



## Clinical Assessment, Management and Histo-Pathological Study of Orbital Tumours – A Prospective Clinical Study

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### ABSTRACT

*Aim of this study is to assess and categorize , the clinico-pathological distribution, management, surgical approaches followed in various types of orbital tumours which were encountered in our practice from October 1994 to till date(January 2016) Materials and methods consisted of 30 patients, with orbital swellings, who visited the outpatient department of Kempegowda Institute of Medical Sciences,- Bangalore and Rajarajeshwari Medical College- Bangalore, where the author has worked in the capacities of Assistant Professor, and Associate Professor respectively. Majority of the cases visited his outpatient department, in Vidya Eye Hospital, Bangalore, where the author is the proprietor. Basic clinical examination was done in each case. Later, investigated by radiography, CT-Scan, MRI to assess, the characteristics and extension of the tumour, to extraorbital areas. Suitable orbitotomy procedures were chosen depending upon the cases. The tumours removed thus were subjected for histo-pathological examination. The conclusion was drawn based on our clinical experience in managing these cases*

### Aim

Aim of the study is to assess various types of orbital tumours encountered in our practice, their clinical presentation, their potential threat to the vision, to highlight which investigation in a particular case throws light on its nature and extension, the decision making at arriving at the proper orbitotomy procedure to be selected in each case, and the histopathological characteristic of each tumour

### Materials and Methods

Materials and methods consisted of 30 patients who visited the outpatient departments of Kempegowda Institute of Medical Sciences,- Bangalore, Rajarajeshwari Medical College- Bangalore, and Vidya Eye Hospital Bangalore. All the tumours encountered by us were primary tumours. Majority of them were benign tumours and some of them were retention cysts.

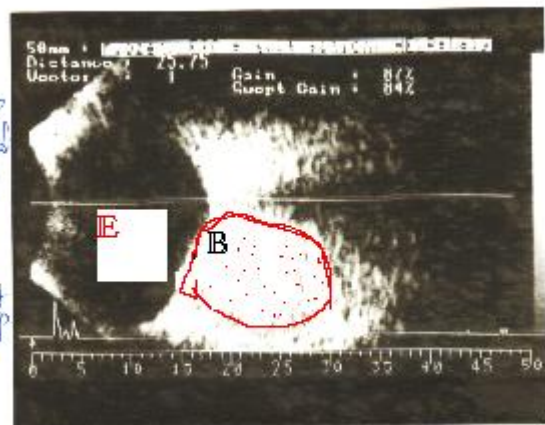
Pseudotumours and other orbital swellings, which responded to medical line of treatment were excluded from the study.

All the patients in the study, underwent a thorough ophthalmological examination, which included assessment of ocular posture, head posture, ocular adnexa, assessment of amount of proptosis, assessment of restriction of movements of extraocular muscles, manifestation of pressure effects on the surrounding structures, vessels and nerves. Visual acuity, refraction, tonometry, fundus examination and visual field analysis by autoperimetry were done for all the patients.

Regional examination by ENT surgeon, Dentist and neurosurgeon were routinely done for all the cases included in the study.

B-Scan of the affected eye, CT – Scan of the orbit and skull, and MRI were used as investigative procedures to throw more light on the nature and extension of tumours, in required cases.

All the cases included in the study were operated by orbitotomy procedures. All the cases were operated by the same surgeon. All the above mentioned parameters to examine the cases were adopted to re-examine the cases after surgical procedure.



**Figure 1-** B-Scan of the Eye showing pleomorphic adenoma of 24 mm size indenting the globe and optic nerve

In the operative procedures orbitotomies were done by standard procedures which are explained in the standard textbooks. Extreme care was taken to identify the margins of the tumours and all the tumours and cysts were excised en-mass and intact. Various instruments like fine forceps to catch the connective tissue attached to the mass, artery forceps were used both to stop the bleeding from vessels and to catch the tumour delicately, cryoprobe was used to pull the deep seated tumour to the surface without injuring the surrounding vital structures. Whenever Lateral orbitotomy was done the required drain in situ was kept to prevent surgery induced haematoma formation.

All the tumours excised were examined grossly, photographs of specimens were taken for documentation, measurement of tumours were taken for analysis, and histo-pathological examination of all the tumours were done.

Post-operatively all the patients were examined ophthalmologically, and followed up for a period of 3months. Visual improvement after surgery, reduction of proptosis and diplopia were assessed upto 3months from the date of surgical treatment offered.



**Figure 2 –** Preoperative picture of a patient showing dermoid cyst in the left supero-lateral quadrant

**Results**

Out of 30 patients, who were assessed and operated, 21 were males and 9 were females. Retention Cyst was found in 3 males and one female, all the 8 cases of dermoid cyst were found in male patients in our study, cavernous haemangioma was found in 7 females, 3 male patients had sebaceous cysts. Pleomorphic adenoma was found in 6 male patients. One male patient had lipoma. One male patient had Maxillary antral tumour, which had extended to the orbit and dental regions. In this case of maxillary antral tumour, author who is an ophthalmologist, has worked with ENT surgeons and Maxillofacial surgeons in removing the tumour.

Among 30 patients who were operated 2 were infero-medial retention cysts and another 2 retention cysts were inferolateral, 2 dermoid cysts were superomedial while rest 6 dermoid cysts were superolateral. Cavernous haemangiomas were found in the order of 5 superomedial quadrant while 2 were inferomedial. All 6 pleomorphic adenoma cases were superolateral. Lipoma was Superomedial, while 2 sebaceous cysts were superolateral and 1 sebaceous cyst superomedial.



**Figure 3** - CT Scan of the orbit showing pleomorphic adenoma in the right superolateral quadrant



**Figure 4** - CT Scan of the orbit showing pleomorphic adenoma in the right superolateral quadrant



**Figure 5**- Gross intact specimen of Dermoid Cyst after removal

Maxillary antral tumour was all along inferior wall.

So in our study majority of the tumours were superolateral – 14 in number (46.66%), next in order were superomedial with 9 cases (30%) Inferolateral were 4 cases (13.33%) while least number of tumours were in inferomedial quadrant - 2 in number(6.66%). The maxillary antral tumour had occupied both the inferomedial and inferolateral quadrant.

There was correlation of histo-pathological findings with the clinical diagnosis in all the cases except in one case, where in lipoma was diagnosed as sebaceous cyst.

**Discussion**

Most of the tomours in our study were benign tumours. All the tumours and cysts removed were



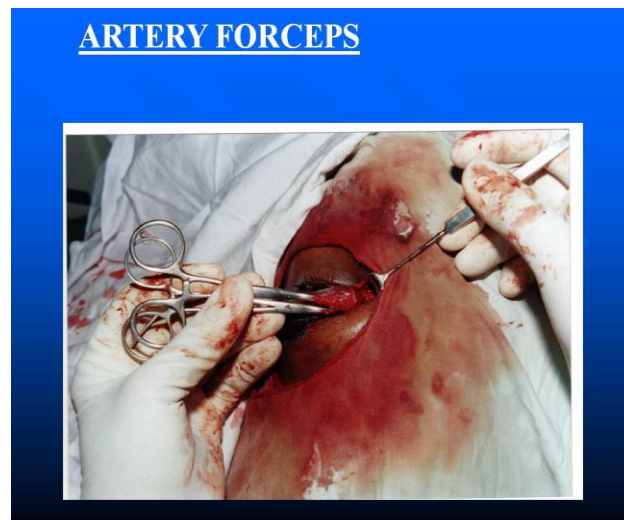
more than 1cm and hence the patients had the symptoms and signs of protrusion of the eyeball, feeling of fullness in the eye socket, and limitation of movement depending upon the location of the tumour. All the tumours in our study were extraconal and hence eccentric proptosis was observed in all the cases. Fundus changes like altered reflexes in the retina, due to anterior bulging of the eyeball, due to indentation of the eyeball were observed in all the cases of pleomorphic adenomas. Hypermetropic refractions were also observed in all these cases of pleomorphic adenomas.



**Figure 6-** Deep seated orbital tumour being pulled to the surface by cryoprobe

In other cases proptosis and limitation of movement were observed but no fundal changes were observed. In pleomorphic adenomas all the above described signs and symptoms disappeared dramatically after the removal of the tumours, and the vision improved to better than 6/9 in all these cases.

The selection of surgical method was adopted in each case depending upon the location of the tumour. Krönlein approach was used for Lateral orbitotomy. Lateral Orbitotomy was done in all the cases of Pleomorphic adenomas. A crow shaped skin incision was put on the lateral aspect of the orbit. Later temporalis muscle was reflected, the lateral bony wall of the orbit was removed to expose the retro-orbital tumour – the pleomorphic adenoma. The tumour was freed from the surrounding connective tissue by using fine scissors. Care was taken to avoid undue damage to the vital neurovascular bundles and extraocular muscles. The tumour was pulled to the surface by using the cryoprobe and removed intact. A drain was placed post-operatively before replacing the surgically-fractured lateral orbital wall. Skin incision was securely closed with interrupted sutures.



**Figure 7-** The orbital tumour being held by artery forceps which are helpful in achieving haemostasis and intact removal of tumour

In remaining cases where the tumours and cysts were in the anterior third of the orbit, the anterior approaches were adopted to remove the tumours. When-ever the tumour was either superolateral or superomedial sub-brow incisions were made to access the tumour and remove the same

In our clinical study we found out that Cryoprobe not only helps in good haemostasis but also helps in obtaining a good grip over the tumour, there by facilitating, intact removal of the tumour (see Figure6 and Figure9). In some cases insinuation of operating surgeon's finger, helped to get the edge of the tumour. Blunt instruments and cotton buds were also helpful in delineating the margins of the tumour.



**Figure 8-** Post operative Drain after Lateral Orbitotomy to prevent haematoma



**Figure 9-** Pleomorphic adenoma being removed intact from Superolateral quadrant of the orbit

### Conclusion

The distribution of benign tumours encountered in our study, were in majority located in the

superolateral aspect of the orbit. Firm orbital swellings which had extended retro-orbitally, posed major threat to the vision by causing pressure effects on the optic nerve. Timely diagnosis and early removal of these tumours helped the patients to regain vision.

Lateral orbitotomy needed extreme skill and dexterity, while removal of tumours in the anterior two thirds of the orbit needed less skill and were easily removed by anterior approach. The anterior approaches even-though, needed less skill, these approaches needed lot of patience and perseverance as they were time consuming. Proper clinical examination, helped us to predict the histopathologic characteristics with maximal accuracy. Our clinical study revealed that the orbit once upon described as Pandora's box can now be explored appreciably well with the help of modern investigative methods.

### Acknowledgement

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