

Wies procedure for correcting involitional entropion of the lower lid in geriatrics

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Abstract

Objective: To evaluate the anatomic outcome and recurrence rate of the Wies procedure for treating involitional entropion of the lower lid in geriatrics.

Materials and methods: This retrospective case series was conducted in the Ophthalmology department of a tertiary care hospital from January 1, 2016 to December 31, 2017. Geriatric patients (≥ 65 years) who had undergone the Wies procedure, *i.e.*, transverse lid split and everting sutures for correction of involitional entropion of the lower lid were included. All the surgeries were done under local anaesthesia by a single ophthalmologist. The follow-up period was 12 months. A successful outcome was defined as restoration of lid margin to its position with no lash touching the cornea and no recurrence within 12 months.

Results: Eighteen eyes of 13 patients with a mean age of 67.6 ± 2.2 SD years were included. There were 11 males (61%) and 7 females (39%). Bilateral entropion correction was done in five patients. Nine right eyes and nine left eyes were included. Anatomical success was 94.4% at 12 months. Recurrence was seen in one (5.6%) patient at 12 months.

Conclusion: The Wies procedure for correction of involitional entropion with horizontal lid laxity in the geriatric population provided good anatomic results in our study. The recurrence rate was minimal within 1 year. The recurrence rate can be reduced by an accurate initial entropion assessment.

Keywords: entropion, geriatric, involitional entropion, lower lid, Wies procedure

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Prosedur Wies untuk memperbaiki entropion involusi kelopak mata bawah dalam geriatrik

Abstrak

Objektif: Untuk menilai hasil anatomi dan kadar pengulangan prosedur Wies untuk merawat entropion kelopak mata dalam geriatrik.

Bahan dan kaedah: Siri kes retrospektif ini dilakukan di jabatan Oftalmologi hospital rawatan tertier dari 1 Januari 2016 hingga 31 Disember 2017. Pesakit geriatrik (≥ 65 tahun) yang telah menjalani prosedur Wies, iaitu pemisahan kelopak mata melintang dan jahitan untuk pembetulan entropion inklusi penutup bawah dimasukkan. Semua pembedahan dilakukan di bawah anestesia setempat oleh pakar oftalmologi tunggal. Tempoh susulan adalah 12 bulan. Kejayaan prosedur ditakrifkan sebagai pemulihan margin ke kedudukannya tanpa bulu mata menyentuh kornea dan tidak berulang dalam 12 bulan.

Hasil: Lapan belas mata dari 13 pesakit dengan usia sekitar 67.6 ± 2.2 SD tahun dimasukkan. Terdapat 11 lelaki (61%) dan 7 perempuan (39%). Pembetulan entropion kedua belah mata dilakukan pada lima pesakit. Sembilan mata kanan dan sembilan mata kiri. Kejayaan anatomi adalah 94.4% pada 12 bulan. Pengulangan entropion berlaku dan dilihat pada satu (5.6%) pesakit pada 12 bulan.

Kesimpulan: Prosedur Wies untuk membetulkan entropion involusi akibat kelonggaran kelopak mata mendatar pada populasi geriatrik memberikan hasil anatomi yang baik dalam kajian kami. Kadar entropion berulang adalah minimum dalam tempoh 1 tahun. Kadar berulang dapat dikurangkan dengan penilaian awal awal yang tepat.

Kata kunci: entropion, entropion inklusi, geriatrik, penutup bawah, prosedur Wies

Introduction

For the first time in history, life expectancy has exceeded 60 years.¹ The geriatric population in low-income countries is estimated to reach approximately 840 million by 2025.² This global rise in the aging population has also made its impact on Pakistan: life expectancy has risen by three decades in the last 50 years and will reach nearly 70 years by 2023.³ Pakistan stands as the fifth most populous country in the world and has a geriatric population currently to be more than 8 million.⁴

With increasing life expectancy, an increase in ocular problems in the geriatric population is also to be expected. Various eyelid diseases such as ectropion, entropion, dermatochalasis, etc., are frequently encountered in the elderly.⁵ As the elderly resort to medical and surgical methods for treatment of these associated

eyelid diseases, surgical treatments are constantly being improved.⁶

Entropion refers to an inward rotation of an eyelid.⁷ It is further classified into congenital, cicatricial, involucional, and spastic. Involucional or senile entropion is the most commonly encountered type of entropion.⁶ Entropion causes chronic conjunctivitis, punctate epithelium erosions, ocular irritation, and blepharospasm in the elderly. If left untreated, it may cause vision loss and ocular damage leading to dry eye, corneal ulceration, and microbial keratitis.⁷ Senile entropion has a prevalence of 2.1% in the geriatric population and is more common in women.⁷ Several aetiological factors are thought to play an important role in the development of senile entropion. Horizontal lid laxity, vertical lid laxity, overriding of the preseptal orbicularis oculi muscle onto the pretarsal muscle, and appositional pressure of the lids during eyelid closure are the anatomical changes that occur with aging, leading to entropion formation.⁸

Everting sutures is the most commonly used technique for lower-lid entropion correction, dating back to Hippocrates.^{9,10} However, everting sutures provide only temporary relief for involucional entropion.¹¹ The Wies procedure, which combines transverse full-thickness blepharotomy and everting sutures, is the other method used for entropion without horizontal lid laxity.¹²

In developing countries, a sizeable proportion of the geriatric population treated in public hospitals is chronically ill and belongs to lower socioeconomic groups, facing significant financial constraints. These elderly patients are frequently using multiple topical eye drops with preservatives, which make them prone to recurrent corneal ulcers and worsen their entropion. Various surgical techniques for entropion correction have been reported in the literature with different success rates.⁷⁻¹² These studies have been conducted worldwide, but local data is missing. To target this dearth of data in Pakistan, in this study we evaluated the anatomic outcome and recurrence rate of the Wies procedure for treating involucional entropion in geriatric patients coming to a tertiary care hospital.

Materials and methods

This is a retrospective case series conducted in the Ophthalmology department of a tertiary care hospital. The study adheres to the tenets of the Declaration of Helsinki. As it is a retrospective study, ethical approval by the institutional review board has been waived. We reviewed the records of 13 patients aged 65 years or above with 18 lower-lid involucional entropion who underwent the Wies procedure with or without horizontal lid laxity, from January 1, 2016 to December 31, 2017. Their records were examined for their history, examination, management, and surgical complications. They were followed in an eye outpatient department for recurrence rate and success rate up to 12 months. Written informed consent was taken from all the patients before the surgical procedure.

Preoperative assessment was taken on a separate form. Patient history regarding symptoms, visual acuity, and slit-lamp examination was collected. The lid, lashes, conjunctiva (for scarring), cornea (for punctate epithelial erosions), epithelial defects, and ulceration were assessed. Entropion was evaluated by the following tests:¹³

1. Squeeze test: The patient is asked to squeeze their eye on looking down. This reveals a rotated lid margin with eyelashes touching the globe in primary position.
2. Reverse ptosis: In downgaze, the lower lid will not be as low as the lid on the unaffected side.
3. Medial canthal tendon laxity: The lacrimal punctum migrates laterally on lateral traction over the lid or more than 5 mm displacement lateral to the nasal limbus.
4. Lateral canthal tendon laxity: There is a displacement of the lateral canthus medially on medial traction. The sharpness of the lateral canthus replaced by rounding off suggests marked laxity.
5. Distraction test: When the lower lid is pulled away from the globe, a distance between the posterior lid margin and globe of > 6mm is abnormal, normal being 2 to 4 mm.
6. Snap back test: This test specifically checks for horizontal lid laxity. When the lower lid is pinched, pulled, and released, it returns to its normal position without a blink. Slow return indicates mild laxity, incomplete return unless the patient blinks indicates moderate laxity, and incomplete return even after blinking indicates severe laxity.

Surgical technique

All the surgeries were done under local anaesthesia by a single ophthalmic surgeon (ES). Strict aseptic measures were taken. The skin was cleaned with povidone 10%. One to 2 ml of 2% lignocaine containing 1 in 200,000 units of adrenaline was injected in the subcutaneous tissues along the whole length of the respective lid. The conjunctiva was anaesthetized with topical anaesthesia (0.5% proparacaine). A straight, full-thickness horizontal incision was made with help of the surgical blade number 15. An incision was made 4 mm below the lid margin to avoid cutting of the tarsal plate. An entropion clamp was used to protect the globe from accidental perforation. Everting sutures with single-arm vicryl 5/0 were passed 2 mm below the lash line into the anterior lamella of the upper cut end then into the posterior lamella of the lower cut end. The needle engaged the lower lid retractors, which are seen as a subconjunctival, infratarsal white band at the lowest point of the inferior conjunctival fornix. It was then passed back through the anterior lamella of the upper cut end 2 mm away from the entry point. The point of entry and point of exit of the sutures were 2 mm below the lash line and 2 mm apart. These two ends of the suture were left to

be tied at the end. Two more similar transverse everting sutures were passed in every patient. The cut ends of the everting sutures were tied after applying all sutures starting from the lateral side of the lid to the medial side. The medial suture was tied in the last to avoid medial ectropion. The skin wound was closed with interrupted black silk 4/0. Slight overcorrection was aimed at the end of the procedure.

Antibiotic drops were instilled in the conjunctival sac after completion of surgery and ointment was applied in the sac and at the suture line. The wound was closed with eye padding, which was removed on the first postoperative day. Postoperatively, systemic antibiotic ciprofloxacin 500 mg, analgesic (mefenamic acid tablet), and anti-inflammatory (serratiopeptidase) were given twice a day for 5 days. Antibiotic steroid combination eye drops and ointment (tobramycin and dexamethasone) were prescribed for 2 weeks. Lubricants were also prescribed three times a day. The silk sutures were removed after 7–10 days depending on wound healing. Vicryl was removed after a month if required, otherwise it was left in place for disintegration. Patients were examined postoperatively on day 1, 1 week, 2 weeks, 1 month, and 3 months for recurrence of symptoms.

All the patients were followed up for a period of 12 months. They were assessed for overcorrection, undercorrection, and wound infection. A successful outcome was defined as restoration of the lid margin to its position with no lash touching the cornea and no recurrence within a 12-month period.

Results

This study had a total number of 18 eyelids of 13 patients. The mean age of the patients was 67.6 ± 2.2 standard deviation (SD) years. The minimum age was 65 years; the maximum age was 75 years. There were 11 males (61.1%). Bilateral entropion correction was done in five patients. The mean duration of symptoms was 5.3 ± 2.8 SD months, with a minimum of 1 month and a maximum of 12 months. The right eye and left eye were seen in 9 (50%) cases each. One patient had a history of grafting at the medial canthus 5 years prior due to basal cell carcinoma. The patients' demographic features are summarized in Table 1.

Postoperative complications including overcorrection (secondary ectropion), undercorrection (residual entropion), and wound infection were not seen in any patient. Ecchymosis was seen in three (16.7%) patients. Postoperative anatomic success was seen in 94.4% of patients, defined as no lash touching the cornea. Recurrence was seen in one patient (5.6%).

Discussion

Several surgical techniques have been described in the literature for correction of involitional entropion, ranging from skin patches,¹⁴ botulinum toxins,¹⁵ tissue glue,¹⁶ to everting sutures.^{9,10} Everting sutures are most commonly used worldwide but they provide only temporary entropion correction.¹¹ Wright *et al.* recommended everting sutures on the patient's first appointment as they can be employed quickly, safely, and cheaply.¹⁷

The present study evaluated the Wies procedure for anatomic success and recurrence rate. We found 100% anatomic success postoperatively at 6 months and 94.4% at 12 months with minimal complications. Rosbach *et al.* reported success rates of 91.2% for primary entropion surgery and 88.9% for recurrent entropion in a case series with a mean follow-up of 34 months.¹⁸ El-Sobky *et al.* reported a success rate of 85.7% after the Wies procedure in 15 patients at the 6-month follow-up.¹⁹ The results of our study are similar to these results. Detailed examination of every patient is very important to decide whether the procedure is suitable for the individual patient.

In our study, only one patient (5.6%) developed recurrence at 12 months. Serin *et al.* reported 29.0% recurrence after the Wies procedure with a mean follow-up period of 18.4 months.²⁰ The average time of recurrence reported in this study was 4.8 months;²⁰ these early recurrences could be due to missing horizontal lid laxity at the initial assessment. Borboradis *et al.* reported a recurrence rate of 17%,²¹ while Karki and Sharma reported a recurrence rate of 29%²² by 12 months of follow-up. In our study, the single recurrence at 12 months could be due to the development of significant horizontal lid laxity a few months after the surgery. This patient was later treated with horizontal lid shortening comprising vertical full-thickness lid resection.

The Wies procedure is a combination of transverse full-thickness blepharotomy and everting sutures. Everting sutures correct vertical lid laxity by passing through the retractor layer and tightening lower lid retractors. Blepharotomy creates a scar between the skin, conjunctiva, and preseptal and pretarsal orbicularis. Combined, these procedures prevent overriding of the preseptal onto the pretarsal orbicularis oculi muscle.²⁰ The Wies procedure does not address horizontal lid laxity, which is due to canthal tendon laxity and tarsal plate laxity.²³ Lid shortening procedures like lateral tarsal strip or full-thickness wedge resection can overcome horizontal lid laxity.²⁴ The general consensus states that recurrence will be higher when horizontal laxity is not addressed by horizontal tightening.^{25,26} Simple advancement of dehisced retractors may be satisfactory for effective repair in absence of horizontal lid laxity. The recurrence rate can be decreased by correcting horizontal laxity in case of a positive snap back test.²⁷ Therefore, we suggest that initial assessment is critical to exclude horizontal lid laxity before performing the Wies procedure for good surgical outcome and prevention of early recurrence.

Incidence of involuntional entropion is reported to be higher in females compared to males. Damasceno *et al.* reported a prevalence of 2.4% in females and 1.9% in males, as females have a smaller tarsal plate than males.⁷ Boboridis *et al.* had 61 female patients and 41 male patients.²⁰ In our study, males were predominant, with 11 patients (61%). Since our study used a small sample size, the difference is not apparent.

The cosmetic results of the procedure have also been considered in other studies.^{20,22} The Wies procedure causes significant transverse scarring 4 mm below the lash line compared to the combined procedure (lateral tarsal strip, retractor tightening, and everting sutures). The combined procedure produces a small 1 cm vertical incisional mark which is buried in skin stress lines, from the lateral canthus to the orbital rim.²⁰ Cosmetic results were beyond the scope of this study, so we did not evaluate them. However, our patients were quite happy and satisfied postoperatively after enduring constant ocular irritation for a long period.

Table 1. Demographic features of patients

Variables	Frequency (%)
Mean age (years)	67.6 ± 2.2 SD
Gender	
Males	11 (61%)
Females	7 (39%)
Laterality	
Right eye	8 (44.44%)
Left eye	5 (27.77%)
Bilateral	5 (27.77%)
Cataract	5 (28%)
Pseudophakic	13 (72%)
Systemic illness	
DM	5 (28%)
HTN	1 (5.6%)
Visual acuity (VA)	
VA 6/6	11 (61%)
VA 6/9 to 6/18	6 (33%)
VA 6/24 to 6/60	1 (6%)
Mean duration of symptoms	5.3 ± 2.8 SD months
Recurrence at 12 months	1 (5.6%)
Anatomical success	17 (94.6%)

DM: diabetes mellitus, HTN: hypertension; SD: standard deviation

The main limitations of our study are its small sample size and limited follow-up time. However, its main strength is that it is the first study in Pakistan studying the outcome of the Wies procedure in the geriatric population.

Conclusion

In our study, the Wies procedure for correction of involuntional entropion in the geriatric population with horizontal lid laxity provides good anatomic results. The recurrence rate was minimal within 1 year. Accurate initial assessment of the entropion before performing the Wies procedure is valuable in reducing its recurrence rate.

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