

## Proptosis - A Clinical Profile

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**Abstract:** To study the cases of proptosis attending the Government Hospital, Kakinada and to analyse the various aetiological factors of proptosis and to correlate various investigative modalities with the clinical diagnosis. In cases attending the Government hospital which gives a bird's eye view of East, west Godavari and parts of Visakhapatnam districts of Andhra Pradesh, an attempt is also made to confirm the diagnosis with the methods available in the institution and also by histopathological examination in some cases. A cure and comfort is given to the extent possible in this institution

**Keywords:** proptosis, bird's eye, diagnosis

### 1. Introduction

The eyes in their position are basic requisite for the symmetry of the face. Any variation in their position invites the attention of onlooker and needs medical attention, as eyes are windows of soul or mirror of mind[1].

Any disturbance of the orbit or its contents was invariably followed by proptosis of eye. Proptosis by definition means - Passive protrusion of eye ball from the socket. Exophthalmos - an active and dynamic process of eye ball. God has designed the orbital cavity so widely that the eye particularly anteriorly fits as smoothly as a hand in glove and almost snugly as a cork in a bottle. It follows then that when something goes amiss with this contact, arrangement such as of oedema, inflammation, the swelling of an expanding tumour or dilation of vascular channels, direct pressure exerted on the eye, the result is forward protrusion of the eye from the protective environs of its orbit. The forward displacement of the eye ball is a striking and disquieting symptom common to many pathological

conditions, the diagnosis of which may present great difficulty and not a little anxiety[2].

Great majority of cases of proptosis are unilateral. In bilateral cases usually systemic disease is the causative factor[3].

Disease of orbit create some of the complex and perpetuating problems in ophthalmology. After taking history and a thorough clinical examination, there invariably remain enough uncertainties to require consultation from other specialist. Usually such a complicated evaluation serves only to include or rule out groups of disease entities. Thus it aptly said that the orbit is a temple of surprises.

A positive approach to the problem of protrusion of eyeball started in 1583 by a Bartish father of Germany as extirpation of eye[4].

It is comparable to modern sub total orbital exenteration. In 1744 Thomas Hope of Scotland attempted removal of tumour without loss of eye. Heop's operation was notable because it was successful and because it preserved the eye. In 1888 Kronlein described new approach for removal of orbital

tumours that is lateral orbital approach. In 1941 waiter Dandy removed the retro-ocular mass on the nasal side of the orbital cavity by transcranial approach[5].

**SURGICAL ANATOMY**

The eye with its complex network of supporting structures lies within the small pyramidal shaped bony orbit. From the mechanical point of view, the orbit is a non-expansile closed box comparable to cranium.

It is bounded behind and on sides by rigid bony walls in front by the eyeball and septum orbital. Thus any accommodation within either by edematous fluid, blood, inflammatory infiltration and neoplasm and any encroachment from without by swelling around it, can be met only by pushing the eye ball forwards resulting in proptosis[6].

Because of the intimate relations the orbit bears to the surrounding structures, the nose, paranasal sinuses, the bones of face, cranium and its contents, as well as soft tissues of the lids, the lacrimal apparatus and face, disease of this region is bound with matters of considerably wider than the ocular interest. It is common territory to the Ophthalmologist, the Rhinologist, the Neuro Surgeon and Facio maxillary surgeon. The intimacy of venous drainage of orbital plexus with the face, nose and cavernous sinus makes the orbit a meeting place of surrounding pathological disturbances and focus where diseases spread so rapidly as far as to cause menace not only to vision but also the life[7]

**SURGICAL SPACES**

In the orbit there are four well-defined surgical spaces which control to some extent the spread of the infiltration and at the same time limits the degree of relief obtained by exploratory measures confined to one compartment[8].

**1. SUB - PERIOSTEAL SPACE:**

This is a potential space between the bone and the periorbita. The periorbita is firmly attached at the rim of the orbit, at the lacrimal fossa, at the various sutures and foramina and at apex to the dural sheath of the optic nerve. Between these attachments it is readily peeled off the bone by effusions and tumours or by surgical manipulations.

**2.PERIPHERAL SURGICAL SPACE:**

This space lies in between the periorbita and the cone shaped partition formed by the Rectus muscles and the intermuscular membrane. The space is bounded by septum orbitale in front, which fuses peripherally with periosteum and

centrally with Tenon’s capsule. A lesion in the space causes early restriction of movements and a lateral deviation of globe eccentric proptosis.

**3.CENTRAL SURGICAL SPACE:**

This lies within the muscle cone. The intermuscular membrane unites firmly with Tenon’s capsule in front. In general however, the effusion here cause no involvement of the lids and conjunctiva and the resulting proptosis is axial. Moreover owing to the pressure generated within the muscle cone, the proptosis is accompanied by immobility of the eye and early loss of vision.

**4.THE EPISCLERAL SPACE/SUB-TENON’S SPACE:**

This lies between the Tenon’s space and the eye ball and is potential but is capable of distension.

The bony margins of the orbit are thick, particularly the supraorbital margin. Among the walls lateral wall is the thickest and this serves the protective purpose. Elsewhere the bones are thin. The medial wall and floor are often very thin. Because of thin medial wall. Ethmoid is one of the commonest cause of orbital cellulitis. Tumours of maxillary antrum can easily invade the thin floor into the orbit causing proptosis.

Passive protrusion of the eye ball from the orbital socket is proptosis.

Active or dynamic process of protrusion of the eye ball is called Exophthalmos.

**2.Observations & Analysis**

Total No. Of cases :30

Age of Incidence

1-10 years of age

S.No	Name	Age	Disease
1.	Abhi	10years	Parasitic cyst

21-30 years of age

1.	Devaraju	22 years	Maxillary carcinoma
2.	K Latha	24years	Graves Ophthalmopathy
3.	Jeeva	25 years	Lacrimal gland tumor
4.	Satti raju	26 years	Tuberculoma
5.	Lovatalli	29 years	Lacrimal gland tumor
6.	Subayya	27years	Orbital varices
7.	Bhoolaxmi	30 years	Hemangioma
8.	Surya kumari	30 years	meningioma

31-40 Years of age

1.	Narasayya	40 years	Graves Ophthalmopathy
2.	Appala raju	32years	Orbital cellulitis
3.	M.Suryavathi	38 years	Fungal orbital cellulitis
4.	Jagannadham	40 years	Graves Ophthalmopathy
5.	Nagamani	39years	Graves Ophthalmopathy

41-50 Years of age

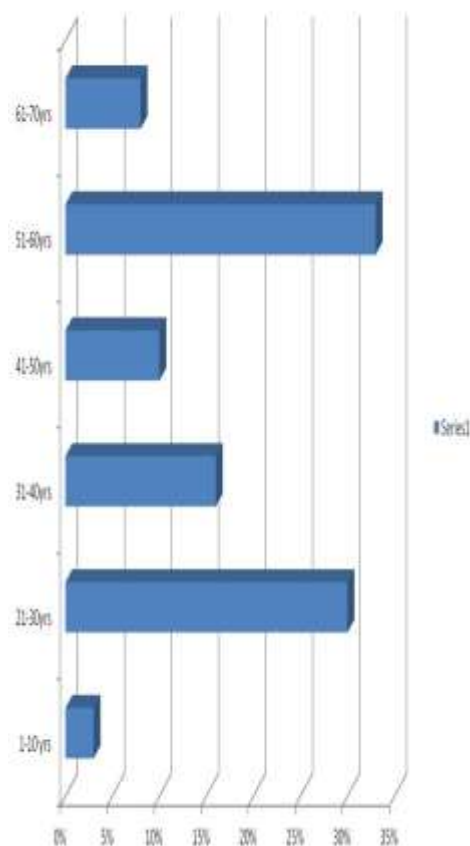
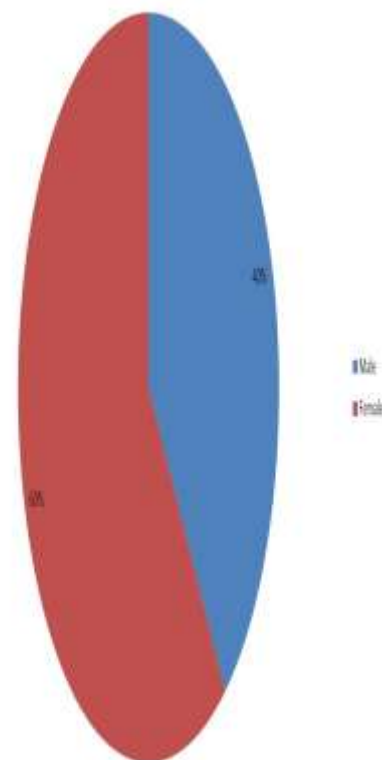
1.	Sri Lakshmi	47 years	Graves Ophthalmopathy
2.	Venkatamma	45 years	Meningioma
3.	Veeraju	50 years	Pseudo tumor

51-60 Years of age

1.	V.Pandu	55 years	Carticocavernous fistula
2.	Laxmamma	56 years	Maxillary Carcinoma
3.	Nookamma	60years	Graves Ophthalmopathy
4.	Subbamma	55 years	Graves Ophthalmopathy
5.	S.Surya rao	60 years	Graves Ophthalmopathy
6.	venkamma	60years	Graves Ophthalmopathy
7.	Rajamma	60 years	Graves Ophthalmopathy
8.	Gangamma	55 years	Graves Ophthalmopathy
9.	venkatamma	60years	Graves Ophthalmopathy

61-70 Years of age

1.	Sitharamayya	70 years	Maxillary Carcinoma
2.	Chandra rao	68 years	Orbital cellulitis



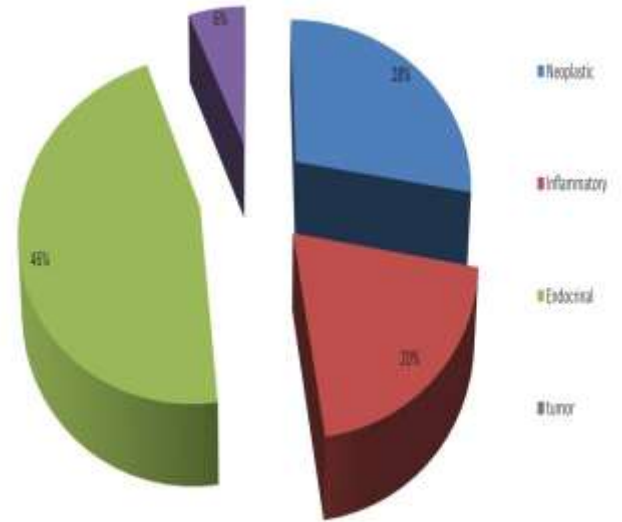
**Aetiology**

**NEOPLASTIC**

S.NO	DIAGNOSIS	AGE(YEARS)	SEX
1.	Maxillary ca.	22	M
2.	Lacrimal gland tumor	25	M
3.	Lacrimal gland tumor	29	F
4.	Meningioma	30	F
5.	Meningioma	45	F
6.	Meningioma	56	F
7.	Hemangioma	30	F
8.	Maxillary Carcinoma	70	M

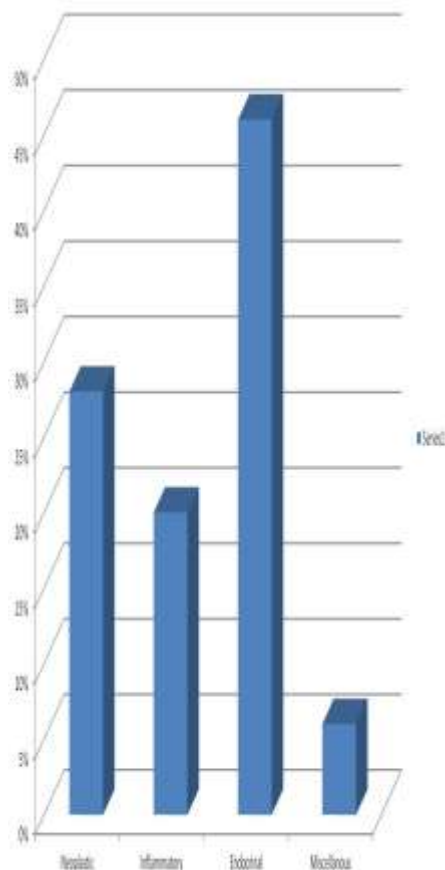
**Miscellaneous**

S.NO	DIAGNOSIS	AGE	SEX
1.	Orbital varices	27	M
2.	Carotico cavernous fistula	56	M



**Endocrinal**

S.NO	DIAGNOSIS	AGE	SEX
1.	Graves ophthalmopathy	25	F
2.	Graves ophthalmopathy	40	M
3.	Graves ophthalmopathy	40	F
4.	Graves ophthalmopathy	39	M
5.	Graves ophthalmopathy	47	F
6.	Graves ophthalmopathy	55	F
7.	Graves ophthalmopathy	55	F
8.	Graves ophthalmopathy	60	M
9.	Graves ophthalmopathy	60	F
10.	Graves ophthalmopathy	60	F
11.	Graves ophthalmopathy	60	F
12.	Graves ophthalmopathy	60	F



### 3. Discussion and Conclusion

This is an observational study of clinical profile of proptosis cases over 3 years presenting to the ophthalmology department of Government hospital Kakinada from years 2011-2013

The study of 30 cases showed equal incidence in both sexes and spread over all ages [9]

It was observed that 5 processes mainly accounted for proptosis in our study

Inflammatory lesions

Infectious lesions

Neoplastic lesions

Vascular lesions

Structural abnormalities

Thyroid ophthalmopathy was highest accounting for 40% of cases. Similar to the epidemiological study of white Americans in 1996 study found that females (75%) were commonly affected than males (25%). Age incidence is bimodal in women and men with peak ages of 40-45 and 60-64 years in women and 45-49 and 60 years in men. These findings are in concordance with the above study. Median age of diagnosis was 45 years. It was more common in smokers

Malignancy was the next cause and it accounted for 30% of cases. Among malignancies, nerve sheath meningioma was most common accounting for 50% of causes. Meningioma is more common in females and occurs in age group of 41 years. This was followed by maxillary carcinoma and lacrimal gland tumors. These findings are in concordance with study by British Columbia orbital clinic.

The third most common cause was infectious with causes like orbital cellulitis predominating. Unlike previous studies, orbital cellulitis was seen in middle age group. The mean age of onset was between 30-35 years compared to 19 years mentioned in previous studies. NSIOS was observed in one patient. This is a diagnosis of exclusion when all the causes of specific inflammation are ruled out. Parasitic cyst was seen in one patient and this patient was child less than 10 years of age.

Among miscellaneous causes one case each of arteriovenous fistula and orbital varices were observed

Among symptoms most patients presented with forward protrusion. In concordance with previous studies bilateral presentation was most common. This is probably due to higher preponderance of thyroid eye disease. 13% had defective vision not corrected by refraction. These patients were from diverse etiologies (2 – meningioma, 1-NSIOS, 1-CCF, 1-TED). The most common reason was late presentation with malignancies. The patient with Thyroid eye disease had severe exposure keratopathy.

B scan and hematology pointed towards the diagnosis which was confirmed mostly by CT scan. Most of the diseases were treatable on early detection as endocrinological causes could be corrected. Malignancy presented late and required more awareness and need early detection to be properly treated. Infectious causes are treatable but again need early detection to avoid unnecessary mortality [10].

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