



Pressure-induced Alopecia from Orthodontic Headgear

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ABSTRACT

Every treatment in the dental specialty has its own set of complications, Orthodontic therapy being no exception. Such a problem during the course of treatment puts the specialist in a dilemma as to whether to continue or stop the treatment.

One such case in which during headgear therapy, a rare complication such as alopecia was encountered has been dealt with in this paper. This case report shows its effective management while still continuing treatment, thus leading to the desired result. It emphasizes on the importance of maintaining a balance between the benefits and risks of a treatment.

Clinical relevance: The use of headgear can lead to the rare complication of alopecia and the clinician should be aware of it.

Objective: The reader should understand the psychological implications of alopecia and also to carry out the treatment after assessing the risk/benefit ratio.

Keywords: Alopecia, Orthodontic headgear, Orthodontic therapy, Pressure-induced alopecia.

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INTRODUCTION

Orthodontic treatment benefits the patient on improvement of mastication, speech, appearance as well as overall health, comfort and self esteem. Like other treatment procedures, orthodontic treatment has its own risks and complications. The usual complications that have been associated with orthodontic treatment includes root resorption, ankylosis, periodontal damage, instability,¹ hypersensitivity to certain components like nickel,² soft tissue injuries and damage to tooth surface.

Ever since its introduction, headgear has been used widely both as an orthopedic appliance and also as an anchorage saver. There are many complications of having orthodontic headgear. Apart from mocking and teasing

in school, headgear cause difficulties performing routine daily tasks such as eating, sleeping. Samuels³ reported on the incidence of soft tissue injuries related to headgear and also the effectiveness of safety equipment in preventing the soft tissue injury. Burden DJ and Eddy DJ⁴ reported a case of allergic contact dermatitis due to the presence of nickel allergy in a 13-year-old girl. Endophthalmitis due to ocular injuries caused by the metallic bow also has been reported.⁵

Alopecia or loss of hair subsequent to use of headgear is relatively a rare complication. Search of orthodontic literature yielded only two clinical cases reported by two different authors.^{6,7} Unlike the two cases reported earlier, this case report aims to describe a unique case wherein the continuous pressure due to headgear resulted in unilateral area of pressure alopecia.

CASE REPORT

A 12-year-old boy sought treatment at the Department of Orthodontics, Government Dental College, Chennai in India. His chief complaint was protruded upper front teeth with increased incisal show. His medical and dental histories were insignificant and he had no medical problems. On clinical examination the patient had class II division 1 malocclusion with 13 mm of overjet 6 mm of overbite and 8 mm of incisal show. The shape of the head was asymmetric, with increased dimension on the left side. Cephalometric analysis revealed class II skeletal relationship (SNA angle 86°, SNB angle 80°, ANB angle 6°). Patient had average FMA of 27°. Assessment of growth status using hand-wrist radiographs showed the patient was in the period of maximum growth.

Patient was referred to neurophysician, pediatrician and orthopedician for the asymmetry of the skull. Radiographs also were taken. No pathological problems were diagnosed and patient was reported to be in normal health.

Orthodontic treatment was planned in two phases. The objective of phase I was to obtain skeletal class I relationship, ideal overjet and overbite and reduction in incisal show.

Patient was given a maxillary intrusion splint with high pull headgear with a force prescription of 450 gm per side. Patient was instructed to wear the extraoral appliance for 12 to 14 hours a day after school hours.

The first 5 months of appliance wear was uneventful. Patient compliance was good and visible clinical improvement was seen. Incisal show reduced to 6 mm. and there was a reduction in overjet by 5 mm.

After 5 months patient began to experience tingling sensation on the left side of the head and his mother saw spot of baldness at the same area. Immediately patient reported to the department of orthodontics. On examination we found that the area of hair loss on the left side was in relation to the pressure exerted by the extraoral appliance (Fig. 1). But the right side of the head (Fig. 2) looked completely normal and patient also did not experience tingling sensation on that side. Patient was referred to a dermatologist and the condition was diagnosed as pressure induced alopecia. Dermatologist prescribed compound benzoic acid and multivitamins and the patient was referred back to us for alternate treatment modalities. We prescribed asymmetric force application. The force on the left side was reduced to 300 gm. Patient was instructed to follow the unequal force application.

After 6 weeks of unequal force application, patient was reviewed. The tingling sensation had completely stopped and also spots of new hair growth were seen in the area of hair loss.

DISCUSSION

Alopecia areata is characterized by complete or nearly complete absence of hair in one or more circumscribed area of the scalp.⁸ Immunologic and genetic factors are considered to play a pathogenic role in cause of alopecia

Table 1: Various types of alopecia and their causes		
	Nonscarring	Scarring
<i>Diffuse</i>	<i>Localized</i>	
• Aging	• Male pattern alopecia areata	• Trauma
• Drug induced	• Mechanical causes (pressure)	• Lupus erythematosus
• Telogen effluvium		• Lichen planus

areata.^{9,10} Pressure alopecia is a form of alopecia areata where there is loss of hair over a circumscribed area usually on the scalp resulting from continuous pressure.

Many factors can contribute to the occurrence of pressure alopecia. Pressure alopecia is also known as post operative alopecia and is commonly seen in patients who undergo surgery and also in immobilized patients. In these conditions the head is kept immobile and prolonged pressure is exerted on a circumscribed area.

Incidence of pressure alopecia due to wear of headgear therapy is scanty. To the authors' knowledge only two incidences has been reported^{6,7} in the literature. It has been stated that pressure alopecia due to headgear therapy occurs only in patients who have predisposition to alopecia.⁶ Pressure alopecia is a type of nonscarring hair loss due to mechanical causes. The different types of alopecia are enumerated in Table 1. Unlike alopecia areata, pressure alopecia is attributed to a definite mechanical cause, the constant pressure. Pressure alopecia can occur in all age groups. Persistent pressure in local area can induce ischemia or hypoxia. Ischemia affects the hair follicle and suppresses or stops hair growth. Pressure alopecia is usually reversible when diagnosed and treated early.

The unilateral hair loss seen in this patient could be attributed to increased pressure on the left side of the head when compared to the right side, because of the asymmetric



Fig. 1: Alopecia on the left side



Fig. 2: Right side showed no signs of hair loss

head. As the condition improved after reduction of force on the left side, the treatment was continued with periodical monitoring. There was no further hair loss and patient showed good improvement in both skeletal malocclusion and hair growth. Early diagnosis of this rare complication is critical to prevent irreversible damage to hair.

CONCLUSION

Though two cases of alopecia have been reported in orthodontic literature, this is the first time a case with reversible form of unilateral alopecia following head gear has been reported. The alopecia has been dealt with effectively with modified force prescription and a balance has been obtained between the orthodontic therapy and complication. The need for headgear as a useful appliance has decreased greatly as more and more orthodontists use temporary anchorage devices for the purpose of anchorage. Still headgears are used widely by many practitioners. Thus if correcting malocclusion is to be of benefit, the advantage it offers should outweigh any possible adverse side effects.¹¹ When using headgear, clinicians should be vigilant in assessing and monitoring every aspects of the damage caused to achieve an uneventful, secure and successful result.

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