



Original Research Article

Prevalence and clinical presentation of entropion: One year cross sectional analysis in tertiary care centre

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Abstract

Purpose: To assess the hospital based prevalence, etiological prevalence, clinical features, and sequelae of entropion in patients attending a tertiary care centre over a one-year period.

Materials and Methods: A hospital-based cross-sectional study was conducted at the Upgraded Department of Ophthalmology, Lala Lajpat Rai Memorial Medical College, Meerut, from July 2023 to June 2024. A total of 140 patients diagnosed with entropion from among 26,000 outpatient attendees were evaluated. Clinical history, visual acuity, and detailed ocular examination were performed. The prevalence of neglected cases, common presenting complaints, and associated complications were recorded.

Results: The prevalence of entropion was 0.54%. Involutional entropion was the most common subtype 83.57%, predominantly affecting individuals above 60 years 85.71%, with a peak in the 71–80 years group 47.14%. A mild female preponderance 56.4% and bilateral involvement 52.5% were observed. The lower eyelid was more commonly affected 44.28% than the upper eyelid 29.28%. The most frequent presenting symptoms included foreign body sensation 82.14%, watering 74.29%, and diminution of vision 55.71%. Pseudotrichiasis was present in 70% of cases, while 12.86% were classified as neglected, often presenting with complications such as secondary corneal thinning 83.33% and vascularization 50%.

Conclusion: Entropion predominantly affects the elderly and is most often involutional in origin. Prompt diagnosis and intervention are critical to prevent vision-threatening consequences, particularly in neglected cases. This study highlights the need for community awareness and structured screening, especially in the geriatric population.

Keywords: Entropion, Involutional, Modified Jones procedure, Surgical outcomes, Eyelid malposition.

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1. Introduction

Entropion is a common eyelid malposition in which the eyelid margin turns inward, causing the eyelashes and skin to rub against the ocular surface. This leads to chronic irritation, foreign body sensation, tearing, conjunctival inflammation, and, if left untreated, serious complications such as corneal thinning, ulceration, vascularization, scarring, and even visual loss.¹⁻⁵

It may be congenital or acquired, with acquired types classified as Involutional (most common, due to age-related changes like retractor dehiscence, lid laxity, and orbicularis override), Spastic⁹ (transient, due to inflammation), Mechanical³ (due to poor lid support), Cicatricial (caused by

conjunctival scarring from burns, trauma, or autoimmune conditions). Cicatricial entropion often requires complex surgery like posterior lamellar grafting or mucous membrane reconstruction.⁵ Congenital entropion, though rare, always requires surgical correction.³ Involutional entropion, resulting from age-related weakening of eyelid support structures, is the most prevalent subtype and is especially common in individuals over 60 years of age. Studies have reported a prevalence ranging from 2.1% in people aged ≥60 years to as high as 10.7% in those over 80 years.¹³ It is also observed more frequently in women and among certain ethnic groups, such as Asians, likely due to anatomical predispositions including looser lid retractors and smaller orbital volume

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Despite its potential to cause significant ocular morbidity, entropion is often underdiagnosed or untreated in its early stages, particularly in rural or resource-limited populations where access to specialized ophthalmic care may be delayed. As a result, many patients present with neglected cases that already exhibit complications.

This study was conducted to determine the hospital based prevalence and clinical presentation of entropion in patients attending a tertiary care centre over a one-year period. The study also aims to highlight the age and sex distribution, laterality, lid involvement, and frequency of neglected cases, thereby contributing valuable data for improving screening and timely intervention strategies in similar healthcare settings.

2. Materials and Methods

A one-year cross-sectional study (July 2023–June 2024) was conducted at the Upgraded Department of Ophthalmology, LLRM Medical College. All entropion patients consenting to participate were included, excluding previously operated or those not giving consent. Comprehensive history, ocular examination, and clinical photography were done.

2.1. Outcome measures

1. Prevalence: overall cases of entropion.
2. Etiological prevalence: The distribution of underlying causes of eyelid malpositions, including age, trauma, infections, and systemic diseases.
3. Prevalence of Neglected Cases: The number of patients who have not sought timely treatment and present with advanced stages of eyelid malpositions and associated complications.
4. Clinical presentation: The types and frequencies of clinical features associated with eyelid malpositions, including corneal abrasions, scarring, or infection.

Data collected were compiled in Microsoft Excel and analysed using descriptive tables with frequencies and percentage.

2.2. Ethical considerations

The study was conducted in accordance with the ethical standards of the institution and approved by the institutional review board (IRB). Written informed consent was obtained from all participants prior to enrollment in the study. Patient confidentiality was maintained by anonymizing personal identifiers and ensuring that all data are stored securely.

3. Results

Out of a total of 26,000 patients who visited the outpatient department (OPD), 140 patients were diagnosed with entropion, resulting in a prevalence rate of 0.54% and it is evident that there is slightly higher number of cases among females (79 patients, 56.4%) compared to males (61 patients, 43.6%). Neglected entropion cases refer to patients who

experience prolonged symptoms before seeking medical attention and may develop some kind of sequelae. Out of 140 patients 18 (12.86%) were neglected cases. (Table 1)

Table 1: Over all prevalence and prevalence of neglected cases

| Category | Total patients | Male | Female | Prevalence (percentage) |
|---------------------------|----------------|------|--------|-------------------------|
| Patients with entropion | 140 | 61 | 79 | 0.54%(n=26,000) |
| Neglected entropion cases | 18 | 8 | 10 | 12.86%(n=140) |

Table 2 shows that the majority of cases fall within the 71-80 years age group (47.14%). However, a significant number of cases are also observed in the 61-70 years age group years (20.00%) and >80years (18.57%) age groups with the lower percentage in the <50 years age group(8.57%) and 50-60 years age group (5.71%)

Table 2: Age wise distribution of entropion

| Age group (Years) | Number of patients (N=140) | Percentage |
|-------------------|----------------------------|------------|
| <50 | 12 | 8.57% |
| 50-60 | 8 | 5.71% |
| 61-70 | 28 | 20.00% |
| 71-80 | 66 | 47.14% |
| >80 | 26 | 18.57% |

Table 3: Etiological prevalence

| Etiology | Number of patients(n=140) | Percentage |
|--------------|---------------------------|------------|
| Involitional | 117 | 83.57% |
| Mechanical | 9 | 6.43% |
| Cicatricial | 11 | 7.86% |
| Spastic | 3 | 2.14% |
| Congenital | 0 | 0.00% |

Table 3 shows that out of 140 patients 117 (83.57%) had involitional entropion and 11 patients (7.86) had cicatricial entropion. Also 9 patients (6.43%) had some mechanical cause for entropion and 3 patients (2.14%) had spastic entropion. In this dataset involitional entropion is the commonest type of entropion.

Table 4: Presenting clinical features in neglected cases

| Clinical feature | Number of patients(n=18) | Percentage |
|--------------------------------|--------------------------|------------|
| Secondary corneal thinning | 15 | 83.33% |
| Corneal vascularization | 9 | 50.00% |
| Corneal scarring/opacity | 5 | 27.78% |
| Corneal ulcer | 3 | 16.67% |
| Corneal ulcer with perforation | 1 | 5.56% |

Table 4 shows that out of 18 neglected cases 15 patients (83.33%) had secondary corneal thinning, 9 patients (50%) had corneal vascularisation. Corneal scarring/opacity (27.78%), corneal ulcer (16.67%) and corneal ulcer with

perforation (5.56%) were the other complications in these subset of patients. secondary corneal thinning was the commonest among all.

Table 5: Overall presenting symptoms

| Presenting complaints | Count(n=140) | Percentage |
|------------------------|--------------|------------|
| Foreign body sensation | 115 | 82.14% |
| Redness | 36 | 25.71% |
| Watering | 104 | 74.29% |
| Discharge | 17 | 12.14% |
| Diminution of Vision | 78 | 55.71% |

Table 5 shows out of total 140 patients of entropion in this study the most common presentation was foreign body sensation 82.14% followed by watering 74.29%. Patients also complaint of diminution of vision (55.71%), redness (25.71%) and discharge (12.14%)

Table 6 shows, in all patients lid margin inversion was present (100%). Trichiasis (70%) was the next most common clinical finding in lid. Blepharitis (33.5%), cysts/growth (2.14%) and edema (2.14%) were other findings in lid examination. In corneal examination 39.29% patients had irregular corneal surface, thinning (10.72%), vascularisation (6.43%), ulcer (3.5%), scarring (3.5%). other findings were conjunctival congestion (25.7%), pthisis (2.8%).

Table 6: Positive clinical signs

| Lid Examination | Findings | Number of patients (n=140) | Percentage |
|---------------------|--------------------|----------------------------|------------|
| | Edema | 3 | 2.14% |
| | pseudotrachiasis | 98 | 70% |
| | Margin Inversion | 140 | 100% |
| | Cysts/growth | 3 | 2.14% |
| | Blepharitis | 47 | 33.57% |
| Conjunctiva | Congestion | 36 | 25.72% |
| | Symblepheron | 2 | 1.43% |
| Corneal Examination | Irregular Surface | 55 | 39.29% |
| | Thinning | 15 | 10.72% |
| | Vascularization | 9 | 6.43% |
| | Ulcer | 4 | 3.57% |
| | Scarring | 5 | 3.57% |
| Globe Examination | Pthisis | 4 | 2.86% |
| | Surgically removed | 2 | 1.43% |

4. Discussion

Entropion remains a significant ophthalmologic condition, particularly in the elderly, where it can profoundly impact comfort, quality of life and vision, if left untreated. The current study investigated the hospital based prevalence and clinical profile in entropion patients.

The prevalence of entropion among the 26,000 patients who attended the outpatient department was 0.54%. While this is considerably lower than population-based studies, such as Damasceno et al. (2011)¹³ who reported prevalence rates of up to 10.7% in individuals aged 80 years and older, it must be understood in the context of a hospital-based study where

patients may only seek care when symptomatic. Although relatively low compared to community-based prevalence figures (up to 10.7% in those aged ≥ 80), this reflects a hospital-based, symptomatic population. The relatively low prevalence may also reflect underreporting or lack of awareness about the condition, particularly in early or mild cases and also because patients in this study are from 50-80+ years.

Age was a significant factor, with the highest number of cases occurring in the 71–80 age group (47.14%) followed by those aged over 80⁵⁷(18.57%). Age Group 71–80 years had the highest prevalence (47.14%), reinforcing the involuntional nature of entropion. The majority (85.71%) of patients were above 60 years, aligning with global data that suggest a marked rise in entropion incidence with aging due to lid tissue laxity, retractor disinsertion, and orbicularis override.

The female predominance (56.4%) observed in this study is consistent with literature (Damasceno et al., 2011 and Wozniak et al.),^{12,13} which has reported slightly higher rates among females. Factors may include differences in skin elasticity, longer lifespan, and lesser access to health facilities in a male dominated society.

Interestingly, a slightly higher proportion of patients had bilateral involvement (52.5%), which aligns with the understanding that involuntional changes affect both eyes over time. The distribution is relatively balanced but also indicates that the bilateral involvement is slightly more common.

Lower lid was affected in 62 cases (44.28%), while the upper lid was involved in 41 cases (29.28%). Additionally, 37 cases (26.43%) presented with both lids affected. This distribution suggests that the lower eyelid entropion is more common. The predominance of lower eyelid involvement aligns with global literature, particularly studies by Kakizaki et al. (2009)⁹ and Pereira et al. (2010)¹⁸, who attributed the vulnerability of the lower lid to gravitational factors, weaker tarsoligamentous structures, and greater mechanical exposure.

Involuntional entropion was the predominant type, accounting for 83.57% of all cases. This is consistent with the findings of Pereira et al.(2010),¹⁰ all of whom report involuntional entropion as the most common subtype($p < 0.05\%$) in the elderly. This form of entropion is often multifactorial, involving horizontal lid laxity, vertical instability due to lower lid retractor disinsertion, and orbicularis muscle dysfunction. These findings support the foundational theories proposed by Jones et al. and further elaborated by Kakizaki et al. (2009),⁹ who emphasized the role of anatomical changes in eyelid support structures.

Other types included cicatricial entropion (7.86%), mechanical (6.43%), and spastic (2.14%). The presence of cicatricial cases often follows chemical burns, Stevens-Johnson syndrome, or trachoma, trauma, consistent with

findings by Ross et al. (2011), who stressed the need for conservative surgical approaches in immunologically driven cicatricial cases and also highlighted the importance of avoiding tissue excision in progressive cicatricial cases.

A notable concern was the high rate of neglected cases (12.86%) these patients often presented with advanced sequelae, including secondary corneal thinning (83.33%), corneal vascularization (50%), and corneal ulcers or perforation. These findings are consistent with Pereira et al. (2010)¹⁰ and underscore the progressive nature of untreated entropion and the importance of timely referral and management. Delayed presentation could be attributed to multiple factors, including low awareness, limited access to specialized care, and a tendency among older adults to downplay ocular symptoms until significant vision loss occurs. Community-based education and screening programs, especially targeting the elderly, may be effective in reducing neglected cases.

The most common presenting complaints were foreign body sensation (82.14%), watering (74.29%), and visual disturbance (55.71%). These symptoms reflect mechanical irritation from misdirected lashes and lid margin inversion, which can lead to chronic inflammation and epithelial damage. These symptoms result from lid margin inversion and lash-globe contact, as confirmed by Wozniak et al. (2010).¹²

Lid Margin Inversion (100%) as the defining clinical sign of entropion, it was understandably present in all patients. This finding confirms the diagnosis and forms the central pathologic feature of entropion, causing the eyelashes and lid skin to rub against the ocular surface. A major secondary consequence of lid inversion, pseudotrachiasis was present in 70% of cases. Misaligned lashes are a direct source of corneal irritation, leading to chronic foreign body sensation, reflex tearing, and eventually epithelial breakdown. This high prevalence highlights the need for early surgical correction to prevent corneal sequelae. It aligns with reports by Wozniak et al. (2010)¹² and Pereira et al. (2010),¹⁰ who reported trichiasis in 60–80% of entropion cases. Blepharitis (33.57%), chronic inflammation of the lid margins was observed in over a third of patients. Blepharitis may contribute to spastic entropion or worsen lid instability due to orbicularis muscle hyperactivity and chronic inflammation. Its co-existence suggests poor lid hygiene and underlines the need for concurrent conservative therapy even when surgical intervention is planned. Edema (2.14%), mild lid edema was recorded in a small number of cases. This may be reactive (inflammatory or allergic) or related to rubbing, trauma, or previous infection. It can obscure the full clinical picture and delay surgery until resolved. Cysts/Growths (2.14%), rarely, mechanical causes such as benign lid tumors (chalazion, papilloma) or cysts may induce or worsen entropion by distorting lid anatomy. Their presence should prompt suspicion of mechanical entropion, and excision may

be curative in such cases. Conjunctival Congestion (25.72%) is a non-specific but significant sign of ocular surface inflammation. It reflects chronic irritation, tear film instability, and possibly underlying blepharoconjunctivitis. Persistent congestion may predispose to conjunctival scarring, which in turn can worsen cicatricial entropion if unaddressed. Irregular Corneal Surface (39.29%) was the most frequent corneal abnormality and usually results from chronic epithelial trauma due to misdirected lashes. It affects the tear film, causes visual disturbance, and predisposes to infection.

Corneal Thinning (10.72%) represents more advanced and prolonged mechanical trauma. Persistent epithelial breakdown, along with localized inflammation, can erode corneal stroma. If untreated, it may progress to ulceration or perforation. Vascularization (6.43%), a hallmark of chronic inflammation and poor epithelial healing, corneal vascularization signifies advanced damage. It can compromise corneal clarity and long-term visual outcomes—even after entropion correction. Corneal Ulceration and Scarring (3.57% each) indicate serious, sight-threatening sequelae of neglected entropion. The anophthalmic state/pthisis itself may predispose the fellow eye to mechanical or involuntional entropion due to disuse or asymmetry in facial tone. Visual acuity was affected in many patients, with 33.57% having VA between 6/24–6/60, suggesting functional impairment due to corneal complications or concurrent cataract.²⁰⁻²⁷

5. Conclusion

This study, conducted over one year with 140 patients, established a etiological prevalence of entropion, predominantly involuntional and affecting individuals over 60 years, with a female preponderance and bilateral lower lid involvement. Common symptoms included foreign body sensation, watering, and trichiasis, often complicated by corneal changes in delayed cases.

6. Source of Funding

None.

7. Conflict of Interest

None.

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