

## Prospective study of ectropion and entropion at department of ophthalmology, Thanjavur Medical College

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### Abstract

**Introduction:** Eyelid malpositions are not so uncommon conditions of the eyelid which seek attention by the patients. ectropion (outward rotation of eyelid) and entropion (inward rotation of eyelid). Both are broadly classified as congenital and acquired. There are different etiologies among acquired ectropion and entropion like senile, involuntional, paralytic, cicatricial, spastic and mechanical. The senile ectropion and entropion share a common pathology, weakness of eyelid retractors.

**Purpose:** To study the occurrence of eyelid malpositions- ectropion and entropion in the study population, various etiologies, gender and age-wise distribution and complications associated with ectropion and entropion.

**Method:** Prospective study, with 40 patients satisfying the inclusion criteria among the screened population.

**Results:** Ectropion more common than entropion and among paralytic ectropion Bell's Palsy (95%) being the commonest cause. Corneal complications are more in Ectropion. Among Entropion senility being the commonest etiology.

**Conclusion:** The Oculoplastic Surgeon play a great role in treating patients with eyelid malposition. Timely intervention is needed to prevent vision threatening complications. General Ophthalmologist to identify and refer the patients at the earliest.

**Keywords:** Bell's palsy, Ectropion, Entropion, Etiologies, Oculoplasty, Senility

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### Introduction

Eyelid malpositions are not so uncommon conditions of the eyelid which seek attention by the patients. The senile ectropion and entropion share a common pathology, weakness of eyelid retractors. Grades of ectropion - Rubin et al<sup>5</sup>

Grade 1- The lower punctum just pointing upwards away from globe (punctual ectropion).

Grade 2- Partial everted lower lid and visible sclera show.

Grade 3- Presence of conjunctival hyperaemia and gross mucosal thickening.

Grade 4- As for grade 3 with additional exposure keratitis.

Entropion has been classified by several authors. It is graded according to the parameters described by Kemp and Collin<sup>4</sup>.

Mild:

- Tarsal plate is normal in position
- Conjunctivalisation of the lid margin is present
- Lash/globe contact occurs only when gaze is directed towards the involved eyelid.

Moderate:

- Tarsal plate is normal in position
- More significant conjunctivalisation of the lid margin is present.
- Lash globe contact is present in the primary position.
- The term 'lid border entropion' has been proposed for these cases.

Severe:

- Gross tarsal deformities are present.
- Marked conjunctival scarring is present.

The purpose of this study is to identify the different etiology of ectropion and entropion, variations of eyelid malposition among age, gender and preference of lid involvement. The axial globe length measurement is found to play an influential role in the case of eyelid malposition.

The conjunctival and corneal complications are observed and their significance established statistically.

Understanding the anatomical and epidemiological factors contributing to these malpositions would certainly help in early diagnosis and hence early treatment so as to avoid recurrence and failure of surgeries.

### Aim

Prospective Study period from May 2012 to October 2013 to find the percentage of occurrence of ectropion and entropion in the study population, their various aetiologies, importance of axial length of eyeball and other ocular complications associated with it.

**Inclusion criteria:** Patients of all ages and both genders with either upper or lower eyelid ectropion or entropion.

**Exclusion criteria:**

1. Patients with mild entropion or entropion not satisfying even grade I
2. Patients of seventh nerve palsy with lagophthalmos but not having even grade I ectropion.
3. Patients surgically treated for ectropion or entropion were not enrolled.

## Materials and Methods

Prospective study done in the Department of Ophthalmology, Government Raja Mirasudar Hospital, Thanjavur Medical College from may 2012 to October 2013.

Among the 62,838 people screened, 40 persons satisfied the inclusion criteria.

They were subjected to clinical examination. Visual acuity measured using Snellen's chart, Slit-lamp examination, parameters like horizontal lid laxity, vertical lid laxity and axial length measured.

**Treatment:** Involutional ectropion corrected by horizontal lid shortening or lateral canthal sling. Cicatricial ectropion corrected by Z-plasty and free slit graft.

Involutional entropion was corrected by skin muscle resection and wies procedure. Antibiotic eye ointment and lubricating drops used in exposure keratitis and in patients with superficial punctate keratopathy.

Patients were examined on day 1 postoperatively, one week later and monthly follow-up.

## Results

Of the 62,838 people who presented to the Out Patient Department during the study period, 40 people presented with eyelid malposition which constitutes 0.063%. Entropion alone constitutes 0.022%, ectropion alone constitutes 0.041%. 40 persons with eye lid malpositions were enrolled for this study of which 26 (65%) were diagnosed as ectropion and 14 (35%) were diagnosed as entropion.

The etiology wise percentage of ectropion shows that paralytic cause of ectropion occupying 65.38% & the rest of the causes form 34.62%. Bell's palsy is the most common cause (64.71%) of paralytic ectropion. The etiology- wise percentage of entropion which illustrates that senile cause is the highest (78.57%) among the etiologies of entropion. Other etiologies contribute 21.43% of the causes of entropion. According to this study, on comparing ectropion with entropion, senile entropion occupies a higher percentage (78.57%) than senile ectropion(21.43%). Paralytic component causes only ectropion. Cicatricial cause for eyelid malposition is common in ectropion (71.43%) than entropion(28.57%).

Senile ectropion and entropion begins to occur from 51 years of age, its percentage increases with age, predominant after 70 years and the mean age of is 66 years .The paralytic cause of eyelid malposition occurs at the mean age of 52years. Cicatricial etiology has a mean age of 48 years.

Total number of males and females taken for this study was equal and each 20 in number. However in case of ectropion, the percentage of males(61.54%) was higher than females(38.46%)and the difference was found to be statistically significant.. In case of entropion, the percentage of females (71.43%) was

significantly higher than the percentage of males(28.57%).

Eyelid malposition is common in the right eye(52.5%) than the left eye(25%). In 22.50% of cases, eyelid malposition occurs in both eyes.

The occurrence of eyelid ectropion and entropion is common in the lower eyelid (87.5%) than upper lid alone(5%) or involvement of both upper and lower lids (7.5%). The involvement of upper lid is quite a rare entity, occurring with cicatricial and congenital component.

The mean axial globe length of affected eyes in senile ectropion is 21.96mm. The mean axial globe length of affected eyes in senile entropion is 20.73 mm. The difference in the mean axial globe length between senile ectropion and entropion was found to be statistically significant.

66.67% of cases of senile ectropion develop superficial punctate keratopathy and 58.82% of paralytic ectropion develop exposure keratopathy. Among cases of cicatricial ectropion 20% developed exposure keratitis and 40% developed opacity of the cornea probably after exposure and not treated adequately. 27.27% of cases of senile entropion developed superficial punctate keratopathy and remaining 72.73% had clear corneas. All cases of congenital entropion and cicatricial entropion included in this study had clear corneas.

The overall percentage of corneal complications(exposure keratitis, superficial punctate keratopathy and opacity) was found to be significantly higher in ectropion than in entropion.

The overall percentage of conjunctival complications (keratinisation, symblepharon, congestion, chemosis) was found to be significantly higher in ectropion than in entropion.

**Table 1: Percentage of Ectropion and Entropion in eye lid malpositions**

Disease	No. of patients	Percentage(%)
Ectropion	26	65
Entropion	14	35
Total	40	100

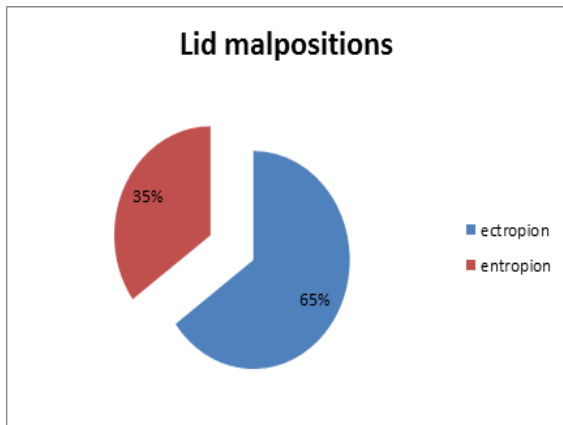


Fig. 1: Percentage of Ectropion and Entropion in eye lid malpositions

Table 2: Etiology of Ectropion

Sl. No.	Etiology	No. of cases of ectropion	Percentage (%)
1.	Senile	3	11.54
2.	Paralytic	17	65.38
3.	Cicatrical	5	19.23
4.	Congenital	1	3.85
	Total	26	100

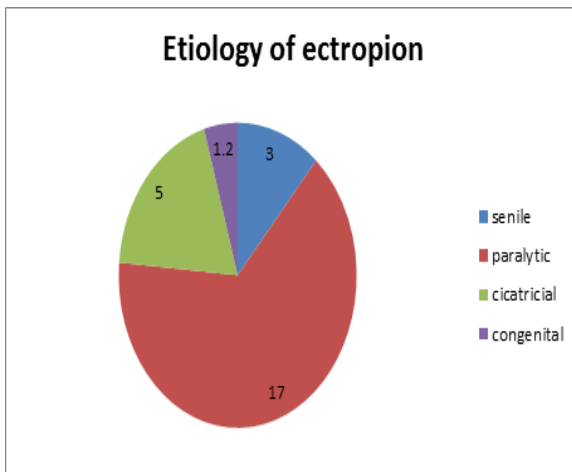


Fig. 2: Etiology of ectropion

Table 3: Different causes for paralytic ectropion

Etiology	Number of case	Percentage%
Hansen	3	17.65
Bells	11	64.71
Acoustic neuroma	1	5.88
DM	1	5.88
Parotid surgery	1	5.88

Table 4: Etiology of Entropion

Sl. No.	Etiology	Entropion	Percentage(%)
1.	Senile	11	78.57
2.	Cicatrical	2	14.29
3.	Congenital	1	7.14
	Total	14	

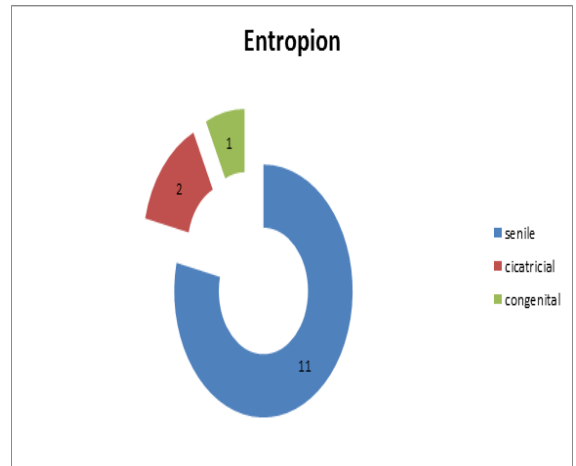


Fig. 3: Etiology of Entropion

Table 5: Etiological Comparison of Ectropion and Entropion

	Ectropion		Entropion	
	No.	Percent (%)	No.	Percent (%)
Senile	3	21.43	11	78.57
Paralytic	17	100	0	0
Cicatrical	5	71.43	2	28.57
Congenital	1	50	1	50

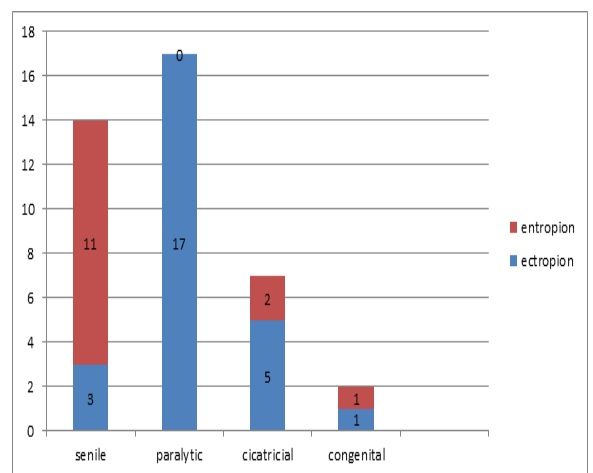
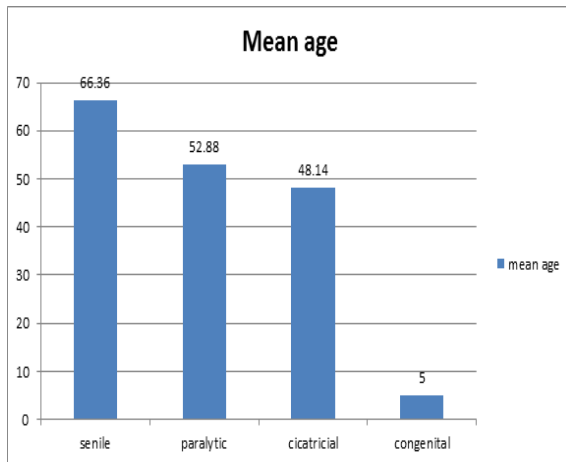


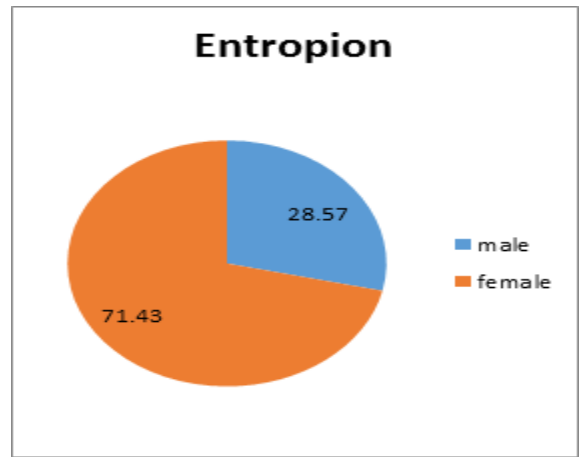
Fig. 4: Etiological Comparison of Ectropion and Entropion

**Table 6: Lid Malposition – Agewise distribution**

Age Range	Senile		Paralytic		Cicatricial		Congenital	
	No.	Percent (%)	No.	Percent (%)	No.	Percent (%)	No.	Percent (%)
0-10	0	0	0	0	0	0	2	100
11-20	0	0	1	50	1	50	0	0
21-30	0	0	1	100	0	0	0	0
31-40	0	0	2	66.67	1	33.33	0	0
41-50	0	0	1	33.33	2	66.67	0	0
51-60	4	40	6	60	0	0	0	0
61-70	6	40	6	40	3	20	0	0
71-80	4	100	0	0	0	0	0	0



**Fig. 5: Mean age in different etiologies of ectropion and entropion**



**Fig. 6: Sex Distribution of ectropion and entropion**

**Table 7: Mean age in different etiologies of ectropion and entropion**

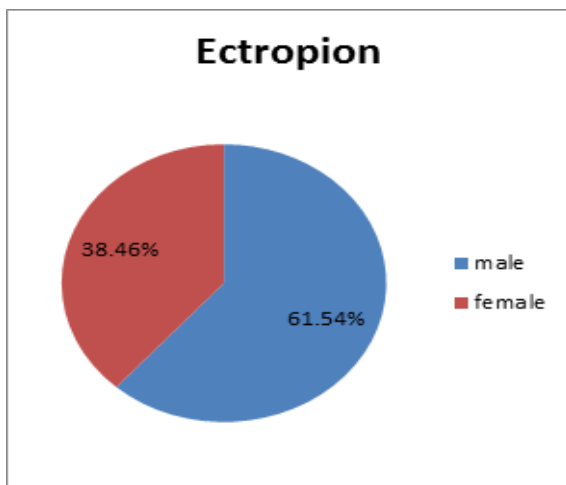
	Mean age(yrs)	SD
Senile	66.36	6.789
Paralytic	52.88	15.763
Cicatricial	48.14	20.522
Congenital	5	5.657

**Table 8: Sex Distribution of ectropion and entropion**

Clinical diagnosis	Clinical diagnosis			Statistical inference
	Male (n=20)	Female (n=20)	Total (n=40)	
Ectropion	16 (61.54%)	10 (38.46%)	26 (65%)	X <sup>2</sup> =3.956 Df=1 .047<0.05 Significant
Entropion	4 (28.57%)	10 (71.43%)	14 (35%)	

**Table 9: Laterality of Eyelid malpositions**

Laterality	Number of patients	Percentage %
Right eye	21	52.50
Left eye	10	25
Both eyes	9	22.50



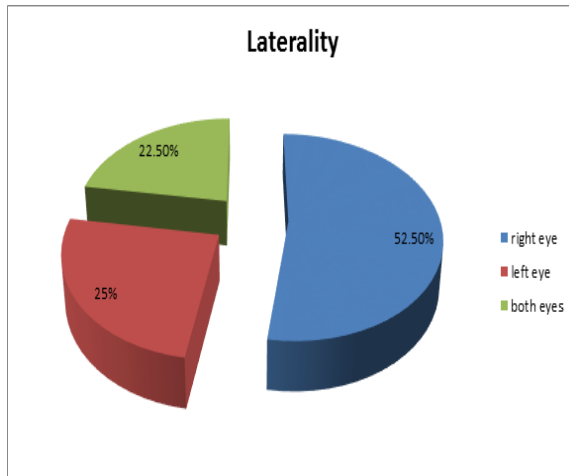


Fig. 7: Laterality of Eyelid malpositions

Table 10: Lid involvement in Various Etiologies of Eyelid Ectropion and Entropion

Etiology	Lower		Upper		Both	
	No.	Percent %	No.	Percent %	No.	Percent %
Senile	14	40	0	0	0	0
Paralytic	17	48.57	0	0	0	0
Cicatricial	3	8.57	1	50	3	100
Congenital	1	2.86	1	50	0	0
Total	35	100	2	100	3	100
Percent %	87.5 %		5 %		7.5 %	

Table 11: Influence of axial globe length on senile ectropion and senile entropion:

	AL of globe in senile ectropion (n=3)		AL of globe in senile entropion (n=11)	
	Affected eye	Normal eye	Affected eye	Normal eye
	21.98	21.83	20.14	20.92
	22.06	21.98	20.46	20.16
	21.83	21.37	20.28	20.18
			20.78	20.46
			20.98	20.74
			20.27	20.83
			20.94	21.59
			21.98	21.59
			20.28	20.15
			20.98	20.36
			20.98	20.36
Mean	21.96	21.73	20.73	20.67

Table 12: Statistical significance of corneal complications in ectropion and entropion

Cornea	Clinical diagnosis			Statistical inference
	Ectropion (n=26)	Entropion (n=14)	Total (n=40)	
Clear	11 (42.30%)	11 (78.57%)	22 (55%)	X <sup>2</sup> =5.871 Df=1
Complicated	15 (57.69%)	3 (21.43%)	18 (45%)	.015<0.05 <b>Significant</b>

Table 13: Statistical significance of conjunctival complications in ectropion and entropion

Conjunctiva	Clinical diagnosis			Statistical inference
	Ectropion (n=26)	Entropion (n=14)	Total (n=40)	
Clear	8 (30.8%)	9 (64.3%)	17 (42.5%)	X <sup>2</sup> =4.183 Df=1
Complication	18 (69.2%)	5 (35.7%)	23 (57.5%)	.041<0.05 <b>Significant</b>

Discussion

Out of Forty patients of eyelid malpositions, 65% were ectropion and 35% were entropion. Damaslano R.W et al<sup>1</sup> in his study 2011 reported prevalence of involutional ectropion higher than involutional entropion.

95% were acquired aetiology and 5% congenital. Paralytic cause common aetiology in ectropion(65%). Senility being common aetiology in entropion (78%).

Jocelyn chua et al<sup>2</sup> by their retrospective study of ectropion among Asian population and compared it with non-Asians. They found that involutional was common aetiology in both.

The mean age of senile ectropion and entropion is 66 years of age.

Ectropion common in male 62%, entropion common in female 71%.

Damasceno RW et al found in their study 2011 involutional ectropion higher in male and involutional entropion higher in females.

Lower lid preferentially involved in all etiologies than upper eyelid.

Axial globe length of Senile Ectropion is significantly longer than that of senile entropion.

Jyothi SB et al<sup>3</sup> in UK in 2012 evaluated axial length and biometry parameters in involutional ectropion and entropion and observed that axial length was significantly longer in ectropion group than entropion group.

58.82% of paralytic ectropion developed exposure keratopathy.

Ocular complications like superficial punctate keratitis, exposure keratopathy, conjunctival complications of keratinisation, symblepharon higher in ectropion.

Limitations include a short study period, few etiologies like spastic and mechanical were not identified within the study period.

## Conclusion

The Oculoplastic surgeon play a greater role in treating patients with eye malpostions. Timely intervention needed to prevent vision threatening complications. General Ophthalmologists to identify and refer the patients at the earliest.

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