

Amniotic Membrane Transplantation for Congenital Distichiasis

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Purpose: To evaluate the use of amniotic membrane transplantation (AMT) for management of congenital distichiasis.

Methods: In this interventional case series, 16 eyelids of 5 patients with congenital distichiasis underwent posterior lamella resection and AMT.

Results: All patients were male subjects with mean age of 13.6 ± 15.2 (range 2-42) years. Mean follow up was 17 ± 7.5 (range 6-29) months. Distichiasis did not recur in 11 eyelids (68.7%). Misdirected eyelashes recurred in 3 eyelids (18.8%) outside the AMT area and in 2 eyelids (12.5%) within the AMT area which were successfully treated by gentle laser epilation. Postoperatively, symptoms of dry eye were controlled by medical treatment in all patients. Eyelid contour was not significantly altered in any patient.

Conclusion: AMT seems to be an acceptable alternative for surgical management of congenital distichiasis yielding acceptable eyelid contour with low rate of complications.

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INTRODUCTION

Distichiasis indicates the congenital or acquired presence of aberrant eyelashes emerging from meibomian gland orifices posterior to normal lashes. The abnormal hair shafts may be fine, soft and well-tolerated, however they may be quite similar to the normal anterior lashes rubbing against the cornea leading to inflammation and corneal scars.¹

Distichiasis should be treated in the presence of symptoms or ocular surface irritation. Some cases of distichiasis may respond to emollients or therapeutic contact lenses, but often more definitive intervention may be required. The abnormal lashes may be removed by epilation, wedge resection, electrolysis, or cryo-

therapy.¹ In cases of distichiasis limited to less than one-third of the lid margin, wedge resection with primary closure may be effective. However, the most common surgical treatment is posterior lamellar resection along with oral mucosal graft.¹ The disadvantage is that oral mucosa retains its pink color and increases eyelid thickness.

Amniotic membrane (AM) has been shown to be suitable for ocular surface reconstruction.^{2,3} There has also been a tendency to use amniotic membrane transplantation (AMT) instead of mucosal graft.^{4,5} The purpose of this study is to report our experience using AMT with posterior lamellar resection for management of congenital distichiasis.

METHODS

After obtaining informed consent, 5 patients diagnosed with congenital distichiasis (unrelated to chronic blepharitis) underwent posterior lamellar resection followed by AMT. The eyelids had more than 6 accessory lashes in an aberrant posterior row emerging from the meibomian glands orifices. Cases of concurrent ocular surface disorders such as entropion, ectropion, severe blepharitis, cicatricial lesions due to trachoma, ocular cicatricial pemphigoid (OCP), chemical injuries and previous eyelid surgery were excluded.

We used prepared, tissue bank-stored AM. The AM was obtained under sterile conditions after selective caesarean section from healthy and HIV, HBV, and HCV negative donors. The AM was rinsed in normal saline solution containing gentamicin for 3 minutes and made ready for cutting. We cut it into appropriate size (1.5 mm larger than the resected tarsal area on each side) and the remaining tissue was sent for microbiological studies.

All procedures were performed under general or local anesthesia by one surgeon. The site of distichiotic lashes was determined under a surgical microscope and an incision was made along the gray line at the site of accessory eyelashes extending one millimeter on each side. Then the posterior lamella was dissected from the anterior lamella and the distal 3 mm of the posterior lamella was resected. Low power cautery was used cautiously for hemostasis in case of hemorrhage. The prepared AM was applied with the stromal side on the site of

resection and sutured to the surrounding tissue with running 8-0 Vicryl sutures. Tetracycline ointment was applied on the AMT and the eye was patched for 24 hours.

Postoperatively, all eyes were treated with gentamicin and 1% betamethasone eye drops for 10 days or more depending on the severity of inflammation. Artificial tears and simple eye ointment were prescribed for control of dry eye or irritative symptoms. The patients were visited postoperatively after 1 and 2 days and then weekly up to one month and monthly up to 6 months and then every 3 months if needed. At each visit, epithelialization, AMT survival, recurrence of distichiotic eyelashes within or outside the AMT area, and any changes in the eyelid contour such as entropion were assessed. The eyes were subjected to photography before and one, three and six months after surgery.

RESULTS

Sixteen eyelids of 5 patients underwent posterior lamellar resection with AMT as described above. All patients were male subjects with mean age of 13.6 ± 15.2 (range 2-42) years. All four eyelids were involved in 3 cases and both lower lids were operated in two other patients. Mean follow up duration was 17 ± 7.5 (range 6-29) months (table 1). The position of the eyelids was normal postoperatively and the eyelid appearance was acceptable regarding contour and thickness. Graft slippage occurred gradually in 4 eyelids after 2 weeks; in other cases epithelialization progressed uneventfully.

Table 1 Demographic data and recurrence of distichiotic eyelashes

Patients	Age (yr)	Involved eyelid	Recurrence	Follow up (mth)
1	42	Both lower lids	No	20
2	2	All 4 eyelids	In one upper lid	16
3	3	All 4 eyelids	In one lower lid	14
4	4	Both lower lids	In one lower lid	6
5	17	All 4 eyelids	In one upper and one lower lid	29

Postoperatively all patients had irritative symptoms of dry eye which were more severe

in 2 cases with involvement of the upper lids. These symptoms were controlled by use of

artificial tears and simple eye ointment in all subjects. There was no case of symblepharon, hemorrhage under the AM, infection or necrosis of the eyelids and corneal abrasion or ulcer during the follow up period. Recurrence of misdirected eyelashes occurred in 5 eyelids during the follow up period including 3 cases outside and 2 cases within the AMT area due to incomplete removal of aberrant follicles during posterior lamellar resection. All these cases were treated by gentle laser epilation with special care to avoid normal lash follicles.

DISCUSSION

Distichiasis is a congenital (often autosomal dominant) or acquired disorder in which an aberrant posterior row of eyelashes emerges from meibomian glands orifices. Eyelashes and meibomian glands develop during the second month of gestation from a common pilosebaceous unit. In congenital distichiasis, these pilosebaceous units undergo aberrant differentiation toward development of hair follicles.^{1,4,5}

Acquired distichiasis is seen in chronic irritative and inflammatory conditions such as ocular cicatricial pemphigoid, erythema multiforme, chemical injuries, trachoma, blepharitis and allergic disorders. Physical and inflammatory damage result in metaplastic changes of meibomian glands to hair follicles. Acquired distichiasis may or may not be accompanied by other palpebral disorders such as entropion, ectropion, or trichiasis.^{1,4}

Primary distichiasis is initially managed conservatively which may include soft contact lenses, epilation, electrolysis and cryotherapy. Epilation is a temporary treatment and the distichiotic lashes will regrow in 2-3 weeks. Electrolysis and cryotherapy are suggested for cases with less than 6 misdirected eyelashes since these interventions may cause lid deformity. Cryotherapy may also cause loss of normal lashes, eyelid skin depigmentation, cicatricial changes in the lid margins, edema and bullae formation, and secondary entropion or ectropion.^{1,4,5}

In localized trichiasis (less than one-third of

the eyelid), wedge resection with primary closure may be effective but the more popular surgical technique is posterior lamellar resection with replacement of the excised area with oral mucosal graft.^{1,4,5} In posterior lamellar resection, the eyelid is divided along the gray line into anterior and posterior lamellae. The distal 2-3 mm of the posterior lamella including the abnormal lash follicles and metaplastic meibomian glands are excised and the excised area is replaced with mucosal graft to prevent tarsal shrinkage, scar formation and entropion. Mucosal graft is obtained from the buccal or lower lip mucosa which contain non-keratinized squamous epithelium.¹ This graft retains its pink color and increases the thickness of the eyelid at the grafted area.^{4,5}

Several studies have addressed the application of AMT in the management of ocular surface disorders with promising results.⁶⁻¹¹ However, there have been only two reports of AMT for correction of lid abnormalities. Ti et al¹² evaluated AMT in entropion surgery and reported 80% success rate. Hemorrhage was the most prevalent complication in their study and AMT was not effective in preventing tarsal shrinkage. Khataminia and Gheibi¹³ evaluated AMT for management of 20 cases of distichiasis with a 3-month follow up. The cause of distichiasis was not mentioned except for two cases of trachoma. They utilized fresh AM obtained from seronegative donors after caesarean section on the same day as the operation. They used 10-0 nylon for suturing which resulted in corneal surface abrasion in two cases. Recurrence of distichiotic lashes was reported in one case inside and 4 cases outside the AMT area.

In this study we did not find any considerable complications except for symptomatic dry eye which was probably due to blepharitis or exacerbation of preexisting mild dry eye or may have resulted from surgical manipulation of tarsal glands and loss of integrity of the palpebral surfaces.

Advantages of posterior lamellar resection with AMT include elimination of need for general anesthesia, decrease in operative time, elimination of oral injury and more favorable cos-

metic outcomes (i.e. lack of lid thickening and discoloration).

Congenital distichiasis is a rare condition and due to the limited number of cases, we can not generalize our results to other types of mis-directed eyelashes with different pathogenesis. Our results are promising and suggest that posterior lamellar resection followed by AMT is a safe and effective treatment option for congenital distichiasis.

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