MULTIDISCIPLINARY AND MULTIDIMENSIONAL APPROACH TO LACRIMAL TUMOUR EXCISION

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INTRODUCTION

Lateral orbitotomy was first described by Kronlein in 1889 and has since then been modified by Berke and other workers in the removal of orbital tumours. It is preferred to the transconjunctival and transcranial approaches because it gives better exposure than the former and has fewer complications than the later despite the larger exposure. However, the use of these other approaches could be indicated depending on the tumour location, size, and pathology. An orbital and cranial CT scan or MRI is an essential prerequisite before surgery to determine intracranial and ocular involvement, tumour size and location. A multidisciplinary approach with the oral and maxillofacial surgery unit (OMF unit) is necessary in the absence of an oculoplastic surgeon, and a multidimensional approach could be necessary depending on the tumour characteristic.

The study aims at showing the importance of a multidisciplinary approach to lacrimal tumour excision in the absence of an oculoplastic surgeon, and the necessity in a multidimensional approach for better access to the tumour for excision.

CASE REPORT

A 58 year old farmer, A.F, presented to the Eye Clinic of the University College Hospital (UCH) Ibadan, Nigeria, with a 14 year history of painless, gradual and progressive superolateral right orbital swelling, associated with gradually progressive protrusion of the right eye. Seven weeks prior to presentation he sustained blunt trauma to the right eye, resulting in pain, redness, increase in the size of the orbital swelling, and increase in the right eye protrusion. There was no history of deterioration in vision in the eye at any time. Prior to presenting in UCH, there had been no form of intervention.

Examination revealed a well oriented middle aged man with unaided visual acuity in the right eye of 6/12, and 6/6 in the left eye. The right upper lid was markedly distended, ptotic and slightly hyperpigmented (Figure 1).

Figure 1
FIGURE 1
There was inferomedial dystopia of the right globe, and it was proptosed by 9mm, with a corneo-canthal distance of 30mm. The extraocular muscle movements were restricted in all directions of gaze and he had diplopia in horizontal and vertical gaze.

There was a firm, tender, smooth surfaced right superolateral orbital swelling; it appeared separate from the globe and the orbital margin, it was not mobile, not pulsatile, not warm to touch, was not retropulsible, and gave no bruit on auscultation. It was not haemorrhagic and there was no break in the covering conjunctiva, which was chemosed. The orbital margins were normal.

All other ocular findings in the right eye were normal. The left upper lid was mildly ptotic, but the orbit and other ocular structures were within normal limits, and both eyes had intraocular pressures of 18mmHg. General examination and review of the systems was essentially within normal limits.

Informed consent: Both oral and written informed consent was given by the patient for his pictures to be taken, and for this article to be written and possibly published.

Pre- and post- contrast cranial and orbital CT scan of the patient (Figures 2 and 3) showed orbital soft tissue swelling with an isodense soft tissue mass in the superolateral aspect of the right orbit displacing the globe anteroinferiorly. There was no destruction of the lateral orbital wall, and the mass was separate from the optic nerve, but the lateral and superior recti muscles were inseparable from the mass at some levels, and also appeared thickened. There was no calcification within the mass and there was no intracranial extension. No cranial or intracranial abnormality was noted. A similar isodense soft tissue mass was seen superior to the left globe and inseparable from the superior rectus muscle, but was separate from the optic nerve. An assessment of right lacrimal gland tumour was made.
He was reviewed by the Oral and Maxillofacial Surgery unit (OMF) of the University College Hospital Ibadan and a joint surgery session- right lateral orbitotomy with orbital tumour excisional biopsy- was scheduled under general anaesthesia.

The lateral orbitotomy involved a curvilinear, below- brow skin incision extending to the horizontal plane of the lateral canthus, and dissected to the anterolateral wall of the orbit, which was removed via the use of an electrical drill, hence permitting lateral, posterior and superior dissection of the tumour (Figures 4 and 5).

Due to the large size of the tumour, there was inadequate exposure medially and anteriorly. The orbitotomy was also obviously too small to deliver the tumour through. Hence, an anterior superolateral transconjunctival approach was decided upon. This facilitated the tumour dissection medially, anteriorly (from conjunctiva) and inferiorly (from globe and extraocular muscles). A lateral cantholysis was also performed (Figures 6 and 7) to aid in the tumour excision as it was too large to be removed via either of the lateral orbitotomy or the anterior trans conjunctival defect. The globe was protected and constantly moistened throughout the surgery. Care was also taken not to traumatize the optic nerve, and gentle pressure was applied to the orbit intermittently to achieve hemostasis during surgery.
The tumour was excised with an intact capsule. It was firm, with an irregular surface, and measured 5cm longitudinally, by 4cm horizontally, by 3cm vertically. It consisted of both the orbital and palpebral portions of the lacrimal gland (Figure 8).

The conjunctiva was closed with 8-0 silk sutures while the lateral cantholysis was closed in layers (3-0 vicryl for muscle and subcutaneous tissue, and 4-0 prollyn for skin). The anterolateral wall of the orbit was then replaced and secured to the adjacent bones by fine stainless steel wires. The skin and the subcutaneous tissues were then closed in layers as the lateral cantholysis (Figure 9). Firm padding was then applied to the operated eye.

Examination of the patient on the first post operative day showed a lax, distended lid with complete ptosis, unaided visual acuity of ‘hand movement at 2 meters’ (no improvement with pin hole), moderate restriction in extraocular muscle movements, resolving chemosis, and a corneo-canthal distance of 21mm as in the left eye and mild disc oedema.

Examination two weeks after surgery showed moderate
ptosis with lesser lid oedema, unaided visual acuity of 6/6, resolved chemosis, mild restriction in extraocular muscle movements, normal anterior and posterior segment findings, and the corneo-canthal distance (distance between the lateral canthus and the corneal apex) remained at 21mm. The intraocular pressure in the right eye was 15 and in the left 20mmHg.

Four weeks after surgery (Figures 10), the right lid oedema and chemosis had resolved and the ptosis was moderate. The lid movement was much better and the extraocular muscle movements had improved remarkably.

The immunohistochemical profile of the tumour showed strongly reactive and diffuse CD20, being consistent with a diffuse B cell lymphoma. He was then referred to the surgical oncology unit for adjunct chemotherapy.

**DISCUSSION**

The lateral orbitotomy is usually employed in excision of retrobulbar and more posteriorly located lesions. The procedure involves temporary removal of the lateral wall of the orbit to gain access to the lacrimal gland and lateral, superolateral, and inferolateral tumours. The approach is commonly used to excise pleomorphic adenomas and some cavernous hemangiomas. 6

Lesions in the anterior two thirds of the orbit are usually approached anteriorly. 7,8,9,10 The anterior approach was devised by Knapp 11 in 1874 and popularized by Benedict. 12 The term anterior orbitotomy erroneously gives the impression that bone removal is employed. As in the case described above, which involves a superiorly located mass, the tumour can be excised through a transconjunctival supraorbital approach, or through an eyelid crease incision or a subbrow incision. It allows for adequate dissection of the medial, superomedial and inferomedial aspect of the tumour. They are also safer to perform when the anterior extent of the tumour is close to or apposed to the globe. 9

Complications that can result from lateral orbitotomy include orbital hemorrhage, edema, infection, optic nerve compression and lateral gaze palsy. 13

Lacrimal gland tumours could either be benign or malignant, the commonest benign tumour being pleomorphic (benign mixed cell) adenoma. It is essential that a cranial and orbital CT scan or MRI is done to properly evaluate the tumour and to determine the appropriate approach for surgery, if indicated, so as to ensure excision of the tumour as a whole and with an intact capsule. The CT scan will also show if there is an intracranial extension of the tumour. A combination of lateral orbitotomy and the transconjunctival approach can be used to excise large tumours that would have otherwise been too large to dissect and deliver via either procedure performed alone. In the absence of an oculoplastic surgeon, a multidisciplinary surgical team is required.

**SUMMARY**

In the absence of an oculoplastic surgeon, a multidisciplinary approach involving an ophthalmologist and an oral and maxillofacial surgeon could be employed to excise an orbital tumour. Access to the tumour could be via a lateral orbitotomy (where the maxillofacial surgeon is required), a transconjunctival approach, or a transcranial approach (where a neurosurgeon would be involved). A CT scan or an MRI will be required to determine the appropriate step to take.

**References**

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