort to the lips. Commercially available bracket sleeve protectors and lip protectors can be beneficial.
- The orthodontist should be prepared for more breakages if the patient is fitted with fixed appliances.

Retention and patients playing a wind instrument

Patients who play a wind instrument should be carefully monitored during the early stages of retention. The orthodontist may consider using lingual and palatally bonded retainers.

Conclusions

There are both dental and orthodontic implications for patients playing wind instruments. Fixed orthodontic appliances can interfere with the playing of a wind instrument. Brass instrument players are more likely to be affected than those playing reed instruments. Professional musicians and skilled, experienced amateurs undergoing fixed appliance therapy may find that this has a major impact on their performance.

When talking to the patient about the risks and benefits of orthodontic treatment, the orthodontist should discuss the possible difficulties of maintaining musical performance. This may influence the patient's decision to proceed with treatment. For wind instrument players who decide to go ahead with treatment, the orthodontist can help to reduce problems in various ways.

References and further reading

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Updated and reviewed by the Clinical Governance Directorate of the British Orthodontic Society 2018. Recommendations may change in the light of new evidence.

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