

# Analysis of Prevalence and Etiology of Proptosis at a Tertiary Care Centre of South, India.

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## ABSTRACT

**Background:** Proptosis is a frequent symptom of wide series of diseases involving eyes and always pose a dilemma in diagnosis and management. **Aims and Objectives:** To analyze the prevalence and etiology of proptosis at a tertiary care centre of South, India. **Methods:** A total of 473 cases with proptosis between 2003 to 2005 were included in this study. Detailed history and routine ophthalmological examination was carried out for all the cases. The obtained data was tabulated and analyzed. **Results:** Out of 473 cases, 267 were males and 206 females. Maximum number of orbital lesions 103 (36.65 %) were seen in the age group 30 to 40 years. Thyroid Related Orbitopathy was the commonest lesion. We found 37.84 % cases to have axial proptosis and 62.16 % with eccentric proptosis. **Conclusion:** Analysis revealed that Graves disease as the most common etiology and proptosis warrants multi modal, multi-disciplinary approach in investigation and management.

**Keywords:** Proptosis, diagnosis, Graves disease, rhabdomyosarcoma.

## INTRODUCTION

The symmetry of face depends on position of eyes, hence they are considered as windows of soul or mirror of mind.<sup>[1]</sup> Any variation in position of eyes alters symmetry and needs medical attention. Proptosis means passive protrusion of eye ball from the socket, whereas exophthalmos means an active and dynamic protrusion of eye ball.<sup>[2,3]</sup>

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The main causes of proptosis are oedema, inflammation, tumours, dilation of vascular channels or direct pressure exerted on the eye. Most of the cases are unilateral. Unilateral proptosis results mainly due local pathology, whereas bilateral proptosis usually have an underlying systemic disease as the causative factor.<sup>[2-4]</sup>

We carried out this study to analyze the prevalence and etiology of proptosis at a tertiary care centre of South, India.

## MATERIALS AND METHODS

The subjects included in our prospective study were the patients attending a tertiary healthcare

hospital in South India with a provisional diagnosis of proptosis, during June 2003 to June 2005. Detailed history of all the patients was taken. Routine ophthalmological examination was carried out for all the cases after obtaining institution ethical committee approval.

**Inclusion criteria:** All cases of proptosis where diagnosis was established

**Exclusion criteria:** Patients of proptosis where diagnosis could not be established, Patients who could not be followed for a minimum period of 3 months.

Basic haematological, radiological, pathological and ophthalmological investigations were carried out to confirm the diagnosis. Demographic details and ophthalmologic data i.e. clinical presentation, investigation details and treatment details were noted and analyzed statistically. Evaluation of proptosis included Hertel's exophthalmometry, ocular motility, cover test, visual acuity, colour vision, intraocular pressure, differential tonometry, fundus examination and cycloplegic refraction. Radiological investigations included a CT scan, MRI when indicated, Orbital ultrasonography, Bone scans, chest x-ray and Ultra sound abdomen, when indicated.

Treatment options included medical treatment in cases with thyroid orbitopathy, Myocysticercosis, Orbital cellulitis, Dacryoadenitis etc. and surgical treatment included lateral orbitotomy /anterior

orbitotomy for excision of benign tumours and exenteration for primary orbital malignancies like adenoid cystic carcinoma of lacrimal gland and secondary orbital malignancies like extension from lid tumour.

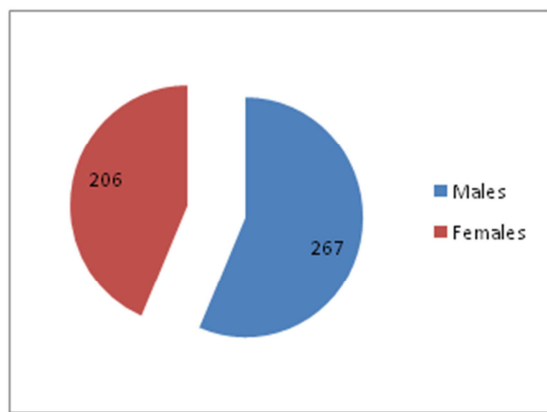
Post operative follow up was done for a minimum period of 3 months:

**RESULTS**

We analysed a total of 473 cases with orbital disease between 2003 to 2005. All cases with proptosis were included in this study. Cases were included regardless of the age and back ground. Out of 473 cases, 267 were males and 206 females [Table 1].

**Table 1: Showing incidence of proptosis according to gender**

Gender	Number of cases	Percentage of cases
Males	267	56.45
Females	206	43.55
Total	473	100



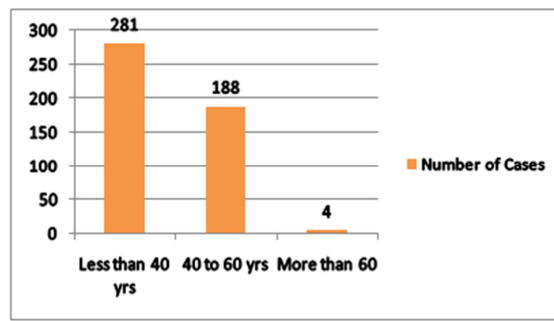
**Graph 1: Showing incidence of proptosis according to gender**

The age of the subjects varied from 2 months to 70 yrs. The frequency of orbital lesions in different age groups is shown in [Table 2], with maximum no of orbital lesions 103(36.65 %) were seen in the age group 30 –40 years.

**Table 2: Frequency of orbital lesions in different age groups**

Age Group	Number of Cases	Percentage of Cases
Less than 40 yrs	281	59.41
40 to 60 yrs	188	39.75
More than 60	4	0.84
Total	473	100

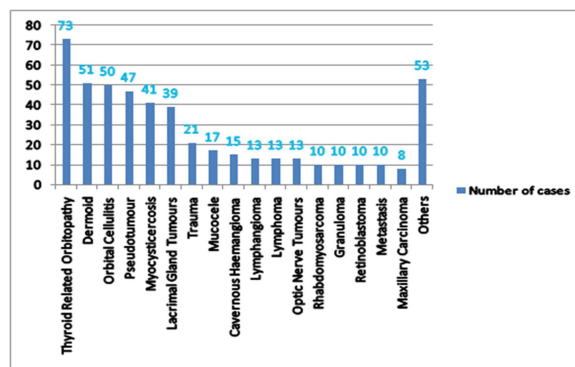
Incidence of cases lesion wise was tabulated [Table 3] and Thyroid Related Orbitopathy was the commonest lesion.



**Graph 2: Showing incidence of proptosis according to gender**

**Table 3: Showing the incidence of specific lesions**

Lesion	Number of cases	Percentage of cases
Thyroid Related Orbitopathy (TRO)	73	15.43
Dermoid	51	10.78
Orbital Cellulitis	50	10.57
Pseudotumour	47	9.94
Mycoticercosis	41	8.67
Lacrimal Gland Tumours	39	8.24
Trauma	21	4.44
Mucocele	17	3.59
Cavernous Haemangioma	15	3.17
Lymphangioma	13	2.75
Lymphoma	13	2.75
Optic Nerve Tumours	13	2.75
Rhabdomyosarcoma	10	2.11
Granuloma	10	2.11
Retinoblastoma	10	2.11
Metastasis	10	2.11
Maxillary Carcinoma	8	1.69
Others	53	11.20
Total	473	100.0



**Graph 3: Showing the incidence of specific lesions**

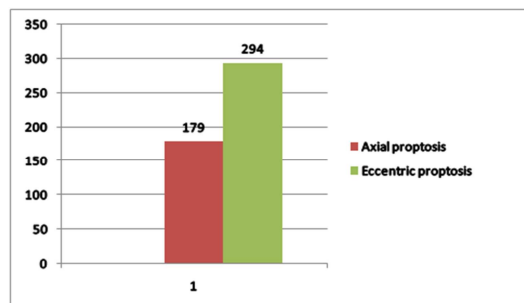
**Table 4: Showing the Incidence of type of the proptosis**

Type of Proptosis	Number of cases	Percentage of cases
Axial proptosis	179	37.84
Eccentric proptosis	294	62.16
Total	473	100

**DISCUSSION**

Even though orbital lesions may have diverse etiology and pathogenesis, they usually present with similar clinical picture, hence might be

misleading. Proptosis is a pathological lesion in which there will be anterior displacement of the eyeball beyond the orbital margin. As the bony walls of the orbit are firm, any situation, which reduces the space within the bony orbit, will result in proptosis.



**Graph 4: Showing the incidence of type of the proptosis**

Etiology of proptosis ranges from orbital problems to infiltrative conditions either from adjacent structures like nasopharynx, paranasal sinuses or in the form of distant metastasis.

Several studies carried out to determine demographic details of proptosis in different geographic areas showed varied incidence, age and sex.<sup>[5,6]</sup>

We found a male preponderance with 267 (56.45 %) cases and 206 females (43.55). Our findings are in accordance with Loganathan and Radhakrishnan, who found 60 % males and 40 % females. Similar male predominance was also seen in studies by

Khan et al, Amudhavadiu and Masud et al.<sup>[2,5,7]</sup> Whereas Zaidi et al<sup>[6]</sup> found female predominance and Naidu and Kishor et al found equal distribution.<sup>[1,3]</sup>

In few studies, the most common lesion causing proptosis was Graves' disease, as was seen in our study also. Proptosis may be due to other conditions like orbital cellulitis, orbital pseudotumour, cavernous sinus thrombosis etc. Naidu et al and Kishor et al found underlying thyroid problem in 40 % and 30 % of their samples respectively.<sup>[1,3]</sup> Loganathan and Radhakrishnan found orbital cellulitis as the most commonest lesion.<sup>[4]</sup> Masud et al found neoplasms as the most common underlying cause (33 %).<sup>[7]</sup> Khalid Farooq et al found inflammatory conditions as the most common cause (50.57 %) as was seen by Otulana et al.<sup>[8,9]</sup>

We found 37.84 % cases to have axial proptosis and 62.16 % with eccentric proptosis. Our findings are in contrast to that of Loganathan and Radhakrishnan, who found 64 % with axial proptosis and 36% with eccentric proptosis. However Amudhavadiu found more number of cases with eccentric proptosis as was seen in our case.<sup>[5]</sup>

The findings of various studies are summarized [Table 5]. This diverse findings might be due to the method of study, age groups and duration of study.<sup>[1,3-5,9-15]</sup>

**Table 5: Comparison of etiology of proptosis in various studies**

Studies	Number of cases	Inflammation	Infection	Vascular	Endocrine	Trauma	Neoplasm
Naidu et al	30	-	-	-	12	-	8
Rauniyar et al	143	30	32	-	-	11	52
Kishoret al	22	5	-	-	7	2	3
Loganathan et al	50	19	-	8	-	4	15
Mohan et al	141	-	-	-	-	-	-
Amudhavadiu	50	18	-	2	5	2	23
Present Study	473	250	-	28	-	-	20

Among all the studies, our sample was largest. We recommend further such studies with more sample size in order to determine the exact cause of proptosis so that we can take adequate measures to find out the age, sex and most common etiologic agent. Etiologic factors resulting in proptosis may cause threat to life and vision. But still a large number of the patients with proptosis are not correctly diagnosed, hence such studies should be carried out in future.

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