Squamous cell carcinoma of the lacrimal punctum: A rare presentation

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Key words: Epiphora, OSSN, punctum, tumor, watering

Ocular surface squamous neoplasia (OSSN) encompasses a variety of conjunctival and corneal epithelial tumors including dysplasia, carcinoma *in situ*, and invasive carcinoma.[1] OSSN commonly affects the interpalpebral conjunctiva and typically arises from the nasal limbus as a solitary growth.[2] It is generally believed that these tumor cells originate from dysfunctional limbal stem cells that have been altered by various mutagenic agents, such as UV radiation; however, these lesions can also be seen to extend across the limbus to involve the cornea.[3] Rarely, OSSN may be seen to arise from atypical locations such as the palpebral conjunctiva.[4-6] In addition, there have been documented cases of squamous cell carcinoma of the lacrimal sac and canaliculus presenting as punctal masses and canaliculitis as well.[7-9] To the best of our knowledge, there has been no previous documented case of conjunctival squamous cell carcinoma presenting as an isolated peri-punctal mass with no involvement of the lacrimal sac. This study was adherent with the tenets of the Declaration of Helsinki.

A 65-year-old patient presented with a six-month old history of epiphora in the left eye. On examination, a greyish-white, elevated mass was seen around the left lower punctum [Fig. 1a] – there was no bleeding or ulceration seen; the central punctum was visible, and irrigation of the lacrimal system was patent. No concretion or discharge was expressed on pressing over the lower canaliculus. The upper punctum in the left eye was normal. Based on the appearance, pyogenic granuloma, pseudoepitheliomatous hyperplasia, punctal papilloma, and canaliculitis were considered as differential diagnoses and the mass was excised flush to the eyelid margin. Histopathological examination showed atypia across the entire thickness of epithelium with the focal nests of cells extending into underlying stroma [Fig. 2a]. Keratin pearls were visible [Fig. 2b – yellow arrow] and the tumor cells had eosinophilic cytoplasm with coarse chromatin and prominent nucleoli; mitotic figures were frequent [Fig. 2b – white arrow]. A diagnosis of ocular surface squamous cell carcinoma with tumor-free margins was made as clear uninvolved conjunctiva was identified along all sides and the base. Systemic evaluation was normal and serology workup was negative for HIV markers. No regional lymphnodes were palpable. Magnetic Resonance Imaging (MRI) and nasal endoscopy were done and revealed no abnormality with a normal lacrimal sac and nasal cavity. As an adjuvant measure, the patient was prescribed 0.04% mitomycin-C drops QID for 3 cycles. At 6-month follow up, no recurrence was seen; repeat MRI scans were normal and the patient was asymptomatic with a patent lacrimal apparatus [Fig. 1b].

Access this article online

Quick Response Code:

Website: www.ijo.in

DOI: 10.4103/ijo.IJO_2308_19

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Received: 16-Dec-2019 Revision: 07-Feb-2020
Accepted: 19-Mar-2020 Published: 23-Sep-2020

Discussion

OSSN is the most common non pigmented ocular surface malignancy.[10] One of the largest series of OSSNs reported in literature comprised of 127 patients (136 eyes); none of which showed involvement of the lacrimal punctum; or presented as a peri-punctal mass.[11] Rumelt *et al*. reported a series of peri-punctal tumors; all of which were benign in nature.[12] The largest series of peripunctal tumors documented the histopathological and clinical findings of 29 tumors – the most common tumors being melanocytic nevus, basal cell carcinoma and seborrheic keratosis; no cases of OSSN were documented.[13]

In the case of peripunctal tumors; the unique location, theoretically allows their extension from the conjunctival sac into the canaliculus and vice versa.[12] Tumor spread from the conjunctival cul-de-sac into the lacrimal sac has been previously documented in literature - therefore, it is best to ascertain free margins whenever a peripunctal tumor is excised.[9] In our case, even though focal nests of cells were seen extending into the underlying stroma, the base was entirely free of tumor cells.

Based on the unique location and histology of the punctum, peripunctal masses may originate from the canalicular epithelium, the conjunctival epithelium, from adjacent skin and from subepithelial tissues. Therefore, the histopathological features may be similar to the characteristics of tumors developing from the tissues in these locations.[12] In our case, clinically the margins of the mass could be seen to be distinctly separate from the eyelid skin and in continuity with the surrounding conjunctiva – a finding, which was confirmed histopathologically. This established that the tissue of origin in our case was in fact the conjunctival epithelium. The punctal opening was also spared with the tumor arranged in a heaped-up manner

Cite this article as: Nair AG, Gopinathan I, Jain V. Squamous cell carcinoma of the lacrimal punctum: A rare presentation. Indian J Ophthalmol 2020;68:2245-7.

around the punctal opening, with the orifice and the patency of the lacrimal system was preserved.

An isolated peripunctal mass can be a rare presentation of an ocular surface squamous neoplasia. However, given that peripunctal tumors are rarely seen, it is difficult to diagnose them pre operatively with certainty, based on their clinical appearance alone. In case a malignancy is suspected, the first step would be to ensure that the lacrimal sac is uninvolved. High resolution MRI may be useful in such cases. As is standard for lid malignancies, wide excision with appropriate lid reconstruction techniques is appropriate. There is not enough evidence to conclusively advocate excision of the canaliculi and/or lacrimal sac in the cases of epithelial tumors of the punctum. Following excision, a close observationshould be kept so that recurrence is detected early. Intraoperative cryotherapy and adjuvant topical therapy with mitomycin-C may have a role in preventing recurrences.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Akshay Gopinathan Nair:
Lecture Fees: Carl Zeiss Meditec
Consultant: HelpMeSee Inc.

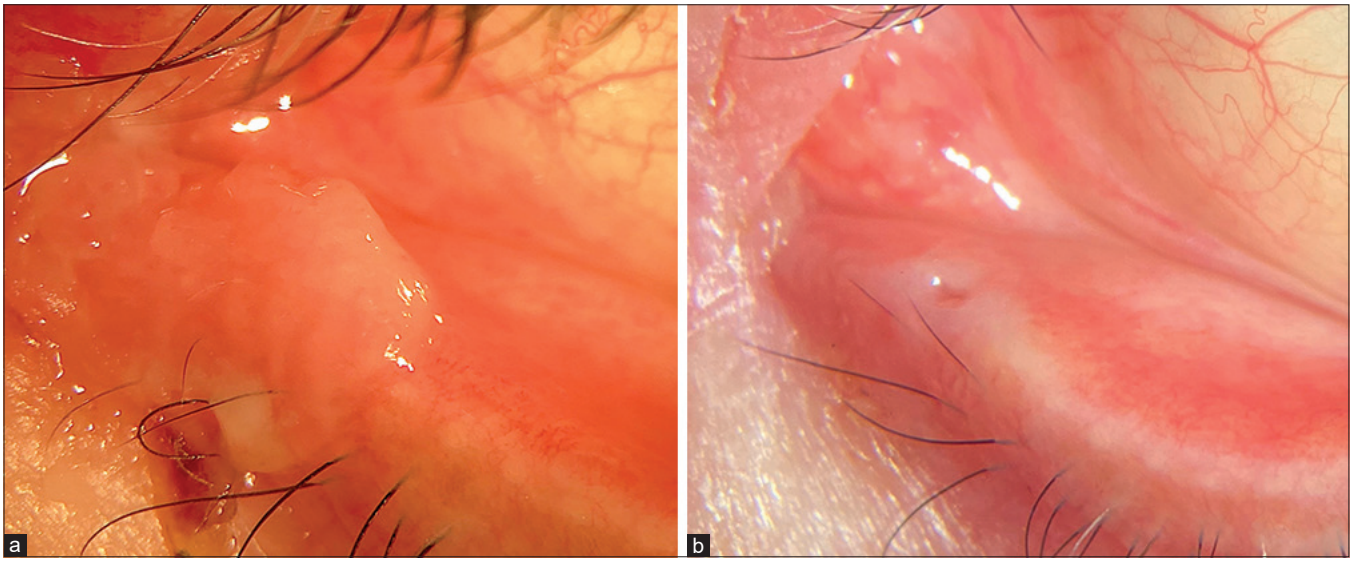

Figure 1: External photograph of the left lower lid showing a greyish-white, elevated mass around the left lower punctum (a) – no bleeding or ulceration is seen and the centrally located punctum is visible. (b) shows the patient at last follow-up following removal of the mono-canalicular stent

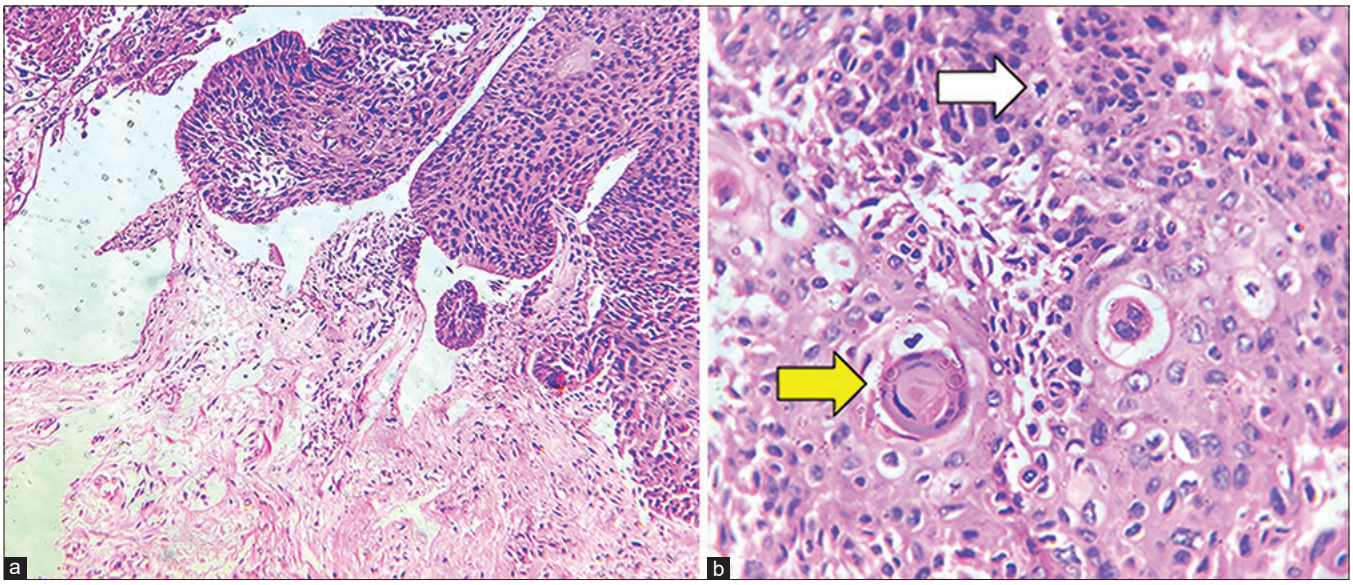

Figure 2: Histopathological examination (Haematoxylin Eosin) shows atypia across the entire thickness of epithelium with focal nests of cells extending into underlying stroma (a; 10x). Keratin pearls are visible (b – yellow arrow; 40x) and the tumor cells have an eosinophilic cytoplasm with coarse chromatin and prominent nucleoli; mitotic figures can also be identified (b – white arrow)

Conflicts of interest

There are no conflicts of interest.

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