



## Metastatic gastric carcinoma to the eyelids masquerading as a chalazion: A case report

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### ABSTRACT

**Purpose:** To describe an unusual case of metastatic gastric adenocarcinoma involving the eyelids and anterior orbit.

**Observations:** An 82-year-old female with prior diagnosis of locally metastatic gastric adenocarcinoma developed eyelid edema. Initial ophthalmic assessment suggested presence of a chalazion that did not resolve with medical management. A few weeks after initial evaluation, the eyelid and facial edema worsened. Eyelid skin biopsy showed only inflammatory changes, but inflammatory work up was unrevealing and there was poor response to steroid therapy. Orbitotomy with biopsy ultimately revealed involvement of eyelid skin by a signet ring cell metastatic gastric carcinoma.

**Conclusions and importance:** Eyelid and orbital metastasis from gastric adenocarcinoma may present mainly with inflammatory signs and symptoms masquerading as a chalazion. This case highlights the spectrum of presentation of this rare periocular metastasis.

### 1. Introduction

Gastric metastasis to the periocular region is exceedingly rare. In 1970, Riley described a case series of metastatic tumors of the eyelids, of which only one case was of gastrointestinal origin.<sup>1</sup> A more recent single institution case series revealed a 1.1% prevalence of eyelid metastasis, of which none were found to originate from the gastrointestinal tract.<sup>2</sup>

Orbital and extraocular muscle involvement in gastrointestinal metastatic disease has been described very rarely as well, with clinical signs and symptoms including cellulitis, diplopia, ptosis and pain.<sup>3–11</sup>

To our knowledge, only 12 cases of gastrointestinal metastasis to eyelid have been described in the literature.<sup>1,12–19</sup> Unveiling the diagnosis can be challenging, especially if an initial tissue biopsy suggests an inflammatory rather than a neoplastic process. We present an atypical case of eyelid metastasis masquerading as a chalazion in a patient with a known history of gastrointestinal adenocarcinoma. The case report is HIPAA compliant and adheres to the ethical principles outlined in the Declaration of Helsinki.

### 2. Case report

An 82 year old African American female presented to the outpatient oculoplastics clinic complaining of left upper lid swelling. Evaluation demonstrated visual acuity of 20/25 in each eye, normal intraocular pressure, full extraocular motility, and a lesion of the left upper eyelid consistent with a chalazion. Past medical history was remarkable for a recent diagnosis of poorly differentiated gastric carcinoma with colonic metastasis. A metastatic work up with positron emission/computed tomography (PET/CT) five months prior to the onset of ophthalmic symptoms revealed local intrabdominal metastasis but no distant sites of metastasis. The patient was deemed a non-surgical candidate and declined chemotherapy. Additional history included diabetes mellitus, hypertension, chronic kidney disease, chronic gastritis, chronic anemia, and a 40 pack-year history of tobacco smoking. Prior ophthalmic history included a central retinal artery occlusion of the left eye. The eyelid lesion was treated with antibiotic-steroid ointment, warm compresses and lid hygiene.

One month after initial evaluation, the patient presented to the emergency department complaining of worsening left periorbital and facial swelling as well as neck and back pain. Ancillary imaging was

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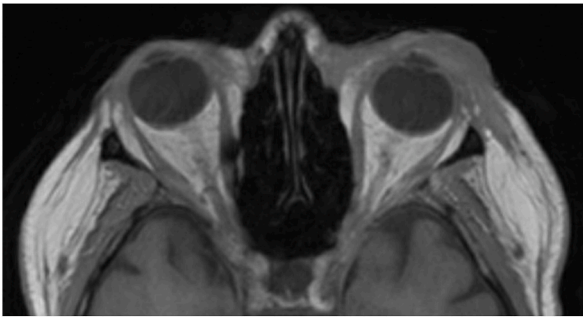
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**Fig. 1.** External photograph one month after initial presentation. The left upper eyelid anatomy is distorted, edematous and ptotic. Left lower eyelid edema can also be appreciated. No frank discharge is noted.



**Fig. 2.** Magnetic resonance imaging (MRI) of the orbits. Axial T1/FLAIR sequences demonstrate left preseptal tissue thickening. There is no evidence of postseptal, intraconal or cavernous sinus abnormal enhancement. The MRI appearance suggests presence of a lymphoproliferative, infiltrative or metastatic process.

highly suggestive of osseous metastasis. Ophthalmic examination found visual acuity of counting fingers at one foot in each eye, intraocular pressure of 19 mmHg on the right, 17 mmHg on the left. Hertel exophthalmometry revealed no proptosis (22mm each eye at 105mm). Color vision could not be assessed due to poor patient cooperation. Extraocular motility appeared full. There was no evidence of relative afferent pupillary defect, V1 or V2 hypoesthesia, facial nerve palsy or lymphadenopathy. External examination showed firm left upper eyelid pretarsal tissues without fluctuance and presence of severe mechanical ptosis (margin to reflex distance 1: 4mm in right eye, -4mm in left eye) (Fig. 1). Slit lamp examination was remarkable for conjunctivochalasis on the left and mild left eye discharge.

Non-contrast computed tomography of the orbits showed preseptal edema without presence of postseptal abnormalities. An inflammatory versus paraneoplastic process was suspected and an inflammatory laboratory work up and orbit magnetic resonance imaging (MRI) were obtained. Culture of the left eye discharge showed rare *Staphylococcus epidermidis* species. MRI of the orbits demonstrated a preseptal infiltrative process, atypical for cellulitis and without intraorbital metastatic disease (Fig. 2). Laboratory studies found white blood cell count of 9.95 k/ $\mu$ L, erythrocyte sedimentation rate 61 mm/hr, C-reactive protein 4.9 mg/dL, positive antinuclear antibodies 4.5 OD ratio, normal thyroid stimulating hormone 2.27  $\mu$ U/mL, rheumatoid factor <10 IU/mL and angiotensin-converting enzyme 43 U/L. Treatment with high dose intravenous steroids was initiated. A left upper eyelid indurated skin shave biopsy showed superficial edema and mild inflammation.

After a three-day course of intravenous steroids, the patient was transitioned to oral steroids at 1mg/kg with some improvement in edema but persistent tenderness of the left upper and lower eyelids. A repeat MRI again revealed preseptal changes concerning for an infiltrative disease, prompting an orbitotomy with biopsy. Intraoperatively,

the skin appeared thickened and the orbicularis had an infiltrated, firm, whitish appearance, while the orbital fat appeared grossly normal. Specimens from skin of the left upper eyelid, orbicularis muscle and orbital fat were obtained. Pathological analysis confirmed a metastatic poorly-differentiated carcinoma with signet ring features and presence of intravascular spread (Fig. 3). The patient was deemed a candidate for palliative radiation but she deferred therapy and was transitioned to hospice care where she expired.

### 3. Discussion

Metastatic gastric adenocarcinoma to the eyelid is a rare entity, with only a dozen reported cases (Table 1).<sup>1,12-14,16-19</sup> Eyelid involvement was the initial presentation of metastatic disease in four cases,<sup>1,13,18</sup> while six cases had a previously known history of gastrointestinal malignancy.<sup>12,14-17,19</sup> In two cases, it was not specified whether a prior history of malignancy had been established.<sup>15</sup> The clinical presentation was variable, ranging from one case of a chalazion-like lesion to other cases presenting as lid ulceration, induration and thickening, painless nodule, and edema of the periocular skin involving the four lids (mask-like). Notably, the only case described to present initially as a chalazion was managed with excision and the specimen was not submitted for pathological analysis; when the lesion recurred, biopsy demonstrated metastatic gastric adenocarcinoma.<sup>12</sup>

Initial imaging and examination of our patient were suggestive of a preseptal inflammatory process, further supported by the histopathological report from the eyelid skin biopsy. To our knowledge, none of the previously reported cases of gastrointestinal eyelid metastasis had an initial misdiagnosis of a purely inflammatory histopathology. The persistent periorbital pain despite steroid therapy directed an in-depth orbital exploration in our patient. The intraoperative appearance of the anterior orbital structures appeared grossly normal. Pathological analysis confirmed the eyelid lesion to be metastatic signet ring cell gastric carcinoma, involving the orbital fat and sparing the orbicularis oculi muscle.

Of the published cases with metastatic gastric carcinoma to the eyelid, time to death ranged from a few days to five months after diagnosis. Signet ring cell morphology, as was described in the histopathological analysis of our patient, is also known to portend a poor prognosis even if treated. If pursued, treatment options for ocular adnexal metastasis are palliative in nature, with radiotherapy being the mainstay.<sup>20</sup> Chemotherapy and hormonal therapy can supplement treatment if the malignancy is known to be chemosensitive. Unfortunately, the disease burden in this patient led to her demise approximately two weeks from diagnosis.

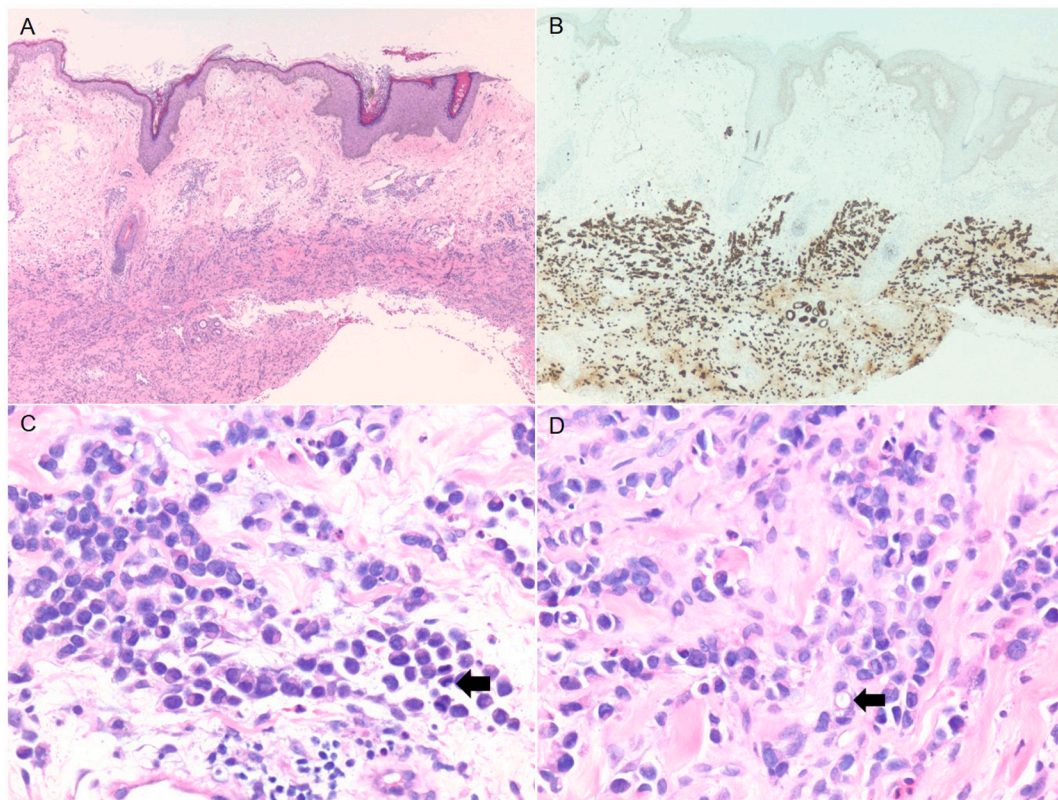
Because clinical presentation of eyelid metastasis is variable and nonspecific to the primary tumor site, a high degree of suspicion is required in any patient with eyelid edema with a prior history of malignancy, especially if untreated. In the case of our patient, eyelid metastasis was initially misdiagnosed as a chalazion, a great masquerader for other infiltrative diseases of the eyelid such as sebaceous cell carcinoma. A greater understanding of the spectrum of eyelid presentation of gastric adenocarcinoma could have spared this patient and others from testing and invasive procedures.

### Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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**Fig. 3.** Histopathological appearance of the biopsy site. A) H&E stained section of the left eyelid skin shows increased cellularity and desmoplastic reaction in the deep dermis mimicking inflammation. B) Immunohistochemistry for cytokeratin 7 highlights the infiltrate and confirms metastatic carcinoma (4x objective). H&E at high power (40x objective) shows dyshesive cells with high nuclear-to-cytoplasmic ratio with eccentrically placed nuclei, mitotic activity (arrow in C) and signet ring cell (arrow in D).

**Table 1**  
Reported cases of gastric adenocarcinoma metastatic to eyelids.

(Author year)	Clinical Presentation	Treatment advised	Prognosis
Cowan (1952) <sup>12</sup>	Right upper lid nodule in a patient with previous history of gastric carcinoma with metastasis to liver. Lesion excised but recurred one week after. Repeat excision showed gastric adenocarcinoma.	Radiotherapy	No change in lesion appearance, patient expired (time from diagnosis to death not specified)
Riley (1970) <sup>1</sup>	(1) Lid ulceration (2) Lid induration and thickening	Inoperable metastatic disease	Poor, both patients died after metastatic carcinomatosis diagnosed
Arnold et al. (1985) <sup>13</sup>	Solitary, painless lid nodule	Surgical excision	Patient deceased five months after diagnosis
Weiner et al. (1986) <sup>14</sup>	Enlarging nodule of right upper lid, progressed to complete blepharoptosis.	Local resection	Patient deceased from metastatic disease two months after eyelid surgery
Mansour, Hidayat (1987) <sup>15</sup>	Case series (31 cases): three originated from gastrointestinal system with variable presentation (lid nodule, ptosis, woody lids, diffuse and cystic swelling)	Not mentioned	Not mentioned
Namieno et al. (1994) <sup>16</sup>	Isolated, nontender mass of right upper lid concurrent with diagnosis of metastatic gastric carcinoma	Gastrectomy	Patient died from complications of a traffic accident two months after gastrectomy
Martorell-Catalayud et al. (2010) <sup>17</sup>	Four eyelid involvement (firm swelling of the periocular skin and nasolabial folds) in patient with previous diagnosis of metastatic gastric carcinoma	Chemotherapy	Patient deceased five months after diagnosis
Rodriguez Garcia et al. (2010) <sup>18</sup>	Painless swelling of left upper and lower lid concurrent with diagnosis of signet ring cell carcinoma of stomach	Not addressed since rapid deterioration due to metastatic disease	Patient deceased several days after diagnosis
Won et al. (2015) <sup>19</sup>	Localized erythematous plaque in eyelid five years after diagnosis of gastric adenocarcinoma	Not addressed since rapid deterioration of disease	Rapid deterioration, patient deceased two weeks after diagnosis

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**Declaration of competing interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence



the work reported in this paper.

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