

Use of Adhesive Tape for Temporary Management of Inturned Upper Eyelid Eyelashes

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Objective: To evaluate the efficacy of adhesive tape for temporary management of inturned upper eyelid eyelashes.

Methods: In a prospective, consecutive, comparative, nonrandomized, interventional case series, 50 patients (100 eyes) had inturned eyelashes with at least 1 of 3 symptoms: foreign body sensation, itchiness, and tearing. Transpore tape was applied to the right upper eyelid of each patient; the left eye was used as a control. A questionnaire was used to assess relief or persistence of the symptoms before, during, and after tape adhesion.

Results: Analysis of variance showed a significant difference between the study and control groups ($P = .002$). Tukey honestly significant difference analysis revealed a significant difference in symptoms before and during tape adhesion and a significant difference during and after tape adhesion. Symptoms in the control eye remained unchanged.

Conclusion: Use of adhesive tape can be an effective temporary measure for relief of symptoms of inturned upper eyelid eyelashes.

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INTURNED UPPER EYELID EYELASHES are found in elderly patients whose eyelid margins turn inward due to aging changes. The changes that accompany involutional entropion include eyelid tissue laxity, disinsertion of eyelid retractors, shrinkage of tarsal plates, downward displacement due to the effects of gravity, and enophthalmos of orbital fat.¹⁻⁵ These anatomical substrates cause dermatochalasis, lateral canthal tendon laxity, lash ptosis, and sometimes trichiasis. Symptoms of inturned upper eyelid eyelashes are foreign body sensation, tearing, itchiness, and eye pain. Ophthalmic findings include chronic lateral conjunctivitis, corneal abrasions, and lateral angular excoriation of the eyelid margin.^{4,6} In severe cases where inturned lashes chronically rub against the cornea, the corneal epithelium may ulcerate, resulting in permanent corneal opacification or blindness.⁶

Miller and Hesse² described involutional upper eyelid entropion in 2 patients, a white woman and an African American man, attributable to a combination of horizontal and vertical eyelid laxity, atrophy of the tarsal plate, and over-riding of the septal orbicularis. Both patients had upper eyelid entropion sec-

ondary to involutional lash ptosis. Camara et al⁷ described a condition called *involutional lateral entropion* wherein only the lateral aspect of the upper eyelid margin was inturning.

Surgery is the treatment of choice for inturned upper eyelid eyelashes.⁸⁻¹⁰ However, immediate surgery or access to an ophthalmologist who can perform surgery is not always available. To our knowledge, no studies on temporary measures to correct inturned upper eyelid eyelashes have been published.

It is a common practice among Asian women to use commercially available pre-cut adhesive tape or self-cut adhesive tape to effect a double upper eyelid fold. Adhesive tapes include Beautiful Eyes Charm Double Eyelid Adhesive Tape, DUP Wonder Eyelid Tape, and 3M Nexcare. This practice inspired us to determine whether custom-contoured adhesive tape could be an effective temporary measure to alleviate symptoms of inturned upper eyelid eyelashes.

METHODS

Fifty consecutive patients with symptomatic, bilaterally inturned upper eyelid eyelashes were

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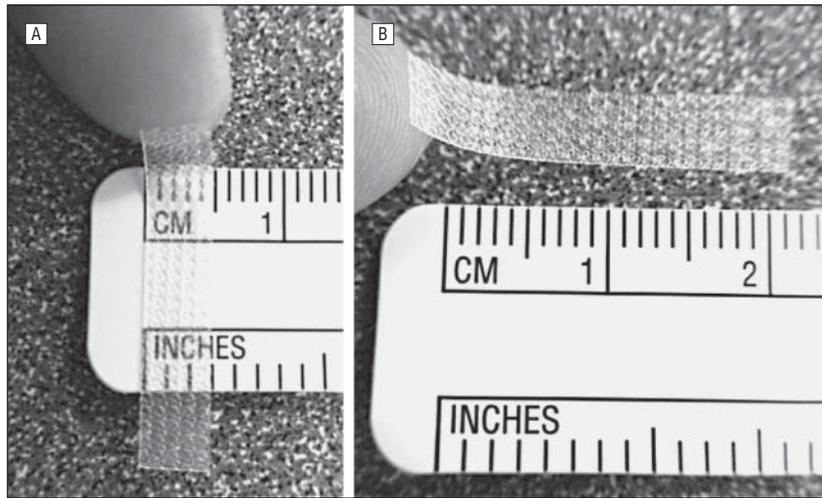


Figure 1. Vertical height (A) and horizontal length (B) measurements for 3M Transpore tape preparation cuts.



Figure 2. Process of 3M Transpore tape adhesion to the eyelid. A, Patient's eyes before tape adhesion. B, Manually elevating the upper lateral area of excess skin and muscle of the right eye. C, Comparison of the right and left eyes after tape application. The left eyelid was left untreated as the control. Slitlamp examination confirmed that the inturned lashes no longer touched the globe when the tape was applied.

studied from August 23, 2010, to January 17, 2011. Criteria for inclusion in the study were having bilateral inturned upper eyelid eyelashes with at least 1 of the following 3 symptoms in both eyes: foreign body sensation, itchiness, and tearing. In our clinical experience, these were the most common and easily identifiable symptoms in patients with inturned upper eyelid eyelashes. Excluded from the study were patients with cicatricial entropion, trachoma, or any history of eyelid surgery or trauma to the eyelids or periorbital area. Patients with conditions that produce the same symptoms (eg, nasolacrimal duct obstruction) were also excluded. In accordance with the Declaration of Helsinki and the Health Insurance Portability and Accountability Act, all participants provided informed consent to participate in the study, and the protocol was approved by the University of Hawaii Institutional Review Board.

Patient information was entered into the examiner's log sheet. The horizontal length of each patient's right eyelid was measured. Transpore tape (3M), chosen for its hypoallergenic properties, was cut into strips with a uniform 5-mm vertical height and the matching measured horizontal length of the patient's right upper eyelid (**Figure 1**).

The tape was applied only to the right eyelid. The left eyelid was used as a control.

The examiner manually lifted the upper lateral area of excess skin and muscle, elevating the lax tissue that induced the inturning eyelashes. The Transpore tape was firmly applied horizontally, approximately 5 mm above the eyelid margin, with the excess eyelid skin held upwardly taut. The tape inclusively covered the horizontal length of the eyelid, correcting the overriding preseptal orbicularis (**Figure 2** and **Figure 3**).

The examiner confirmed under slitlamp examination that the inturned lashes no longer touched the globe. No other treatment, such as eyedrops or warm compresses, was used to relieve symptoms.

The patients were sent home with a questionnaire to complete once the tape spontaneously loosened or detached. The patients recorded symptoms of foreign body sensation, itching, and tearing or a combination thereof at 3 separate times: before (defined as prior to tape adhesion), during (defined as the time the tape was adherent on the eyelid), and after (defined as after the tape was removed or spontaneously loosened). Patients were advised to remove the tape completely on its loosening so



Figure 3. Lateral view of tape adhesion to the right eyelid.

that the tape no longer held the excess skin upward. The patients also were instructed to record the duration (in days) from initial adhesion to spontaneous loosening or detachment. All patients underwent a follow-up examination 2 weeks later, at which time they submitted their completed questionnaire.

Data were analyzed as simple comparative percentages of the 3 symptoms and their combinations. Statistical analysis was performed using SPSS version 19 for MAC (SPSS Inc). A 1-way analysis of variance and a post hoc Tukey honestly significant difference analysis were used to determine statistical significance of the efficacy of the adhesive tape. Statistical significance was determined as $P < .05$. Efficacy was defined as the absence of symptoms once the tape was attached to the upper eyelid and return of the same symptoms once the tape was removed.

RESULTS

A total of 50 consecutive patients with inturned upper eyelid eyelashes were studied. The age range was 34 to 87 years, with a mean (SD) age of 63 (12.2) years. Of 50 patients, 30 (60%) were women and 20 (40%) were men. All patients were of Asian descent.

The patients' symptoms, individually and in combination, in both eyes before tape adhesion and in the right eye during tape adhesion and after tape removal are shown in the **Table** and **Figure 4**. Symptoms in the control left eye remained the same before, during, and after tape adhesion. The mean (SD) duration of tape adhesion on the right upper eyelid was 5 (1.5) days.

Analysis of variance indicated a significant difference between the 3 groups ($P = .002$). A post hoc Tukey honestly significant difference analy-

Table. Clinical Symptoms of Patients With Inturned Upper Eyelid Eyelashes Before, During, and After Tape Adhesion

Symptoms	Patients, No. (%)		
	Before Tape Application (n = 50)	During Tape Application (n = 50)	After Tape Application (n = 50)
Foreign body sensation	45 (90)	6 (12)	29 (58)
Itchiness	32 (64)	5 (10)	24 (48)
Tearing	29 (58)	7 (14)	26 (52)
Foreign body sensation and itchiness	7 (14)	1 (2)	2 (4)
Foreign body sensation and tearing	11 (22)	0	4 (2)
Itchiness and tearing	3 (6)	1 (2)	4 (8)
Foreign body sensation, itchiness, and tearing	15 (30)	2 (4)	15 (30)

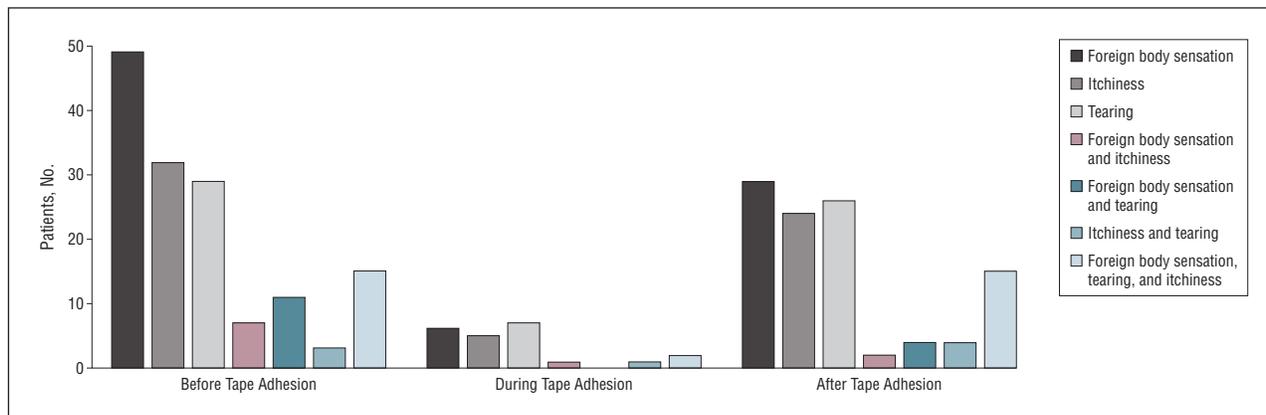


Figure 4. Distribution of patients' symptoms in the right eye before, during, and after tape adhesion (n=50).

sis comparing individual groups showed a significant difference between the symptoms before and during adhesion of the tape ($P = .008$), a significant difference between the symptoms during and after adhesion of the tape ($P = .007$), and no statistical difference between the symptoms before and after adhesion of the tape.

COMMENT

Surgery is the traditional treatment for inturned upper eyelid eyelashes. The goal of surgery is to correct the anatomical substrates causing the inturned eyelashes. Upper eyelid skin is removed, with or without the orbicularis muscle, and rotational sutures are placed to redirect the lashes away from the globe. Any temporary measure would ideally achieve similar anatomical results.

In our study, Transpore tape was applied over the excess upper eyelid skin, correcting the dermatochalasis and mechanically elevating the eyelashes away from the globe. In addition, the applied tape helped re-

inforce the atrophic tarsal plate commonly found in patients with inturned upper eyelid eyelashes.^{2,3} While the symptoms of foreign body sensation, itchiness, and tearing were relieved while the tape was on the eyelid, the symptoms returned once the tape was removed. The control left upper eyelid, to which no tape was applied, remained symptomatic throughout the duration of the study.

Transpore is a plastic tape with an extensible, perforated polyethylene film. It is coated with an acrylic adhesive, offering strong adhesion.¹¹ The perforations in the tape serve a dual function. They allow the passage of water vapor from the skin, reducing the possibility of maceration and bacterial proliferation, and enable the tape to be torn easily in both directions without the use of scissors. Transpore is also hypoallergenic and allows visualization of the skin. The permeability of the tape allows it to withstand sweating and washing with water. Its elasticity and flexibility make it particularly well suited for securing dressings on areas that are subject to movement.

Comparative results indicate an effective decrease of symptoms while the tape was on the eyelid as compared with both before and after adhesive tape placement. These results demonstrate the efficacy of the adhesive tape to temporarily relieve symptoms of inturned upper eyelid eyelashes while the tape is on the eyelid. In addition, a 1-way analysis of variance indicates a statistically significant reduction of the symptoms when comparing before and during the tape adhesion. There was also a statistically significant reduction of the symptoms when comparing during and after the tape adhesion.

In our sample size of 50 patients of Asian descent, the results indicate a salutary, albeit temporary, effect of the tape on the symptoms of inturned upper eyelid eyelashes. There was no statistically significant difference of symptoms comparing before the tape was applied and after the tape was removed. In other words, symptoms were relieved only while the tape adhered to the eyelid.

We believe that the results of this study add to the armamen-

tarium available to the ophthalmologist treating inturned upper eyelid eyelashes. Because surgery is currently the only option available, the use of adhesive tape as described in this article could benefit patients with inturned upper eyelid eyelashes who may be unable to undergo surgery or when no surgeon is available to treat the condition. Furthermore, placement of the tape as described on inturned upper eyelid eyelashes may facilitate preoperative discussion of the benefits of corrective surgery. This study supports previously published findings on the use of adhesive tape for the temporary treatment of lower eyelid entropion.⁴

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