APPROACH TO ORBITAL TUMOURS*† BASED ON A STUDY OF ORBITAL TUMOURS IN CEYLON

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THIS communication is based on personal experience of orbital tumours for a 15-year period (1950–1964), in which over 10,500 eye operations were performed in Colombo; 49 space-occupying tumours were dealt with by the present author, four of which have been reported (Sivasubramaniam, 1954, 1955a, b), and six others were reported by other workers in Ceylon.

Material

The pathological records of the Victoria Memorial Eye Hospital, Colombo from 1929 to 1961 yielded 62 orbital tumours among 668 specimens. A breakdown of 52 of the commoner orbital tumours found among these pathological specimens is shown in Table I. From this and what has been said earlier, it would appear that orbital tumours are rare in Ceylon.

TABLE I
PRIMARY AND SECONDARY ORBITAL TUMOURS VERIFIED PATHOLOGICALLY,
1929–1961

Primary		Secondary	
Type	No.	Type	No.
Sarcoma	8	Carcinoma	6
Endothelioma	9	Melanoma	2
Fibroma	3	Retinoblastoma	5
Fibroangioma	5		
Cyst	2		
Dermoid	1		
Adenoma of lacrimal gland	1		
Total	29	Total	13
Fibrous Tissue*	10		

* Now recognized as Pseudotumour

Secondary Tumours

Table II gives details of the fifteen secondary orbital tumours met with in this series. This group includes eleven cases in which proptosis was the main presenting symptom, but in which the cause was extra-orbital (Table III).

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TABLE II
DETAILS OF FIFTEEN SECONDARY TUMOURS IN THIS SERIES

Site of Origin		Nature of Tumour	No.	Treatment
Paranasal Sinuses	Ethmoidal	Carcinoma	2	Irradiation
	Frontal	Carcinoma	2	ENT surgery (1)
	Maxillary	Carcinoma	4	Exenteration (1) ENT surgery
Epibulbar		Carcinoma	4	2 enucleation 2 exenteration
Optic Nerve		Carcinoma (secondary to breast)	1	Enucleation
Choroid		Melanoma	1	Inoperable
Retina		Retinoblastoma	1	Inoperable
Total			15	

TABLE III
DETAILS OF ELEVEN QUASI-ORBITAL TUMOURS

Site of Origin		Nature of Lesion	No.	Treatment
Frontal Sinus		Mucocele	1	Drainage by ENT surgeon
Intracranial		Chordoma	1	Inoperable
		Meningioma	4	Inoperable (1) Neurosurgery (3)
		Pituitary	1	Neurosurgery
		Aneurysm	3	Carotid ligation
Conjunctiva		Cyst	1	
Total			11	

Primary Tumours

Table IV shows the nature of the 23 primary tumours in this series.

Surgical Approach

Anterior Approach.—This was used in fifteen cases. Two of these were neurofibromata of the optic nerve and the eye was enucleated with excision of a good length of the optic nerve.

In the remaining thirteen cases there were nine incisions of the Benedict type (for angioma (3), for lacrimal adenoma (2), for osteoma lymphocytoma and sarcoidosis (1 each)), There were also two Callahan incisions (angioma) and two Davis incisions (one cystic eyeball and one sarcoma).

Lateral Approach (Kronlein's).—This was used in eight cases. In one of these, suspected to be leontiasis ossea, the operation took the form of a decompression. In two cases no tumour was found. In the other five cases tumours were removed (pseudotumour (2), dermoid, angioma, and lacrimal gland adenoma (1 each)).

Other Operations.—Table IV also includes six cases reported by other surgeons in Ceylon. Paul (1946) used the Shugrue approach in a case of cavernous haemangioma, but he used the transconjunctival route in a case of orbital dermoid (Paul, 1953). Weerekoorn (1962) performed two Krönlein operations for the removal of a lacrimal adenoma and a neurofibroma. Karunaratne and Thamber (1963) reported a case of orbital hydatid cyst removed by the anterior route.

TABLE IV
DETAILS OF TUMOURS AND SURGICAL PROCEDURES

Nature of Tumour	No. of Cases					Surgery			
	Present Series (23)	Other Authors (6)				Orbitotomy		Enucleation	Exenteration
		Paul (1946, 1953)	Weerekoorn (1962)	Karunaratne and Thamber (1963)	Anandarajan (1954)	Anterior	Lateral		
Angioma	6	1				6	1		
Adenoma of lacrimal gland	3		1			2	2		
Sarcoidosis	1				1†	1			
Sarcoma	1					1			
Neurofibroma of optic nerve	2		1			2	1		
Pseudotumour	2						2		
Osteoma	1					1			
?Leontiasis ossea	1						1		
Cyst of eyeball	1					1			
Lymphocytoma	1					1			
Dermoid	2	1				2	1		
Hydatid disease				1		1			
Frontal carcinoma	1‡								1
Carcinoma	4‡							2	2
Negative findings	2*						2		

* One of these, an angioma involving the scalp and upper part of the face, was inoperable; an anterior orbitotomy was also done in this case to study the extent of the mass and for biopsy. The growth was one continuous closely-knit mass spreading from the orbit onto the face and scalp.

† Treated medically.

‡ These were secondary tumours.

Discussion

This series, though small, demonstrates the need for flexibility in the surgery of orbital tumours. The surgical approach must be varied with the position of the neoplasm within the orbit. The pathology in many cases could only be surmised, and in only one case of angioma could pre-operative confirmation be obtained by angiography, yet it is not true that orbital surgery should not be undertaken in the absence of a firm pre-operative diagnosis.

In all cases of anteriorly-placed tumours, Benedict's, Callahan's, or Davis's incisions sufficed, even when the neoplasm extended fairly deep into the orbit. Whenever the site of the tumour was in doubt or when it lay within the muscle cone, a lateral orbitotomy proved to be satisfactory. When the tumour was of long duration and of slow growth and gave rise to proptosis so permitting easy access, the anterior approach was employed. When a tumour involved the optic nerve only, but had caused marked proptosis, its removal

by the anterior route with enucleation proved to be much quicker and less arduous than more elaborate techniques involving bone resection. For too long have ophthalmic surgeons believed that an orbital tumour requires a complicated operation through a breach in the bony walls of the orbit; this is not so. The approach through the soft tissue anterior boundary should be used whenever possible; in other cases Krönlein's lateral orbitotomy or Berke's modification thereof should be practised. If bone resection is unavoidable in an anterior approach, Reese's modification of Benedict's incision is hard to excel.

Summary

In eleven out of 49 cases of proptosis the cause of the apparent orbital tumour was in fact extra-orbital. In fifteen cases the lesions were in the neighbourhood of the orbit (*i.e.* the paranasal sinuses and the eyeball). The remaining 23 patients proved to have primary tumours.

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