

## Metastatic pulmonary adenocarcinoma to an anophthalmic socket

Metastasis to an anophthalmic socket is a very rare occurrence. We report a case of metastatic pulmonary adenocarcinoma to the anophthalmic socket of a patient who presented with difficulty wearing his prosthesis.

A 69-year-old ex-smoker presented with a 1-month history of ill-fitting prosthesis in his right orbital socket. Forty years prior to presentation, the patient had undergone enucleation of his right eye with placement of an orbital implant following a car accident in which he sustained severe ocular trauma. Preoperatively, examination showed diffuse contracture of the right orbital cavity with significant adhesions between the superior palpebral conjunctiva and the orbital socket, as well as a central 1.5 cm granuloma. No other lesions in the periocular area or orbital cavity were noted. The provisional diagnosis was granulation tissue of the orbital cavity in the context of socket contraction. The patient underwent surgical excision of the granuloma with reconstruction of the orbital socket with a buccal mucosal graft to improve fitting of his orbital replacement prosthesis. Two days postoperatively, the patient presented with purulent discharge and signs of mild cellulitis at the level of the temporary tarsorrhaphy. A 10-day course of oral clindamycin treatment was initiated. On follow-up 4 days later, no signs of infection were noted.

During the period leading up to his ophthalmic surgery, the patient presented to a neighbouring hospital with significant left shoulder pain. Initial work-up, including x-rays of the chest (Fig. 1) and the left shoulder, revealed a 2.7 cm pulmonary lesion, a larger heterogeneous lesion located in the scapula (4.2 × 4.5 cm), and several other pulmonary lesions. Further investigation by computed tomography and bone scintigraphy showed multiple mediastinal adenopathies as well as heterogeneously enhancing lytic lesions in the left scapula, D<sub>1</sub> vertebrae, ribs, and both femurs that were suggestive of skeletal metastases. The left scapular lesion was biopsied and revealed a CDX2/CK7-positive and a CK20/TTF1/NKX3.1-negative immunohistochemical profile. Although the immunostaining profile was relatively nonspecific, it was noted to be negative for TTF1, which did not favor a pulmonary origin. In the absence of pancreaticobiliary or upper gastrointestinal lesions identified during the work-up, a diagnosis of moderately differentiated pulmonary adenocarcinoma infiltrating the bone was probable. The patient elected to undergo palliative radiotherapy.

Biopsy of the orbital granuloma (Fig. 2) revealed an immunostaining profile that was positive for both CDX2 and CK7 but negative for CK20, TTF1, and NKX3.1, which matched the profile obtained from the scapular biopsy. A final diagnosis of metastatic pulmonary

adenocarcinoma to the orbit was made. The patient died of pulmonary sepsis before his 1-month follow-up in ophthalmology. The tarsorrhaphy had yet to be opened.

Ocular metastases are the most common intraocular tumours, but they are nevertheless infrequent. In the United States, the incidence of ocular metastases is approximately 20,000 per year.<sup>1</sup> Primary neoplasms that metastasize to the eye do so via hematogenous spread and preferentially reach areas with higher blood flow such as the choroid, iris, and ciliary body. Metastases to the orbit are even rarer and account for approximately 1%–13% of all orbital tumours.<sup>2</sup> Breast carcinomas are responsible for most orbital metastases, which explains why women are most affected. Lung cancer comes second in terms of frequency and affects primarily males.<sup>3</sup> Although different primary neoplasms tend to metastasize to different orbital structures (i.e., breast carcinomas metastasize preferentially to extraocular muscles and surrounding orbital fat), the overall distribution seems to follow a 2:2:1 bone–fat–muscle ratio.<sup>2</sup>

Our patient presented with metastasis to an anophthalmic socket. A literature search yielded only 1 other report describing a similar case. In 2011, Sharma et al.<sup>4</sup> reported metastatic carcinoma of the lung to an anophthalmic socket. Similar to our case, the patient presented with an ill-fitting prosthesis. The patient's orbit had been enucleated 18 years prior. Examination of the socket revealed a bulge that was initially thought to be an amputation neuroma. Further investigation revealed that the mass was a metastasis of the patient's asymptomatic lung neoplasm.

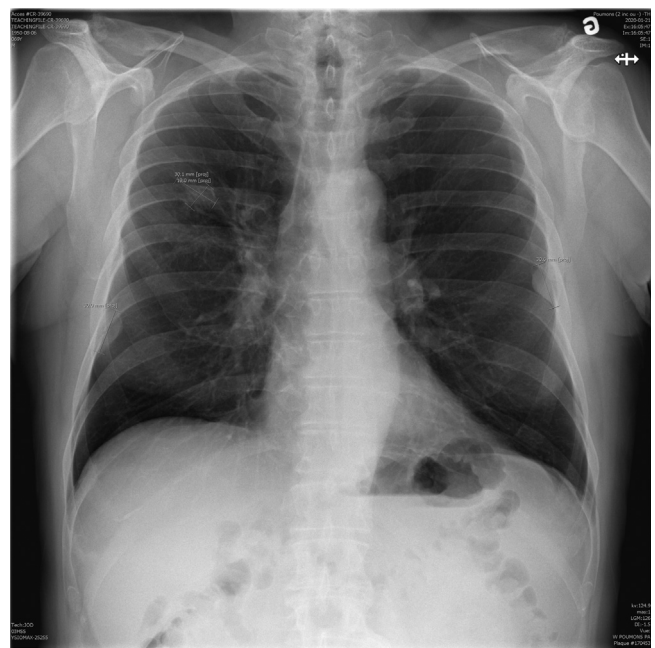
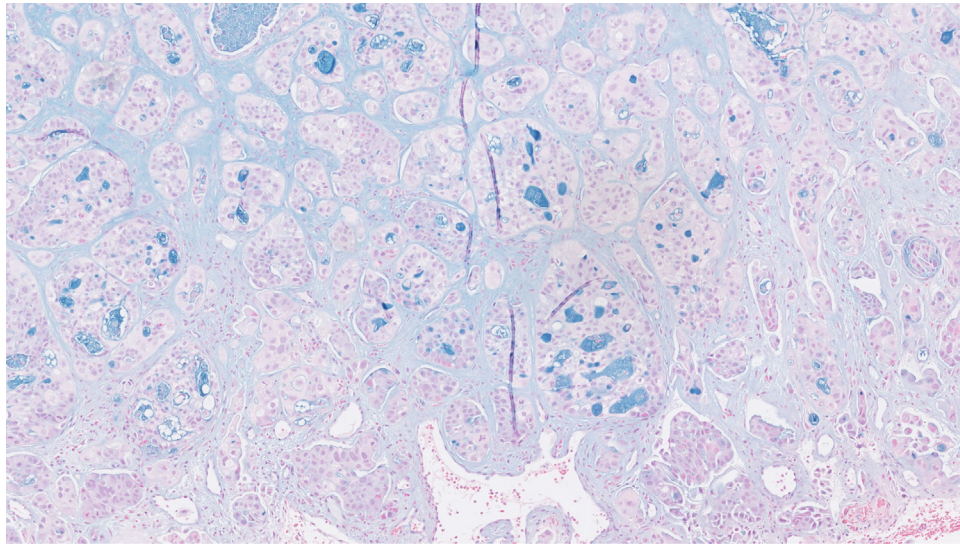


Fig. 1—Pulmonary x-ray showing multiple lesions.



**Fig. 2—Pathology of specimen from the orbital cavity revealed adenocarcinoma with immunolabelling similar to the specimens obtained from the lung and scapula.**

Cases of primary malignancies such as conjunctival squamous cell carcinoma<sup>5</sup> and melanoma<sup>6</sup> arising in anophthalmic sockets have been reported. In both cases, the patients had worn prosthetics regularly for years before presenting with recent difficulties wearing their prosthesis. We suggest that patients with late-onset prosthesis extrusion warrant prompt and careful examination of their socket. Biopsy of any suspect lesion should be considered before reconstruction.

We report the rare occurrence of a metastasis to the anophthalmic socket of a patient who presented with difficult prosthetic wear. The patient was subsequently diagnosed with metastatic pulmonary adenocarcinoma.

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## Footnotes and Disclosure

**Patient consent:** Consent to publish this case report was impossible to obtain because the patient died shortly after his initial diagnosis of lung cancer. This report does not contain any personal information that could lead to identification of the patient.

The authors have no financial disclosures to report.