Original Article

A Retrospective Cohort Study of the Clinical Presentation and Visual Outcomes of Blepharoptosis Treatment

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ABSTRACT

Background: Blepharoptosis (ptosis) is the drooping of the upper eyelid, which can be congenital or acquired and caused by various factors. It can lead to vision impairment, such as amblyopia in children, and reduced visual fields in adults, affecting quality of life. **Aim:** To analyze the clinical manifestation of ptosis, specifically examining the available treatment options and evaluating the resulting visual outcomes. **Methods:** A comprehensive analysis was conducted on the medical records of patients diagnosed with ptosis who received treatment through both surgical and non-surgical approaches between January 2017 and December 2020. Additionally, an examination of the underlying factors contributing to the condition was performed and presented. **Results:** A total of 28 patients, with an average age of 31.48 ± 21.66 years, received treatment at our facilities. Out of the 26 cases of unilateral ptosis, 11 patients (43%) underwent surgery, while 15 patients (57%) were treated with medications. The majority of the surgical cases were due to congenital ptosis (8 patients), followed by traumatic ptosis (3 patients). Among the patients who did not undergo surgery, neurological ptosis was present in 6 cases, while congenital ptosis was observed in 5 cases. All cases were successfully managed, resulting in good visual acuity and no complications. **Conclusion:** The most prevalent type of ptosis is congenital ptosis, which primarily affects males and tends to occur more frequently in the left eye. In acquired cases, traumatic ptosis is the most commonly observed type according to this study. After undergoing surgery, patients with congenital ptosis experienced improved visual outcomes, displaying good cosmetic appearance and achieving a visual acuity of 6/6-6/18.

Keywords: *Etiology, eyelids, ptosis, treatment options, visual outcome*

Introduction

Blepharoptosis, also known as "ptosis," is an abnormal drooping of the upper eyelid, with the eye in primary gaze.[1,2] It can be categorized based on the age of onset as congenital or acquired, or based on the cause as myogenic, aponeurotic, neurogenic, mechanical, or traumatic.[2,3] Ptosis can impact vision, leading to amblyopia (reduced vision) in children due to a lack of visual stimulation, and it can affect appearance in adults, causing a restricted visual field that negatively affects their quality of life.[4] Ptosis is one of the most common eyelid disorders seen in clinics; however, there is limited data available from large studies conducted on a population level.[2,5,6] The reported prevalence rates in the general population vary significantly, ranging from around one percent in children to over 10 percent in adults.[7,8] These studies consistently show that the incidence of ptosis increases with age and affects both genders.[7] In a Taiwanese population, there was a female

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to male ratio of 2.72:1.[6] A study conducted in a hospital in Northern Nigeria by Lamina *et al*.[9] found that ptosis was more common in adult males.

Ptosis can be managed through conservative methods, including medical treatment and surgical intervention.[1,10] Conservative approaches involve using upper eyelid tapes during the day, lid glue, or glasses with a crutch attachment.[5,11] Additionally, medication may be administered to patients with ptosis caused by conditions like myasthenia gravis.[12,13] However, in most cases, surgical correction is the preferred option.[5,2,10] Studies have shown that ptosis surgery yields positive functional and cosmetic outcomes,[10,14,15] leading to an improvement in health-related quality of life.[16-18] In an effort to contribute to the existing limited data on ptosis, we present a retrospective analysis of ptosis cases, management options, and treatment outcomes at a tertiary eye care center.

Methods

Ethical consideration

This study received approval from the human research ethics committee of the hospital and followed the standards outlined in the Helsinki Declaration, of 1975, as revised in 2000. It fully adhered to the requirements set forth in STROCSS (Strengthening the Reporting of Cohort Studies in Surgery) 2021[19] and was reported in accordance with the STROCSS criteria. Additionally, the study was registered in the Research Registry (https://www.researchregistry.com) with a unique identification number (UIN: 9592). Informed consent was duly obtained from the patients as required. The consent covered both the medical procedure and the extraction of patient information from theater records.

Surgical procedures

The Fox technique was utilized for all ptosis corrections.[20] Two small incisions were marked approximately 1-2mm above the lash line, positioned 1mm inward from the inner corner of the eye and 1mm outward from the outer corner. Additionally, three small incisions were made on the forehead above the eyebrows. These incisions were created using a razor blade fragment. Following the incisions, a 4/0 nylon polyfilament suture was threaded through the lid incisions, engaging the partial thickness of the tarsal plate while ensuring the protection of the eye. The needle was then removed, and the suture was passed from the lid to the brow incisions, traveling behind the orbital septum in a pentagonal manner using a Wright needle. The suture was carefully adjusted until the lid reached the desired height, corresponding to the superior limbus. Subsequently, the suture was tied using a surgeon's knot, and the knot was meticulously buried beneath the skin. The incisions on the forehead were closed using interrupted 6/0 Vicryl sutures. Additionally, a Frost suture was placed on the lower eyelid to close the eye, and a compressive dressing was applied over the closed eye for 24 hours. After the surgery, the Frost suture was secured to the lower lid, and the patient was prescribed topical 0.4% ciprofloxacin, 400 mg of paracetamol three times a day for a week, and 500mg of ampiclox capsule every 6 hours for two weeks.

The indication encompasses visual rehabilitation, enhanced superior visual field, improved reading, and other close work to avoid the need for tilting the chin upward, discomfort caused by eye strain, and to achieve a good cosmetic appearance. On the other hand, the contra-indication includes inadequate bell's phenomenon, reduced sensitivity of the cornea, and poor tear production.

Statistical analysis

The data were descriptively analyzed using a statistical package of social science (IBM SPSS Inc. Chicago V 19.0) at a 95% confidence interval, with a *P* value <0.05% considered as statistically significant. Descriptive statistics such as means and standard deviations were used to summarize quantitative variables while categorical variables were summarized with proportions.

Results

During the 4-year period of analysis, our center managed a total of 28 patients, with a focus on the treatment of 30 eyes. The majority of cases involved unilateral conditions, with only 2 instances of bilateral cases (as shown in [Table 1]). Among the patients, 57% were male (16 cases), while females accounted

Table 1: Patient's demographic characteristics and clinical presentation of ptosis

	Unilateral	Bilateral	Male	Female
Operated	11 (39%)	0 (0%)	8	3
Not operated	15 (54%)	2 (7%)	8	9
Total	26	2	16	12

Table 2: Etiological factors of ptosis

Type of ptosis	Operated	Not operated	Total
Congenital	8	4	12
Traumatic	3	4	7
Neurological	-	5	5
Aponeurotic	-	3	3
Mechanical	-	1	1
	11	17	28

Table 3: Preoperative and postoperative visual acuity

Age	Gender	Laterality	Types of ptosis	Preoperative visual acuity	Postoperative visual acuity
63	M	LE	Traumatic	6/9	6/5
26	M	LE	Congenital	6/12	6/6
11	M	RE	Congenital	6/9	6/9
1	M	LE	Congenital	6/24	6/18
47	M	RE	Congenital	6/12	6/5
9/12	M	LE	Congenital	6/24	6/18
62	F	RE	Traumatic	6/12	6/18
8	M	LE	Traumatic	6/6	6/6
3	F	RE	Congenital	6/12	6/9
9	F	LE	Congenital	6/9	6/9
2	M	LE	Congenital	6/24	6/24

M=male, F=female, LE=left eye, RE=right eye

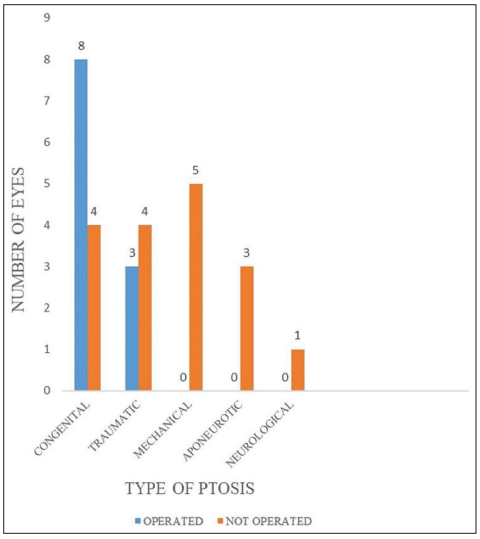

Figure 1: Treatment strategies of ptosis

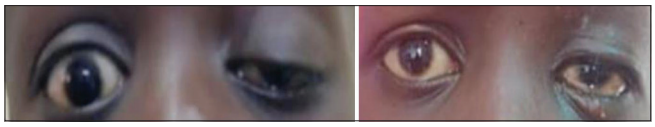

Figure 2: Photo microphotograph of congenital ptosis

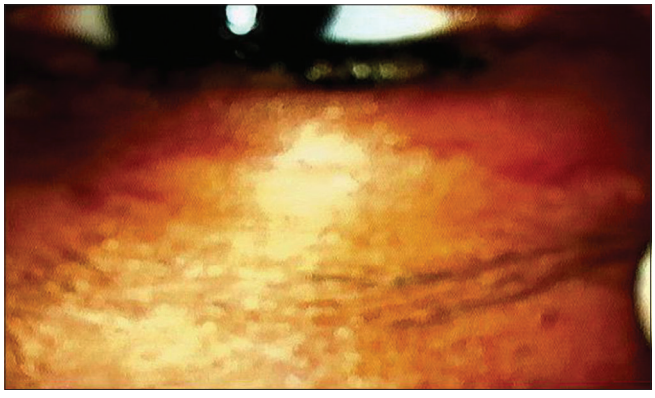

Figure 3: Photo microphotograph showing pentagon incision on the upper lid for surgical intervention in congenital ptosis

for 43% (12 cases). The patients had an age range of 31.42 ± 21.66 years.

The cases of ptosis managed at our center were classified into five different etiological factors, as shown in Table 2. The majority of the operated cases were attributed to congenital ptosis, with a total of 8 patients, followed by traumatic ptosis which accounted for 3 cases. In regard to the non-operated cases, there were a total of 5 patients with neurological ptosis, 4 were classified as congenital, 4 as traumatic, 3 as aponeurotic, and 1 as mechanical. Figure 1 provides a visual depiction of the patients who underwent surgical intervention versus those who received medical treatment.

According to Table 3, the majority of cases of ptosis in this study were found in the left eyes. Notably, patients with congenital ptosis experienced improved visual outcomes following surgical intervention, resulting in favorable cosmetic appearance [Figure 2] and a visual acuity range of 6/6-6/18 [Table 3]. Figure 3 depicts a microphotograph of a pentagon-shaped incision in the upper eyelid, which was performed as a surgical intervention for congenital ptosis.

Discussion

This study retrospectively examined the clinical presentation, medical interventions, and visual outcomes of blepharoptosis. It is one of the few studies that specifically focuses on the clinical presentation and outcomes of ptosis after medical and surgical interventions. Our findings indicate that ptosis occurred in patients with an age range of 31.42 ± 21.66 years, with a higher prevalence in males compared to females [Table 1]. A similar study conducted by Lamina and Hanif (2008),[9] which assessed ptosis patterns in the same region as ours, revealed a comparable high prevalence of 65.4% in male patients within a similar age group as reported in our study. In contrast to our study's observation of congenital ptosis in the left

eye [Table 2], they reported a high incidence (61.5%) in the right eye, with trauma being the cause in 60.9% of cases.[9] While there is no official report on the global incidence of ptosis to determine its prevalence and incidence,[21] genetic factors have been found to influence the pathology of ptosis according to studies.[22,23]

At presentation, the condition was characterized by the drooping of one or both upper eyelids, which affected the patients' appearance and impaired their visual function, leading to a negative impact on their quality of life. This aligns with previous descriptions of blepharoptosis as one of the most common disorders of the upper eyelid in optometric and ophthalmic practice.[1,2,13] According to the findings of this study, unilateral eyelid drooping accounted for 93% of the cases. Among these cases, 39% were managed through surgery, while 54% were treated non-surgically with medications [Table 1]. There have been limited studies on the prevalence of ptosis in the general population;[21,24] however, our finding is in agreement with previous research on the presentation of ptosis,[25,26] which demonstrated a higher occurrence of unilateral ptosis compared to bilateral ptosis [Table 1]. While medication treatment showed favorable outcomes for most patients [Figure 1], surgical management resulted in even better success rates. This aligns with the established notion that surgery is an effective option for treating ptosis,[2,10] leading to improved elevation of the upper eyelid and addressing visual field deficits, as shown in Figure 2b.

In terms of the time of appearance, ptosis can be broadly categorized as either congenital, meaning it is present at or shortly after birth, or acquired, appearing later in life.[2] Our findings indicate that the majority of cases were congenital [Table 2], which aligns with similar studies reporting that congenital ptosis accounted for 90% of the study population[25] and 69% in another report.[26] We observed that, although the left eye was predominantly affected [Table 3], the right eye was also impacted. It has been reported that ptosis, characterized by drooping eyelids, can affect one or both eyes.[1] Notably, post-surgical intervention led to improved visual outcomes for the patients, resulting in a favorable cosmetic appearance [Figure 2] and visual acuity ranging from 6/6 to 6/18 [Table 3]. These findings support the report that surgery [Figure 3] is an effective treatment option for ptosis.[2,21] In our institution, the choice of surgical intervention is guided by a thorough preoperative examination, which includes assessing the degree of ptosis, levator function, position and extent of the skin crease, and the presence of Bell's phenomenon. The limitation of the present study is that it is one of the few hospital-based studies on ptosis, which means that the findings cannot be generalized. Although ptosis is a common eyelid disorder in optometric and ophthalmic practice, there is limited data available from studies on this condition.[2,9,21]

Congenital ptosis is the most frequently occurring type, primarily affecting males, and commonly appearing in the left eye. In terms of acquired cases, traumatic ptosis was found to be the most prevalent type in this study. Surgical intervention significantly enhanced the visual outcome of patients with congenital ptosis, resulting in improved cosmetic appearance and a visual acuity ranging from 6/6 to 6/18. These findings reveal the effectiveness of surgery as a viable treatment option for ptosis.

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Conflicts of interest

There are no conflicts of interest.

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