



## Case Report:

**Frontalis Sling Procedure for Blepharoptosis Following Trauma to the Head**Tudjarova Gjorgova Smilja<sup>1</sup>, Srbov Blagoja<sup>2</sup>, Nina Karadjinova<sup>3</sup><sup>1,2,3</sup> University Clinic for Plastic and Reconstructive Surgery - Skopje, Medical Faculty "Ss.Cyril and Methodius", North Macedonia**ARTICLE INFO**Published Online:  
30 March 2022**ABSTRACT**

Blepharoptosis is a relatively common condition and the treatment remains unpredictable as the choice of one of the many surgical options relies on the cause of the ptosis. We report a case of severe blepharoptosis, the surgical technique, the materials that were used the post-op outcomes. Frontalis suspension is a commonly used surgery that is indicated in patients with blepharoptosis and poor levator muscle function. This surgery connects the eyelid to the brow with a sling material and utilizes the power of the frontalis muscle to elevate the poorly functioning eyelid. In our discussion we propose possible treatments in severe blepharoptosis such as resection and advancement of the levator aponeurosis, The Whitnall sling procedure, the frontalis muscle flap procedure, use of fascia lata, and Müller's muscle-conjunctival resection surgery. We elaborate on our predilection for use of the Frontalis sling procedure. Even though our patients may suggest that using general anesthesia is better for their comfort we prefer, and recommend the use of local anesthesia with intravenous sedation due to the advantage of the ease in balancing the lids during surgery. Deciding on which technique to use depends on many factors such as the operator experience, their comfort level with various techniques, the degree of ptosis of levator muscle function.

**Corresponding Author:**Tudjarova Gjorgova  
Smilja**KEYWORDS:** Frontalis Sling, Straight Needle, Blepharoptosis, Unilateral, Woman.**INTRODUCTION**

Blepharoptosis is a relatively common condition, and It's frequently encountered by ophthalmic and plastic surgeons. The treatment remains unpredictable and the choice of one of the many surgical options relies on the cause of the ptosis and the amount of levator muscle function. Blepharoptosis is a condition when a patient has drooping of the upper eyelid to a lower than normal.[1] Detailed history taking, degree of ptosis, the levator function, the anatomic basis of the ptosis and lid crease, and a historic review of surgical procedures.[2] For poor levator muscle function procedure as frontalis suspension is a commonly used surgery that is indicated in patients with blepharoptosis. This surgery connects the eyelid to the brow with a sling material and utilizes the power of the frontalis muscle to elevate the poorly functioning eyelid.[3] We report a case of using the frontalis sling procedure.

**CASE REPORT**

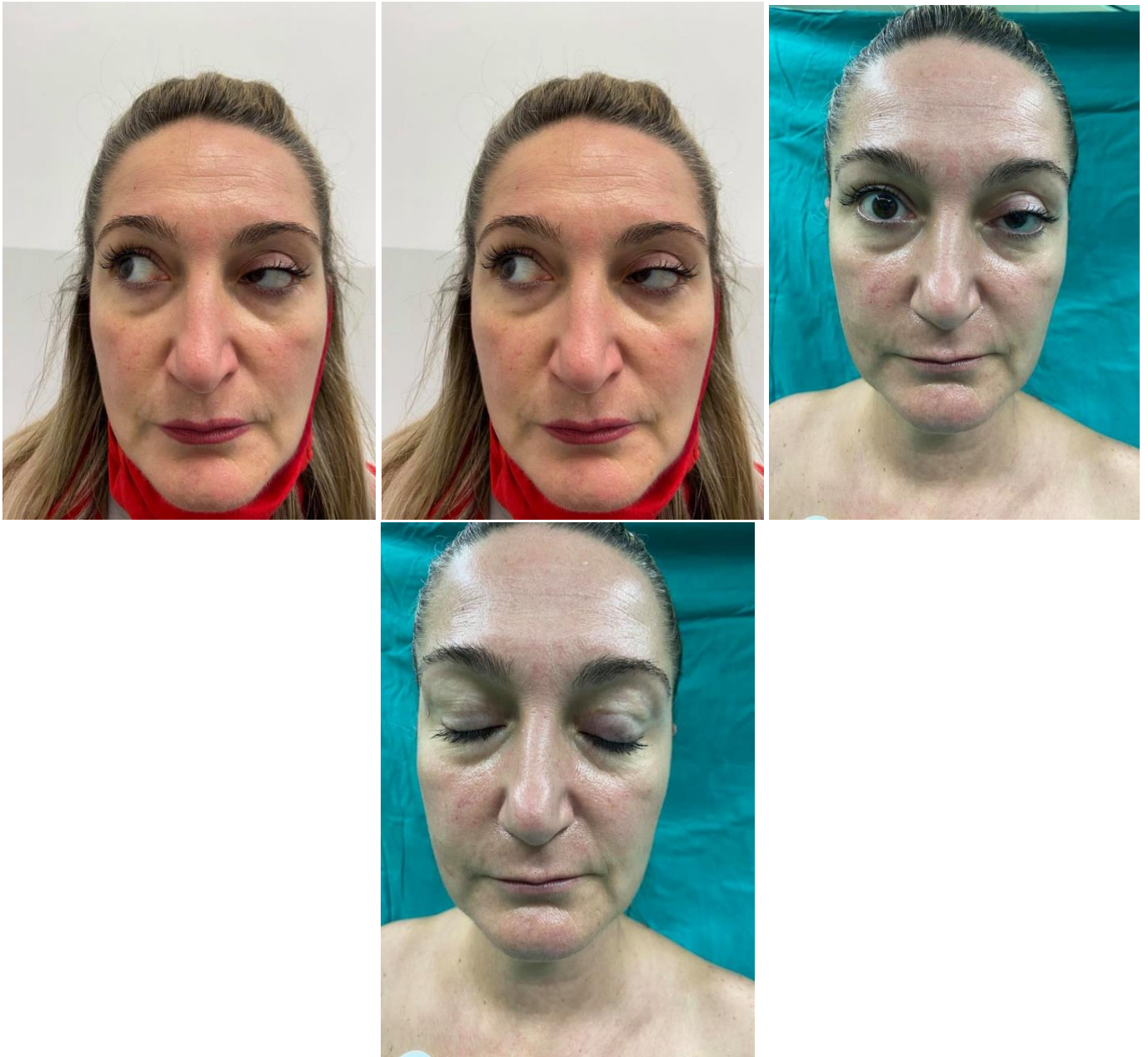
A 37-year-old woman was admitted to our hospital in October 2020 for surgical treatment of blepharoptosis. She developed this condition after sustaining a traumatic injury. The reconstruction was carried out under local anesthesia with intravenous sedation (Fig. 1). To achieve an analgetic state of

the surgical area we use an anesthetic solution of 2% Lidocaine with adrenaline. A solution of Tetracaine was used to numb the eyes. On the upper border of the eyebrow, a small incision was made in the skin and subcutaneous tissue to reach the frontal periosteum (Fig. 2). Using a straight needle and a 4-0 silk, we thread down through the center of the lid. Just below the m. orbicularis oculi, an exiting point is made mid pupillary a few millimeters above the lash line. The first strand is threaded using the same midline exit point to pass medially for 10 mm. When passing through the same exit point, we carry on vertically just under m. orbicularis oculi and going under the brow we exit few millimeters to the central incision. To complete the lateral ring, we pass the thread to the central incision and the same procedure is done with another needle. After the medial and lateral loops are performed, we have done a quadrangular pattern of loops. Within, the two rings are completed by bringing the threads through the first central incision. This procedure should be fast and should not take more than 15 minutes. It is very important to balance the lid elevation. We can do that by telling the patients to balance the lid. The skin was closed using Monocryl 4-0. Sterile non-adhesive gauze was applied to the wound. After the procedure the patient was in the

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hospital for one day (Fig. 3) during which she received intravenous antibiotics, Ceftriaxone 2 grams once daily and, analgesics for control of pain. During her follow-up after two

weeks, one month, and three 3 and 6 months, the patient expressed satisfaction with the results and her overall hospital experience.

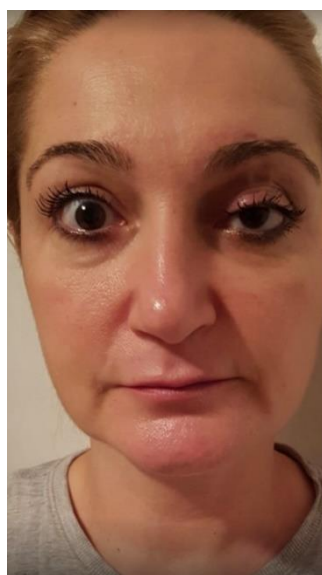


**Fig. 1.** Pre-operative

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**Fig. 2.** Intra-operative



**Fig. 3.** Out-patient at one-month post-op



**Fig. 4.** Six -month follow-up

## DISCUSSION

Even though ptosis occurs due to direct or indirect trauma to the levator muscle. Some injuries involving the levator can be repaired right away. However, ptosis secondary to blunt trauma may go away spontaneously. If the ptosis does not improve after 6 months, then a surgical repair may be necessary.[4] Many factors may have an impact on the outcome, such as gender, age, cause of the ptosis, degree of the ptosis, the function of the frontalis and levator muscle. In one study Amer S Al Mansory concludes that using silk suture as a sling material is recommended for male patients, as its use produces better results, including eye symmetry and patient satisfaction. The complication rate is lower in men compared with that in female patients.[5] The surgery technique previously described has changed the way we treat our patients. The frontalis sling procedure has been really popular for the past few years in treating patients with blepharoptosis. Other procedures that are possible in treating blepharoptosis are resection and advancement of the levator aponeurosis, The Whitnall sling procedure, the frontalis muscle flap procedure, using fascia lata and, the Müller's muscle-conjunctival resection surgery.[6] S M Betharia [7] presented the disadvantages for use of the traditional frontalis sling procedure. The author notes the risk of lagophthalmos, scarring in young children, unsatisfactory geometric tenting of the pretarsal and skin, loss of the eyelid crease, and a poor tarsal and corneal interface seen upon brow elevation and down-gaze. Cates and Tyers et al.[8] reported that levator resection and advancement has been successful in 74% in six months post-op. They also note that increasing levator function may lead to an increased risk of overcorrection. Anderson et al.[9] have done a study in which they use The Whitnall sling procedure. They concluded that using this procedure may lead to a high incidence of late under correction. The frontalis flap muscle procedure was described in one study by S H Goldey et al.[10] where they report that

the primary advantage of frontalis muscle flap advancement over a graft or suture material that it elevates the eyelid directly. It is designed by moving the insertion of the frontalis muscle into the eyelid, rather than by graft or suture material. Some of the complications using these procedures were described such as transient postoperative forehead anesthesia with spontaneous recovery, eyebrow asymmetry, reduced eyelid excursion with an extreme upward and downward gaze, lagophthalmos, and overcorrection possibly due to the frontalis muscle being stronger than the levator muscle.[6] When using Müller's muscle-conjunctival resection surgery, it may lead to corneal abrasions, ulcerations secondary to suture material irritation. They also describe complications such as hemorrhage, infection, and over-or under correction. The study from Mercandetti Met al.[11] state that this technique does not allow for intraoperative adjustment of the eyelid height and every estimation of the proper resection length must be made preoperatively. In one study from the past year, Ali Adawal Ali et al[12] report that frontalis suspension surgery using double threading of proline and a cannula can be considered as an effective method for treating cases of severe ptosis. They say that the overall recurrence rate of ptosis was in five lids, most of which was in young patients. Other complications were incomplete closure in 2 lids, overcorrection in 1 lid, and corneal exposure and exposure keratitis in 1 eye. S M Balaji [13] compares the outcomes of frontalis sling and fascia lata and silicone aurosling for congenital unilateral eye ptosis. The frontalis sling procedure has a lot of modifications. Some of them may emphasize the lid crease formation [14] as they make the incisions higher than the usual 2mm above the lash line. They also report that they prefer to insert material within the eyelid in a pentagonal configuration. Using this method, one can more effectively transfer the power of the frontalis muscle to the upper eyelid due to the increased bulk of upper eyelid tissue engaged with the sling material. Even though our

patients may suggest that using general anesthesia is better for their comfort, we primarily recommend using local anesthesia with intravenous sedation, easy balance the lid during surgery. One study [15] reports that there was no statistically significant difference in the parameters when choosing the type of anesthesia. The use of local anesthesia is easier, of less risk, and lower cost with the same aesthetic results as general anesthesia. This procedure does not require a lot of materials and it is not time-consuming.

## CONCLUSION

Deciding which technique to use will depend on many factors such as the experience and comfort level of the surgeon with various techniques, the degree of ptosis in the patient, and the degree of levator muscle function. Current recommendations for the correction of ptosis vary by the clinical scenario. This procedure has better results in men. It has been reported, the congenital ptosis has better outcomes than the one caused by other factors. The complications described in the medical journals are mostly the formation of a foreign body due to the sutures that are used. Even though this procedure relatively new for blepharoptosis treatment, we recommend using the frontalis sling procedure as it is very effective, and pain-free.

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