Lichen planus (LP) is a mucocutaneous inflammatory dermatosis that can cause scarring alopecia and nail destruction. Forty percent of patients with cutaneous LP may also have mucosal lesions, most commonly involving the oral and genital mucosa, with stenosis, vaginal synechia, and loss of vulval architecture. In some cases, there may be involvement of the esophagus, resulting in strictures and dysphagia. Lacrimal duct obstruction secondary to LP was previously described among 8 patients (5 female and 3 male) by Durrani et al in 2008. Lacrimal canalicular obstruction had previously been described in a 67-year-old woman with LP. Among some women with vulvovaginalginalval (VVG) syndrome, a subtype of severe erosive LP, we have noted scarring around the punctum of the lacrimal duct, which we believe is related to their LP.

REPORT OF CASES

CASE 1

A 65-year-old woman of white race/ethnicity had biopsy-proven LP affecting the skin, scalp, and oral and vulval mucosa. Her disease was controlled using topical treatments alone. Her medical history included sclerosing cholangitis. She had a 3-year history of epiphora associated with redness and slight photophobia. An ophthalmological assessment revealed cicatricial conjunctivitis and scarring of the lower conjunctiva around the lower lacrimal duct openings bilaterally (Figure 1). A normal lacrimal duct opening is shown in Figure 2 for comparison. Her symptoms improved with daily eye drops of carbamolose sodium, 0.5%, and prednisolone sodium phosphate, 0.5%, and she has not required intubation of the lacrimal duct outflow system.

CASES 2 THROUGH 9

Eight additional women with LP had scarring of the conjunctiva around the lacrimal ducts. The details of these cases are summarized in the Table.
ing in conductive deafness and esophageal involvement that leads to strictures and dysphagia. It has a slight female predominance (1.4:1) and affects 1% to 2% of adults. In most patients, it is self-limiting and follows a benign course. The mucosal variant of LP may involve the oral and genital mucosa and is characterized by sores and erosions. Scarring results in fibrous bands in the buccal mucosa, leading to a reduced vestibular sulcus and limitation of the oral aperture. In our series, 7 of 9 women had VVG syndrome, which is a severe subtype of LP characterized by erosions or desquamation of vulval, vaginal, and gingival mucosa, with predilection for scarring and stricture formation. The pathogenesis of LP is unclear, but it is believed to be caused by specific and nonspecific immunological mechanisms. Specific mechanisms probably include antigen presentation by basal keratinocytes and antigen-specific T cells that are cytotoxic to keratinocytes, whereas nonspecific mechanisms include activation of matrix metalloproteinases and mast cells. A potential association with the HLA-DQB1*0201 allele has been described in patients with VVG, suggesting a genetic predisposition; however, a strong association with autoimmune disorders in this variant of LP may in part explain the increased frequency of this allele. Five of 7 patients herein with VVG LP tested positive for the HLA-DQB1*0201 allele, whereas the 2 patients without VVG LP were negative for this allele. Given the strong association between erosive mucocutaneous LP, particularly of the VVG syndrome subtype, and multisite scarring sequelae, it is not unexpected that ocular inflammation may lead to subconjunctival fibrosis and lacrimal duct stenosis.

Lichen planus may manifest as ocular involvement, most commonly with lesions affecting the eyelid, which is the location of the lacrimal duct. The lacrimal gland produces tears that enter the lacrimal duct and drain into the nose. This system is composed of epithelium-lined lumina. Symptoms of lacrimal canaliculic obstruction include epiphora secondary to the overproduction of tears or their inadequate drainage. Stagnant tears within the system can lead to infection, and spillage of tears can lead to eczematous changes on the lower eyelid.

Rarely, LP can affect the conjunctiva, resulting in conjunctival inflammation, cicatriziation, and subepithelial scarring. One of our patients had LP that caused recurrent conjunctival injection and photophobia. Lichen planus has also been associated with keratitis and keratoconjunctivitis sicca.

Lacrimal canaliculic obstruction may be caused by trauma, eye surgery, Stevens-Johnson syndrome, ocular cicatricial pemphigoid, or use of systemic fluorouracil or certain topical medications. Unilateral obstruction may be seen following herpes simplex virus infection, usually in younger patients following primary pericocular herpes simplex virus infection. Our patients had no history of eye trauma, eye surgery, herpes simplex virus infection, or use of systemic fluorouracil.

Lacrimal duct obstruction is treated by dacryocystorhinostomy with retrograde canaliculostomy. However, the severity of canaliculic obstruction associated with LP often results in a poor outcome with this procedure, and primary or secondary placement of Jones tubes (lacrimal drainage bypass devices) is often needed. Four patients underwent lacrimal reconstructive surgery by an ophthalmologist: 1 patient had improvement in her symptoms, while the other 3 patients did not. Medical intervention has seldom been described. One patient with VVG syndrome and lacrimal canaliculic stenosis was treated with systemic cyclosporin A (150 mg twice daily), which resulted in total resolution of
her epiphora after 6 weeks of therapy. Four of 9 patients herein had been prescribed an immunosuppressant for their oral or vulval disease, none of whom reported improvement in their eye symptoms with immunosuppressant treatments.

In conclusion, lacrimal drainage obstruction secondary to LP has been previously reported in 8 patients by Durrani et al in 2008. Histologic findings in tissue from 2 blocked lacrimal ducts herein showed chronic predominantly lymphocytic subepithelial infiltrate, with a few macrophages and occasional mast cells. There was also scattered lymphocytic infiltration of the basal epithelium and thickening and fragmentation of the basement membrane; immunohistochemistry showed no immune complex deposition, and these changes were consistent with LP. Although the patients herein had no histologic diagnosis demonstrating LP in the lacrimal duct, we can assume that the lacrimal canalicular mucosa was affected by LP, causing punctal and canalicular stenosis and subsequent functional lacrimal duct obstruction. We believe that this complication has been underreported among patients with LP and that an ophthalmological history and examination of the punctal of the lacrimal duct should be sought in patients with the erosive subtype of LP.

### Table. Cases of Lichen Planus With Lacrimal Canalicular Duct Scarring

<table>
<thead>
<tr>
<th>Case No./Sex/Age, y</th>
<th>Sites Involved</th>
<th>VVG Syndrome</th>
<th>Oral Disease</th>
<th>Vulvar or Vaginal Disease</th>
<th>Eye Symptoms</th>
<th>HLA DQB1*0201 Allele</th>
<th>Eye Findings</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/F/65 Skin, scalp, mouth, oral cavity, vulva</td>
<td>No</td>
<td>50</td>
<td>50</td>
<td>62, Watery eyes</td>
<td>No</td>
<td>Cicatrizings conjunctivitis, bilateral punctum scarring</td>
<td>Eye drops of carmellose sodium, 0.5%, and prednisolone sodium phosphate, 0.5%</td>
<td></td>
</tr>
<tr>
<td>2/F/51 Skin, ear canals, scalp, oral cavity, esophagus, vulva, vagina</td>
<td>Yes</td>
<td>31</td>
<td>31</td>
<td>41, Watery eyes</td>
<td>Yes</td>
<td>Bilateral punctum scarring</td>
<td>Bilateral lacrimal duct dilatation</td>
<td></td>
</tr>
<tr>
<td>3/F/56 Skin, ear canals, scalp, oral cavity, esophagus, vulva, vagina</td>
<td>Yes</td>
<td>25</td>
<td>35</td>
<td>51, Watery eyes</td>
<td>Yes</td>
<td>Surgical scar (right tear duct)</td>
<td>Bilateral stents inserted in 2004</td>
<td></td>
</tr>
<tr>
<td>4/F/66 Skin, oral cavity, vulva, vagina</td>
<td>Yes</td>
<td>40</td>
<td>49</td>
<td>61, Slight tearing of left eye</td>
<td>Yes</td>
<td>Punctum scarring (left eye)</td>
<td>No treatment</td>
<td></td>
</tr>
<tr>
<td>5/F/51 Oral cavity, esophagus, vulva, vagina</td>
<td>Yes</td>
<td>16</td>
<td>26</td>
<td>No symptoms</td>
<td>Yes</td>
<td>Bilateral punctum scarring</td>
<td>No treatment</td>
<td></td>
</tr>
<tr>
<td>6/F/78 Oral cavity, vulva, vagina</td>
<td>Yes</td>
<td>63</td>
<td>65</td>
<td>76, Irritation of eyes; 77, watering of left eye</td>
<td>No</td>
<td>Bilateral punctum scarring</td>
<td>No treatment</td>
<td></td>
</tr>
<tr>
<td>7/F/83 Oral cavity, esophagus, vulva</td>
<td>No</td>
<td>79</td>
<td>79</td>
<td>75, Watery eyes</td>
<td>No</td>
<td>Bilateral punctum scarring</td>
<td>No treatment</td>
<td></td>
</tr>
<tr>
<td>8/F/66 Oral cavity, vulva, vagina</td>
<td>Yes</td>
<td>57</td>
<td>57</td>
<td>Watery eyes</td>
<td>Yes</td>
<td>Bilateral punctum scarring</td>
<td>Bilateral stents inserted in 1984 and 1985</td>
<td></td>
</tr>
<tr>
<td>9/F/70 Skin, scalp, oral cavity, vulva, vagina, pharynx, esophagus, urethra</td>
<td>Yes</td>
<td>50</td>
<td>55</td>
<td>No history</td>
<td>Yes</td>
<td>Bilateral punctum scarring</td>
<td>Lacrimal duct dilatation in 1975 (right eye)</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: VVG, vulvovaginalgingival.

aSeen by an ophthalmologist, who diagnosed lacrimal duct scarring.

Accepted for Publication: August 21, 2011.

Correspondence: Naomi K. Webber, MBBS, BSc, John’s Institute of Dermatology, Guy’s and St Thomas’ National Health Service Foundation Trust, Westminster Bridge Road, London SE1 7EH, England (naomi.webber@doctors.org.uk).

Author Contributions: All authors had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Webber and Neill. Acquisition of data: Webber, Setterfield, Lewis, and Neill. Analysis and interpretation of data: Webber, Setterfield, and Lewis. Drafting of the manuscript: Webber, Setterfield, Lewis, and Neill. Critical revision of the manuscript for important intellectual content: Webber, Setterfield, Lewis, and Neill. Study supervision: Neill.

Financial Disclosure: None reported.

### REFERENCES
