COMSERVA
JURNAL PENELITIAN DAN PENGABDIAN MASYARAKAT

e-ISSN: 2798-5210
p-ISSN: 2798-5652

Volume 5 No. 2 Juni 2025

Ectropion Prevention in Lower Blepharoplasty with Abnormal Distraction Test and Snap Back Test

Kartika Sari Nainggolan*, Agung Mahardika Venansius Purba
Universitas Sumatera Utara, Indonesia
Email: kliniksari2022@gmail.com*
**Correspondence:Kartika Sari Nainggolan*

ABSTRACT

Ectropion, characterized by the outward displacement of the lower eyelid from the globe, is a significant complication that may occur following lower *blepharoplasty*, a common surgical procedure for correcting baggy eyelids. Despite its generally gratifying aesthetic outcomes, the development of *ectropion* can be distressing for both patients and surgeons. This study aims to evaluate the effectiveness of preventive techniques in reducing the incidence of postoperative *ectropion* in lower *blepharoplasty*. The research employed a retrospective observational method by analyzing patient data between April 2023 and June 2025. Out of 68 patients who underwent lower *blepharoplasty*, 2 cases of *ectropion* were identified in the early phase of the study prior to the implementation of preventive measures. These patients were successfully treated using the lateral tarsal strip procedure. Subsequently, for patients with doubtful or abnormal results from *snap-back* and *distraction tests*, a preventive technique was applied during surgery. Notably, no further cases of *ectropion* were observed after the adoption of this preventive approach. The findings suggest that proper preoperative evaluation combined with targeted preventive surgical techniques can significantly reduce the risk of *ectropion*. These results have important implications for improving surgical outcomes and patient satisfaction in lower eyelid *blepharoplasty*.

KeyWords: ectropion, lower blepharoplasty, eyelid laxity, canthal tightening, lateral canthopexy, LCT tightening, canthal suspension surgery, canthal laxity, distraction test, snap back test

INTRODUCTION

Ectropion is a malposition of the eyelid in which the lower eyelid falls away from its normal position to the globe with exposure of the palpebral and bulbar conjunctiva.(López-García et al., 2017) Ectropion is the most common serious complication following lower blepharoplasty for the correction of baggy eyelid.(Fong et al., 2006) Although lower blepharoplasty may be considered one of the most gratifying plastic surgery, but if ectropion occurs, it will be very distressing to both patient and surgeon. On the other hand, ectropion of the lower eyelid is a common and very distressing complication.(Castañares, 1978)

The most important cause for this complication is excessive excision of skin, which can and must be prevented in every case.(Castañares, 1978) Another common cause is weakness of the muscle, tendon, and supporting tissues of the lower eyelid that occurs with aging, this condition usually shows abnormal (positive) results on the distraction test and snap back test.(Castañares, 1978)

Eyelid and canthal laxity are assessed with the snap back test by drawing the lower eyelid from the globe with the thumb and forefinger to check its capability to revert back to the globe. After release, the eyelid should restore to its normal position quickly and assuredly

before the patient blinks (Fig. 1A, B). The orbicularis oculi muscle strength was assessed by perfoming the snap back test.(Linkov & Wulc, 2016)

The lower eyelid distraction test is performed by drawing the lower eyelid away from the surface of the eye ball. If the eyelid can be pulled more than 6 to 10 mm from the cornea, the test result is abnormal (positive), which also indicates eyelid laxity (Fig. 1C). The distraction test is used to assess the laxity of the medial and lateral canthal tendons. An LCT (Lateral Canthal Tendon) tightening is indicated in patients with eyelid laxity determined by either of these tests.(Linkov & Wulc, 2016; López-García et al., 2017)

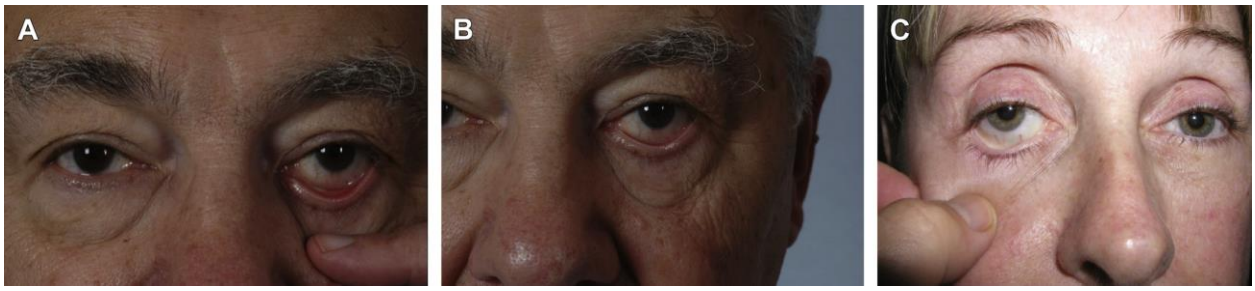

Figure 1. In-office tests. (A) Snap back test: Lower eyelid is pulled away from the globe. (B) Snap back test: In this patient, the eyelid does not return to its normal position. (C) Distraction test: The lower eyelid is being pulled more than 6 to 10 mm from the cornea, indicating eyelid laxity.(Linkov & Wulc, 2016)

I feel that with the limited resection of skin and a lateral superior tensioning of the skin and relaxed orbicularis muscle underneath, ectropion is preventable even in cases of baggy eyelids in elderly patients. (Adifitrian et al., 2023; Cruz & Garcia, 2021; Fong et al., 2006; Garza et al., 2012; Georgescu, 2014; Hou et al., 2021; Kopecký et al., 2022; Lee et al., 2023; López-García et al., 2017; Pacella, 2025; Pascali et al., 2017; Qureshi et al., 2022; Rozon et al., 2022; Vydláková et al., 2021)

In lower eyelid blepharoplasty, the surgeon is attempting to reverse aging and gravitational changes in the eyelid with a goal to shorten that distance and suspend tissues.(Branham, 2016) It may require modifications from standard technique to ensure aesthetic outcomes. The surgeon must be able to identify these at-risk patients. Similarly, the surgeon must be able to address the postoperative patient who develops lower eyelid ectropion or lateral canthal dystopia after lower blepharoplasty.(Linkov & Wulc, 2016)

In previous studies, ectropion has been identified as a frequent and distressing complication of lower eyelid blepharoplasty, particularly in elderly patients due to anatomical and structural changes in the eyelid. For instance, Patipa (2000) emphasized that excessive skin resection during lower blepharoplasty remains a critical and preventable factor leading to ectropion, especially in aging patients with increased eyelid laxity. However, his study was limited to surgical technique recommendations without systematic use of preoperative functional tests like the snap-back or distraction test to stratify ectropion risk preoperatively. Meanwhile, McCord and Shore (1991) proposed the use of lateral canthal support procedures such as the lateral tarsal strip (LTS) in cases of evident laxity, but lacked clinical data showing the impact of a preventive strategy applied systematically in all high-risk patients. The current study fills this gap by integrating a structured perioperative protocol involving both snap-back

and distraction tests to screen patients for eyelid laxity and applying prophylactic LCT tightening procedures (e.g., LTS) in those with positive results. This approach not only provides evidence-based support for functional testing but also demonstrates that no cases of ectropion occurred postoperatively in 68 patients once the preventive method was standardized. Therefore, the purpose of this research is to evaluate and document the effectiveness of preventive eyelid tightening techniques in blepharoplasty patients with pre-existing eyelid laxity, with the broader aim of enhancing surgical safety, aesthetic outcomes, and patient satisfaction.

CASE REPORT

The patient provided written informed consent and permission to publish the case details and associated images for scientific use. A 56-years-old woman came to our clinic (Klinik Pratama Sari) with complained of asymmetrical eyes appearance and area of the visual field is getting narrower because the globe is covered by sagging skin of the upper eyelid. The patient also complained of eye bags that have been prominent for the past few years which make the eyes look droopy and tired appearance. This condition makes the patient feel disturbed in her appearance and quality of life. The preoperative photo shows the patient's appearance in Figure 2.

The patient's periorbital area shows protruding eye bags with excessive and loose upper and lower eyelid skin. The snapback test displays lower eyelid strength while the distraction test displays lower eyelid laxity. Based on the patient's complaint and the results of the examination, the proposed treatment plan includes Upper and Lower Blepharoplasty with modified LCT and Tarsal tightening.

Our patient elected for repair of her eyelid under local anesthesia. After injecting the eyelid and the lateral canthus with local anesthetic e.c adrenaline, using a 30-gauge needle, the patient is prepared and draped in the standard sterile manner. An about 1.5-mm incision is performed at the lateral canthus. The incision can be various and an upper eyelid crease incision can be performed for this method if an upper blepharoplasty is enacted simultanously. The suture is now deployed deep to the orbital rim along the posterior lateral wall of the orbit at the desired canthal location. This suture is passed in an attempt to engage the posterior portion of the LCT adjacent to Whitnall's tubercle. A second cleft palate needle is now utilized to generate a double-armed horizontal mattress suture, also positioning the suture through the posterior part of the LCT. The course of both sutures illuminate the sought height and position of the lateral canthus.

Before securing the suture, the analogous procedure is performed on the contralateral side and the desired position of the canthus and its symmetry is ensured. The skin is now closed with subcuticular sutures. (Figs. 3 A and B).(Linkov & Wulc, 2016)

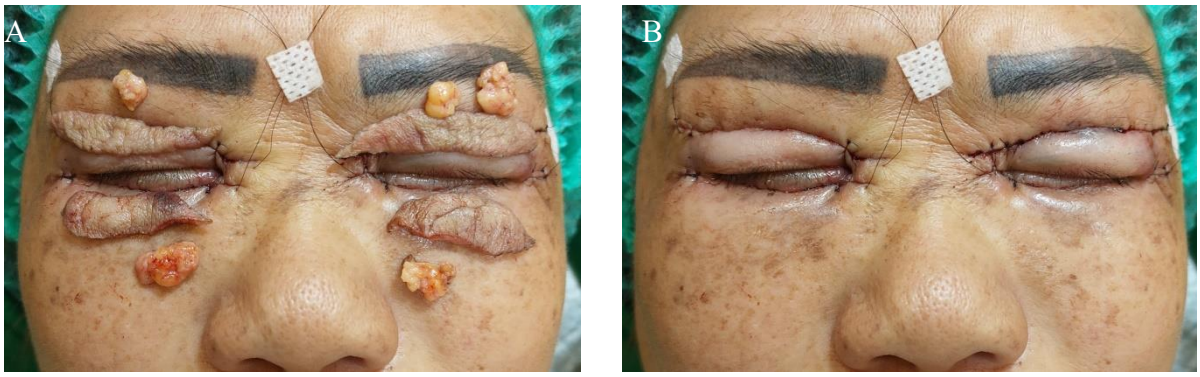

Figure 3. The right after pos-operative photo. (A) The skin and fat was removed. (B) The appearance of suture right after post-operative.

To create a good incision, we make skin incision using scalpel no. 11. To reduce the risk of bleeding, we cut the tissue using electrosurgery. To tighten the inner periorbital area, we use 5-0 and 6-0 Vicryl. To tighten the tarsal and LCT, we use 5-0 Vicryl. To close the skin, we use 6-0 Nylon with a subcuticular suture method.

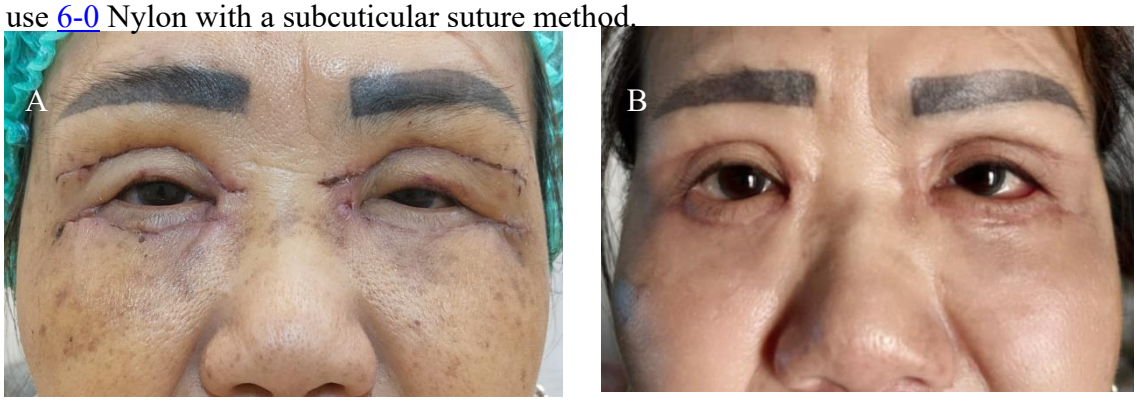

Figure 4. Pos-operative photo. (A) 8 days after surgery. The eyelid are still swollen making the globes look small. (B) 7 weeks after surgery. The sweeling is gone and the globes look normal.

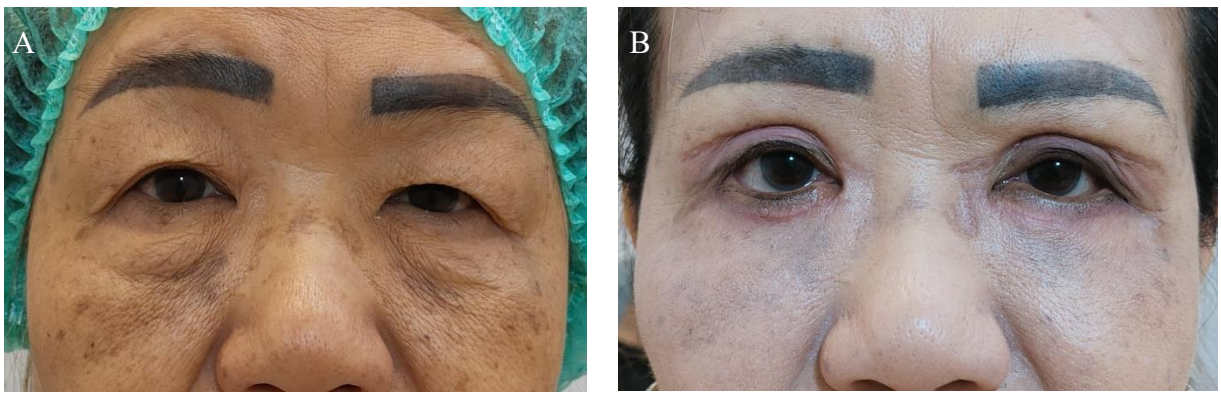

Figure 5. Before-after photo. (A) Before surgery. (B) 2,5 months after surgery.

RESULTS AND DISCUSSION

A patient with negative (normal) snap back and distraction tests, we usually do not perform tarsal and LCT tightening (Dirim et al., 2021; Ghafouri et al., 2014; Sagili & Ha,

2019; Wesley, 1982). Meanwhile, in patient with doubtful to abnormal snap back and distraction tests, we usually perform tarsal and LCT tightening.10 LCT tightening in lower blepharoplasty is done as an anchor to prevent ectropion from occurring.12 To prevent ectropion, the amount of eyelid skin removed must be considered.9 Do not to remove too much eyelid skin. It is better to have close to maximum results, but not causing ectropion. Rather than maximum results, but causing ectropion.4 In lower blepharoplasty, we usually tighten the tarsal and LCT first, then suture the periorbital area, close the skin with subcuticular sutures. However, this surgical procedure makes it difficult for us to prevent ectropion, especially in the results of the snap back and distraction tests with doubtful results. Candidates for ectropion are usually visible during the periorbital suture process. Even if the periorbita is only half the area sutured, ectropion is already visible. Therefore, to prevent ectropion from occurring, we first suture the periorbita while checking for signs of ectropion, like there is space between tarsal and globe (normally it should be in a tight position touching each other), the lower eyelid is pulled away from the globe.

This can happen because the periorbita under the tarsal has been tightened during the lower blepharoplasty process, while the tarsal remains loose, causing the tarsal to fold outward away from the globe.14 So, to prevent this condition, the tarsal must also be tightened and linked to the LCT which has also been tightened. In this case, tightening the LCT is useful as an anchor.

Therefore, to make it easier to prevent ectropion, we will suture the periorbita first while checking for signs of ectropion.6 If these signs are present, then we tighten the tarsal and LCT, close the skin with subcuticular sutures. The use of plaster during the recovery period can help support the tarsal in its normal position and help prevent the occurrence of ectropion.16

A patient with canthal or lower eyelid laxity may exhibit dry eye symptoms, a foreign body sensation, or reflex tearing owing to eye irritation. However, the majority of patients

will be asymptomatic and develop problems postoperatively. It is therefore important to identify the at-risk patient preoperatively.

The evaluation of the patient undergoing lower blepharoplasty routinely involves the assessment of vertical vectors.19 The patient who might develop eyelid retraction after blepharoplasty will have a relatively prominent eye as compared with the bony maxilla.6 Many of these predisposed patients have shallow bony orbits, axial myopia, or thyroid eye disease.20

Our preferred canthal suspension technique accompanies many of our lower eyelid cosmetic blepharoplasty in the predisposed patient and involves a noncutting canthal tightening procedure. It is performed in conjunction with lower blepharoplasty.

Conservative canthal surgery should not give rise to severe complications.8 However, procedures such as wire fixation and the tarsal strip procedure can disrupt the canthus and cause decreased orbicularis function, lash loss, and scarring. Overtightening of the lateral canthus can result in lid imbrication syndrome, where the loose upper eyelid overrides the tightened lower eyelid with lid closure. Medial drift of the lateral canthus can occur after degloving of preexisting attachments at the lateral canthus. Commonly observed complications with the

technique we describe for lower blepharoplasty with canthal tightening include granulomas at the incision site from the absorbable sutures,2

Between April 2023 to June 2025 of all 68 our patients who underwent Lower Blepharoplasty, in the early year before we implemented preventive techniques, we found 2 patients who had severe ectropion. We corrected those 2 patients with Lateral Tarsal Strip and the results are in Figure 6.

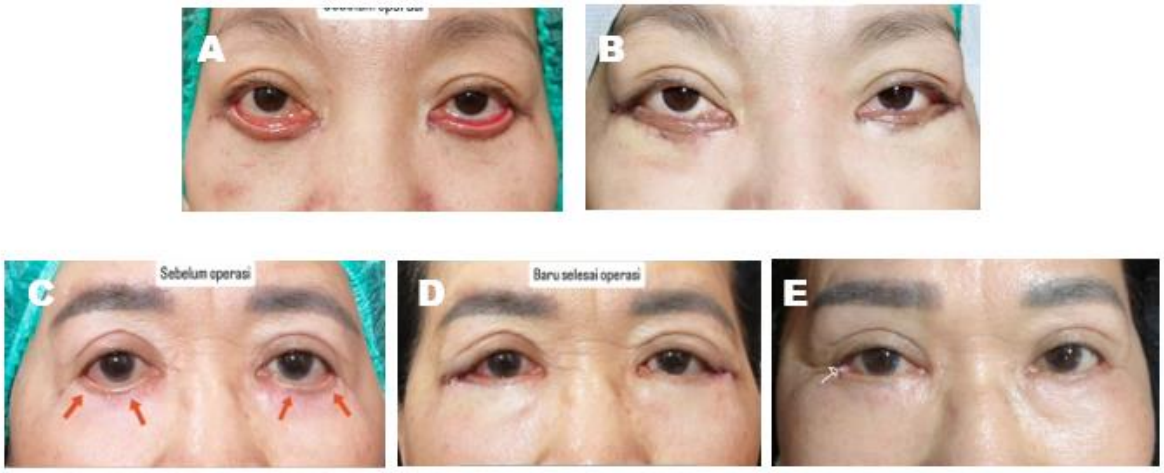

Figure 6. Ectropion. (A and C) Ectropion post lower blepharoplasty. (B and D) The right after ectropion corection surgery. (E) 3 months after surgery. Granuloma at the incision site from absorbable suture, shown by the white arrow.

Described by Gary and Allan in 2016, commonly observed complication with the technique for lower blepharoplasty with LCT tightening include granulomas at the incision site from the absorbable suture.(Linkov & Wulc, 2016) 3 months after the ectropion correction, the patient came back complaining about a granuloma at the incision site from ectropion surgery (Fig.6E). We injected Triamcinolone Acetonide intralesion into the granuloma. After 2 months, the patient said the granuloma has disapperead.

After those ectropion cases, we began to modify the Lower Blepharoplasty technique and combine it with preventive techniques of tarsal and LCT tightening. A patient with doubtful to abnormal snap back and distraction test results, we performed the preventive technique. After that, we no longer found cases of ectropion in our patients. Below are examples of our patients with doubtful to abnormal snap back and distraction test results in Lower Blepharoplasty with tarsal and LCT tightening in Figure 7.

CONCLUSION

This study demonstrates that incorporating preventive techniques such as *tarsal* and lateral canthal tendon (*LCT*) tightening in lower *blepharoplasty* significantly reduces the incidence of postoperative *ectropion*, particularly in patients with doubtful to abnormal results on preoperative *snap-back* and *distraction tests*. Initially, two patients developed severe *ectropion* before the implementation of these preventive methods, requiring corrective surgery

using the lateral *tarsal strip* technique. Following this, a protocol was established to evaluate eyelid laxity preoperatively and apply *tarsal-LCT* tightening in at-risk patients. The success of this approach is evident, as no additional *ectropion* cases were reported among 68 patients who underwent the modified procedure from April 2023 to June 2025. Furthermore, the importance of intraoperative vigilance—such as observing periorbital tension and eyelid-globe contact—was reinforced to detect early signs of *ectropion*. Although one patient developed a granuloma post-correction, it was effectively treated with intralesional corticosteroids. This research suggests that systematic preoperative screening and proactive surgical adjustments can prevent *ectropion* while maintaining aesthetic outcomes. Future studies are encouraged to explore long-term functional and cosmetic outcomes across larger cohorts and assess the integration of adjunct technologies such as real-time intraoperative imaging or biomechanical eyelid assessments to further enhance surgical precision and safety.

REFERENCES

Adifitrian, T., TriHartono, H., & Garnasih, A. I. (2023). A CASE REPORT: ENHANCING TARSAL AND MUSCULAR SUPPORT FOR ECTROPION CORRECTION IN TESSIER 3 AND 5 FACIAL CLEFT. *Jurnal Rekonstruksi Dan Estetik*, *8*(2).

Branham, G. H. (2016). Lower eyelid blepharoplasty. *Facial Plast Surg Clin North Am*, *24*(2), 129–138.

Castañares, S. (1978). Ectropion after blepharoplasty prevention and treatment. *Aesthetic Plastic Surgery*, *2*(1), 125–140. https://doi.org/10.1007/BF01577946

Cruz, A. A. V, & Garcia, D. M. (2021). Re:"Change in Lower Eyelid Contour Following Ectropion Repair With Lateral Tarsal Strip." *Ophthalmic Plastic & Reconstructive Surgery*, *37*(3), 296–297.

Dirim, A. B., Türker, İ. Ç., Doğan, C. U., & Yeşiltaş, S. K. (2021). Comparing surgical results of lower eyelid retractor advancement and retractor advancement with lateral tarsal strip for involutional entropion. *Medical Journal of Bakirkoy*, *17*(3). https://doi.org/10.4274/BMJ.galenos.2021.09821

Fong, K. C. S., Mavrikakis, I., Sagili, S., & Malhotra, R. (2006). Correction of involutional lower eyelid medial ectropion with transconjunctival approach retractor plication and lateral tarsal strip. *Acta Ophthalmologica Scandinavica*, *84*(2), 246–249.

Garza, R. M., Lee, G. K., & Press, B. H. J. (2012). Tarsal ectropion repair and lower blepharoplasty: A case report and review of literature. *Journal of Plastic, Reconstructive & Aesthetic Surgery*, *65*(2), 249–251.

Georgescu, D. (2014). Surgical preferences for lateral canthoplasty and canthopexy. *Current Opinion in Ophthalmology*, *25*(5), 449–454.

Ghafouri, R. H., Allard, F. D., Migliori, M. E., & Freitag, S. K. (2014). Lower eyelid involutional ectropion repair with lateral tarsal strip and internal retractor reattachment with full-thickness eyelid sutures. In *Ophthalmic Plastic and Reconstructive Surgery* (Vol. 30, Issue 5). https://doi.org/10.1097/IOP.0000000000000218

Hou, X., Guo, Y., Li, S., Lin, M., Jia, R., Rokohl, A., & Heindl, L. M. (2021). Lateral tarsal strip procedure for involutional ectropion: A retrospective analysis of 85 cases and a comprehensive literature review. *Advances in Ophthalmology Practice and Research*, *1*(1), 100004.

Kopecký, A., Rokohl, A. C., & Heindl, L. M. (2022). The role of the lateral tarsal strip procedure in modern ophthalmic plastic surgery—A review. *Frontiers in Ophthalmology*, *2*, 871964.

Lee, H., Shin, H., Kim, J., & Baek, S. (2023). Clinical Importance of the Lateral Tarsal Strip Procedure by a Single Experienced Oculoplastic Surgeon: 8 Years of Experience in a Tertiary Medical Center (Cross-Sectional Study). *Journal of Craniofacial Surgery*, *34*(7), 2124–2128.

Linkov, G., & Wulc, A. E. (2016). Management of lower eyelid laxity. *Atlas of the Oral and Maxillofacial Surgery Clinics of North America*, *24*(2), 153–159.

López-García, J. S., García-Lozano, I., Giménez-Vallejo, C., Jiménez, B., Sánchez, Á., & de Juan, I. E. (2017). Modified lateral tarsal strip for involutional entropion and ectropion surgery. *Graefe's Archive for Clinical and Experimental Ophthalmology*, *255*, 619–625.

Pacella, S. J. (2025). Lower Lid Tightening Procedures: How and When. *Clinics in Plastic Surgery*, *52*(1), 43–53.

Pascali, M., Avantaggiato, A., & Carinci, F. (2017). Tarsal strip versus tarsal belt in ectropion correction: a statistical evaluation. *Journal of Craniofacial Surgery*, *28*(2), e186–e189.

Qureshi, Z., Bernard, A., Grisolia, A. B. D., Jaru-Ampornpan, P., Ozgonul, C., & Demirci, H. (2022). Simplified technique for lateral canthal tendon canthopexy. *Indian Journal of Ophthalmology*, *70*(9), 3403–3408.

Rozon, J.-P., Bussières, L., & Black, D. O. (2022). Teaching of the lateral tarsal strip technique using a duct tape simulation. *Canadian Journal of Ophthalmology*, *57*(4), e120.

Sagili, S., & Ha, J. (2019). Lower eyelid retractor (white-line) advancement to correct tarsal ectropion. *Canadian Journal of Ophthalmology*, *54*(1). https://doi.org/10.1016/j.jcjo.2018.02.005

Vydláková, J., Tesař, J., Krátký, V., Šín, M., & Němec, P. (2021). Lateral tarsal strip technique in correction of eyelid ectropion and entropion. *Cesk Slov Oftalmol*, *77*(2), 73–78.

Wesley, R. E. (1982). Tarsal ectropion from detachment of the lower eyelid retractors. *American Journal of Ophthalmology*, *93*(4). https://doi.org/10.1016/0002-9394(82)90139-8