

Muscat, Sultanate of Oman
V. Nirmala
Department of Pathology
Sultan Qaboos University Hospital
Muscat, Sultanate of Oman

Dr A. Ganesh, MRCOphth ✉
Department of Ophthalmology
Sultan Qaboos University Hospital
PO Box 38
PC 123
Muscat, Sultanate of Oman
Fax: +968 513009
e-mail: ganeshs@omantel.net.om

Sir,

Bilateral sixth nerve palsy treated with augmented vertical muscle transposition

Traditional extraocular muscle transposition surgery for strabismus may fail to correct the more challenging cases of paretic strabismus,¹⁻⁴ and sometimes fails to produce significant motility in the direction of the palsied muscle.⁵⁻⁷ Scott Foster⁸ has recently described an augmented form of transposition for such severely affected cases. We describe the use of this procedure in an unusual case of bilateral sixth nerve palsy. The case illustrates the occasional need to extend medical history several decades into the past.

Case report

A 37-year-old patient was referred to the eye clinic with a 2 year history of the eyes turning inwards, and discomfort and redness of the left eye. He had been blind in his right eye since early childhood following a 10 m fall off a roof. He had developed a marked tendency to

turn his head to the left in order to see. This extreme head posture had become progressively worse over 2 years and was creating great difficulty with everyday activity: he had become unemployed, his weekly alcohol consumption was over 40 pints of Guinness (Guinness, Dublin) per week and he was encountering social and domestic problems.

There was no light perception in the right eye and 6/4 visual acuity in the left. A marked right esotropia (100Δ) was associated with an extreme left face turn. Dilated episcleral blood vessels were present in the left eye (Fig. 1a) but there was no bruit. Extraocular motility examination revealed absence of voluntary abduction (-5) of the left eye (Fig. 1a). Some limitation of abduction (-3) of the right eye was present (Fig. 1a). Vertical eye movements were intact. The right optic nerve was atrophic. The patient was diagnosed as having bilateral sixth cranial nerve palsy. Tests for a medical cause were negative.

CT scan showed a large partially calcified lesion within the right cavernous sinus (Fig. 2a). The right superior ophthalmic vein was dilated (Fig. 2a), but the left superior ophthalmic vein was of normal calibre. CT was not able to differentiate between traumatic carotico-cavernous sinus fistula and true or false aneurysm of the internal carotid artery.

On MRI, the intracavernous portion of the left internal carotid artery appeared normal. Reconstruction of time-of-flight MR angiography images showed a saccular aneurysm of the intracavernous portion of the right internal carotid artery. The upper right internal carotid artery had been displaced by the aneurysm (Fig. 2b). Selective angiography also demonstrated the unopacified aneurysmal sac on the right. The aneurysmal sac did not

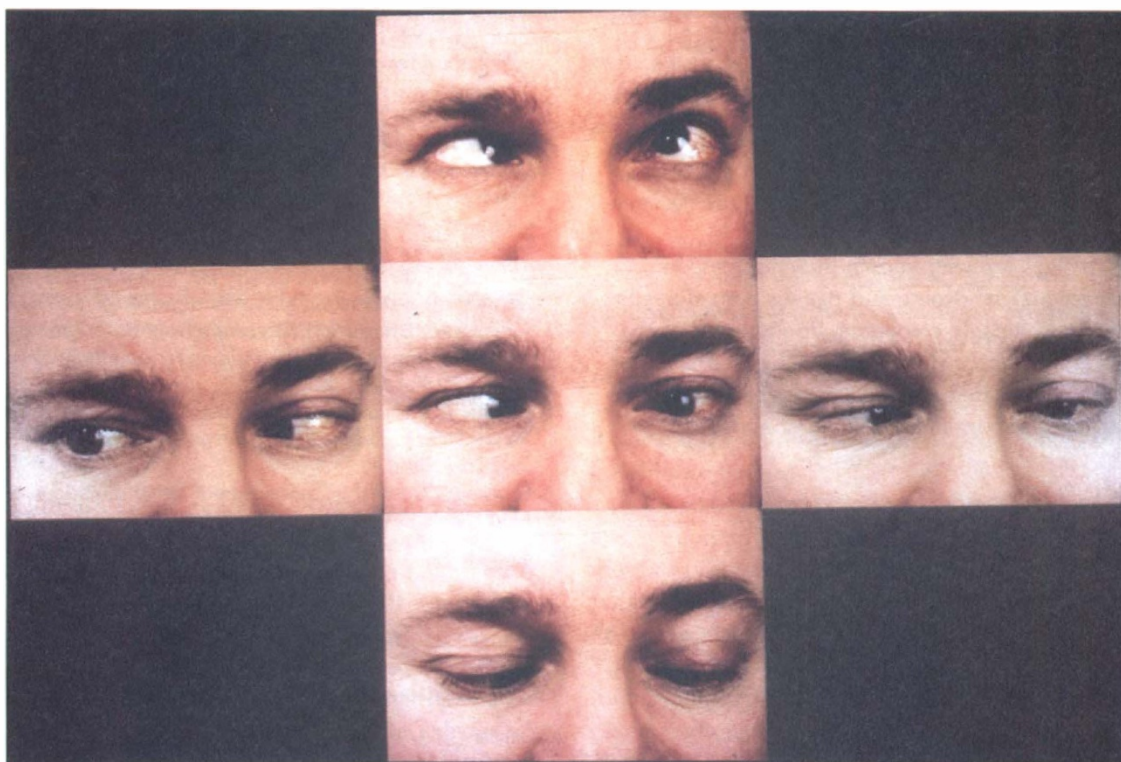


Fig. 1(a) (Legend opposite.)



Fig. 1. (a) Pre-operative ocular motility. There is absence of abduction of the left eye and some limitation of abduction of the right eye. Dilated episcleral blood vessels in the left eye can be seen. (b) Post-operative ocular motility. Horizontal ductions of the left eye are greatly improved. The alignment of the eyes in the primary position is excellent.

fill with contrast, indicating either very slow-flowing or thrombosed blood. The left internal carotid artery was normal (Fig. 2b).

The childhood history of head trauma and the appearance on neuroimaging suggested that the aneurysm was both traumatic in origin and long-standing, and therefore low risk. Interventional radiology was not indicated.

Surgical management

Once the need for intervention for the underlying intracranial pathology was ruled out, we proceeded with squint surgery for the head posture and strabismus. A vertical muscle transposition augmented with lateral fixation was performed on the left eye.⁸

Botulinum toxin was injected into the medial rectus 5 days before the muscle transposition surgery but the long-standing nature of the secondary contracture may have prevented any benefit from this. Transposition of the vertical rectus muscles adjacent to the lateral rectus muscle was followed by lateral fixation sutures 16 mm posterior to the limbus and adjacent to the lateral rectus muscle, incorporating one-fourth of the transposed vertical rectus muscle.

Post-operatively, extraocular motility was greatly improved with useful abduction of the left eye 10° to 12° beyond the midline (Fig. 1b). The convergent squint measured 17Δ in the primary position (Fig. 1b). The patient was able to maintain both eyes in the primary position without effort, which obviated the head posture.

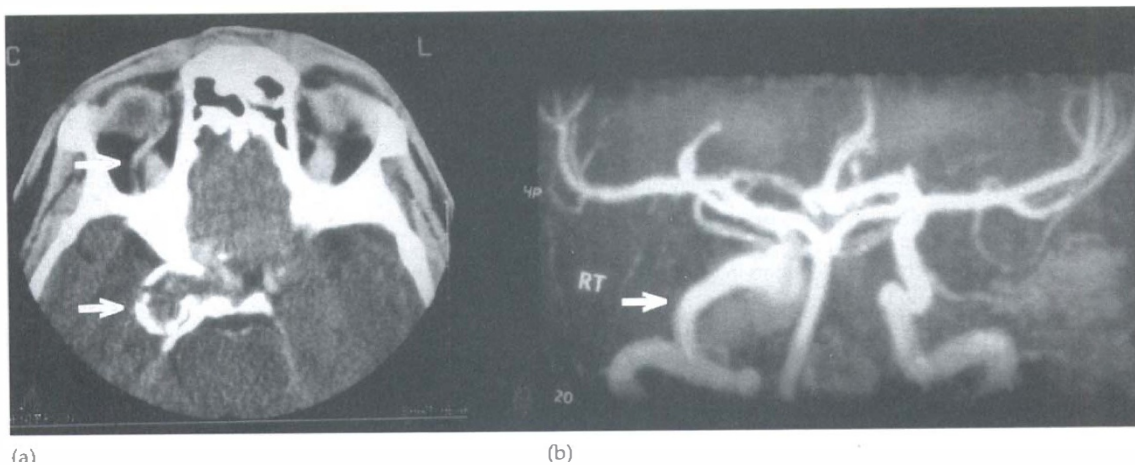


Fig. 2. (a) CT scan showing a large partially calcified lesion within the right cavernous sinus (lower arrow). The right superior ophthalmic vein is dilated (upper arrow). (b) Magnetic resonance angiography showing a saccular aneurysm of the intracavernous portion of the right internal carotid artery. The upper right internal carotid artery is being displaced by the aneurysm (arrow). The left internal carotid artery is normal.

Improvement in his self-image resulting from surgery has contributed to the improvement in his lifestyle and he has managed to abstain from alcohol since his surgery.

Comment

This case is unusual and interesting for several reasons. An intracavernous lesion presented with symptoms of pain and redness in the contralateral eye. Although such a finding has been reported previously⁹ it remains difficult to explain, especially in the absence of a demonstrable carotico-cavernous fistula.

The results of conventional vertical muscle transposition surgery are often disappointing.¹⁻⁸ Whilst the Foster modification has been adopted widely in North America with encouraging results in both complete sixth nerve palsy and Duane syndrome, it has not gained great popularity in Britain. The addition of lateral fixation sutures to the transposed vertical rectus muscles significantly increases the tonic abducting forces of the transposition without decreasing adduction, by horizontal redirection of the path of the post-equatorial vertical muscle. The pre-operative use of botulinum added little to the procedure and the excellent post-operative improvement in ocular motility has remained long after any therapeutic effect from the injection had disappeared. In retrospect we should have reserved its use for treatment of a possible post-operative undercorrection, as suggested by Foster.⁸ Repeated botulinum toxin injected into the left (or right) medial rectus may result in correction of the residual esotropia and remains an option in this case. Foster suggests that an ipsilateral medial rectus recession, even at a later date, should be avoided because of the risk of reduced adduction and possible late overcorrection.⁸ We suggest the Foster modification of vertical muscle transposition is a useful technique in selected cases for the surgical management of permanent complete sixth nerve palsy.

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Desirée C. Murray
Ann Walsh
John Henderson
John R. Ainsworth
Birmingham Heartlands Hospital
Birmingham B9 5SS, UK

John R. Ainsworth, FRCOphth ✉
Paediatric Ophthalmology Department
Birmingham Children's Hospital
Steelhouse Lane
Birmingham B4 6NH, UK
Tel: +44 (0)121 333 9465
Fax: +44 (0)121 333 9461
e-mail: j.r.ainsworth@bham.ac.uk

Sir,

The cosmetic improvement of ocular deformities with spectacles

Spectacles were first described during the Middle Ages. Their commonest use is for the correction of refractive errors. A less widely known use is in the optical improvement of cosmetic deformities.

Case report

A 4-year-old boy was born at 27 weeks gestation to non-consanguineous parents. He was subsequently found to have a cosmetically noticeable left microphthalmic eye with an opaque vitreous and cataract (Fig. 1). The right



Fig. 1. The patient's appearance without spectacles, showing noticeable left microphthalmia.