

ADVICE SHEET

USE OF RETRACTION HEADGEAR AND FACEBOWS



Introduction

Despite the use of retraction headgear declining due to increasing use of other anchorage supporting mechanisms such as Temporary Anchorage Devices, it is still used as an adjunct to growth modification and treating malocclusions with high anchorage demands. Headgear is generally safe if worn correctly but there are reports in the dental literature indicating that soft tissue and eye injury can occur from headgear components. The incidence is very low, but when an eye injury does occur, it can have serious consequences. As wounds are contaminated by oral bacteria, intraocular infection (endophthalmitis) is a significant risk after a penetrating injury and can be difficult to treat. Another rare, but serious consequence can be sympathetic ophthalmitis occurring in the uninjured eye. Such eye injuries may result in impaired vision or even loss of the eye.

There are 2 types of retraction headgear used either in isolation or combination:

1. Cervical pull headgear where the strap is anchored around the back of the patient's neck giving a downward and backward pull to the teeth.
2. Occipital (high pull) headgear where the strap is anchored around the back of the patient's head giving an upward and distalising pull to the teeth.

Both types of distalising headgear are composed of fabric straps, an elastic mechanism to apply and control the force level, metal facebow and other safety components such as a plastic neck strap.

Injuries from headgear can occur due either to recoil, where the appliance is actively pulled, or as a result of accidental disengagement, particularly during sleep. The dangers arising from accidents during play or incorrect use are known and have been recognised for some time. Manufacturers produce safety neck straps and anti-recoil headgear, but even so, antirecoil devices alone do not make headgear totally safe. It has been reported that the greatest incidence of disengagement occurs at night and it is therefore essential when using headgear at night that it is securely attached to the appliance.

The following guidance gives advice for the safe use of headgear. It is the responsibility of the orthodontic practitioner to ensure that proper instruction in safe use is given to the patient and parents at the time the headgear is provided. It is important to check the use and fit of headgear at each appointment as the facebow and applied force may need to be adjusted as the teeth move.

It is the operator's responsibility to keep abreast of developments in anchorage control, buccal occlusion correction, non-compliance techniques and new developments in headgear safety.

It is recommended that both the patient and parents be informed of the risks and benefits of headgear use and in particular, the risk of eye injury. Alternative treatment plans without headgear should be discussed wherever possible. This discussion should form part of the consent procedure so that both the patient and parents are involved in the decision process. The outcome of this discussion should be documented into the patient's clinical notes.

Safety Mechanisms

It is important that all headgear has two independent safety mechanisms: one to prevent recoil injuries and one to prevent accidental disengagement. It is the orthodontist's responsibility to select the most appropriate combination of headgear safety features for each case in question.

Safety Mechanisms and Fixed Appliances

Prevention of recoil injuries

Anti-recoil devices: These are designed to 'break-away' when excessive force is applied to the facebow or strap. However, there is considerable variation in the amount of force required to activate the break-away mechanism and they do not prevent disengagement of the facebow from buccal tubes. This 'break-away' mechanism in the strap should be demonstrated to the patient and parents so they are aware of this safety feature.

Locking mechanisms: These ensure that the facebow cannot be accidentally removed from the buccal tubes, but they may be more challenging for the patient to fit and remove.

Locating Elastics: Short strong elastics may be used between hooks on the inner bow and the buccal tubes to reduce the likelihood of disengagement. They may be variable in effect and may present difficulties for the patient to fit and remove.

Other Safety Mechanisms

'Safe ends': These do not prevent accidental removal of the facebow from the buccal tubes or potential recoil, but provide a blunt end which may reduce the risk of penetrating injuries.

Safety Mechanisms and Removable Appliances

Clip-over appliances: Consideration should be given to the use of cemented bands to which a facebow can be securely locked whilst in use, over which the removable appliance can be clipped. When headgear is used directly to a removable appliance it is important to ensure that the appliance is securely retained in the mouth.

Integral facebow: When practical, consideration should be made to having the facebow constructed as an integral part of the removable appliance.

Locking mechanisms: Mechanisms similar to those used for fixed appliances may be used to positively locate the facebow to the appliance.

When facebows are used in conjunction with removable appliances, the patient should be instructed to fit the facebow with the appliance out of the mouth.

Informing patients and parents

Written and verbal advice should be given to the patient and parent including:

- Wear your headgear every day for the hours suggested by your orthodontist (between 8-14 hours depending on whether the headgear is used for anchorage or distal movement).
- During the first week, the headgear may cause the teeth to feel sore. Simple painkillers may be helpful to help the patient adjust to wearing the headgear.
- Remove external headgear straps before removing the inner bow. Never remove or fit the headgear in one piece by pulling the headgear over the face or head.
- Wash the metal facebow daily with mild soap. The fabric straps can also be disconnected and washed if required.

- Do not wear headgear while playing sports, rough games or active computer games.
- At night always ensure that the safety mechanisms are in place to prevent accidental removal of the headgear and facebow.
- Bring your headgear to each appointment and report any problems to your orthodontist
- If the headgear becomes detached during sleep, stop wearing the headgear immediately and contact your orthodontist the next day. Do not wear the headgear again until you have seen your orthodontist.
- If any eye injury associated with the headgear occurs, it must be treated as a medical emergency. Attend your local Accident and Emergency Department for an ophthalmic opinion immediately. Take the headgear with you to show the doctors.

References and further reading

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