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## A NEW TECHNIQUE FOR TOTAL RECONSTRUCTION OF THE LOWER LID

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**William C. Lineaweaver, MD**

*Annals of Plastic Surgery*

**Dear Editor,**

I am writing to submit a new original manuscript entitled “**A New Technique for Total Reconstruction of the Lower Lid**” for publication in your journal. Thank you for your consideration.

With best regards,

Assist.Prof.Metin TEMEL, MD

## **A New Technique for Total Reconstruction of the Lower Lid**

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**Running Title:** Reconstruction of the Lower Lid Defects

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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## A NEW TECHNIQUE FOR TOTAL RECONSTRUCTION OF THE LOWER LID

### ABSTRACT

**Background:** Although several methods have been described for total lower eyelid reconstruction, it remains as a major challenge in reconstructive surgery. Here, we present a new technique namely Mutaf's unequal-Z-plasty procedure for reconstruction of defects of the lower eyelid.

**Methods:** In this technique, two skin flaps designed in an unequal Z-plasty manner are used to provide skin coverage. Except two patients whom an additional upper eyelid defects were closed with Fricke flap, all patients reconstructed with Mutaf's unequal-z-plasty procedure. The conjunctival and tarsal defects are reconstructed with composite chondrocutaneous from ear, mucocondral grafts, harvested from the nasal septum. Over 12 years, this new technique was used in 24 patients, as 13 males and 11 females, with total and subtotal lower eyelid defects resulted from excision of basal cell carcinomas. The age range of the patients was between 45-72 years.

**Results:** There was no complication such as ocular irritation or postoperative epiphora because of ectropion or entropion, all patients healed uneventfully. A mean follow-up of  $4.7 \pm 2.15$  years (between 1 to 9 years) revealed a functionally and cosmetically satisfactory total lower eyelid reconstruction in all patients.

**Conclusions:** This new technique seems to be a useful alternative for reconstruction of total and subtotal lower eyelid defects. The procedure appears to be superior since it requires considerably shorter operating time with no risk of flap failure. Moreover, in this technique, like local skin presenting an excellent color and textural match reconstructs total and subtotal lower eyelid defects extending the infraorbital area.

**Key Words:** Total lower eyelid reconstruction, Unequal z-plasty; The Mutaf's triangular closure technique.

## INTRODUCTION

Lower lid defects are often resulted from surgical excision of the skin cancers, trauma, and burns and congenital <sup>1</sup>. Although several techniques have been describing for reconstruction small and medium lower lid defects, total lower lid defects require further surgery. Because of lower eyelid is an important functional and aesthetical unit, reconstruction of its have been always a difficult ask for reconstructive surgeons because of its peculiar anatomy and unique tissue composition. Here, we present a new technique for one-staged reconstruction of complex total and subtotal defects of the lower lid reconstructions.

## MATERIAL AND METHOD

### *Study Design and Patient Selection*

All procedures performed in this study were by the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical norms. Patients gave informed consent before enrollment in the study. Over 12 years (between 2003-2015), this new technique was used in 24 patients, as 13 males and 11 females with total lower eyelid defects resulted from excision of basal cell carcinoma and trauma. The age range of the patients was between 45-72 years (Table 1).

The diagnosis of BCC was confirmed by preoperative biopsy in twenty-two patients. 9 of the patients had right lower eyelid and 15 of the patients had left lower eyelid involvement. Two of the four patients had involvement of lateral canthal and lateral 1/3 of upper eyelid region involvement; the rest 2 patients had medial canthal area and medial 1/4 of the upper eyelid involvement. A total of 22 patients with BCC, 4 of the patients was recurrent, the remaining 18 of them it was primary. Before the operation, an ointment with antibiotic was applied to the eye, and a protective lens was deployed. After excision of the tumor with an intact margin of 5 mm, the resultant defect is photographed and for the layers of the defect

must be repaired properly surgical plan is done on the computer to determine the best flap design and orientation according to the individual requirements of each patient. Total excision of the tumor was confirmed by frozen section and reconstruction was performed. Planning to close the defect created in the form of a triangle can be done in vertical or horizontal. This planning will be shaped according to scar. A vertical scar that cuts through the eyelid margin should not be preferred because of the contraction may cause ectropion. The direction of the resultant scars seems to be another critical factor dealing with this flap. Repair of mucosa and tarsus should be made before closure of the skin according to the needs of patients.

For reconstruction of conjunctiva and tarsus, chondrocutaneous composite grafts were used in the 16 patient and the other eight patients mucocondral composite grafts from nasal septum were used. Conchal cartilage fitting the size of the defect was obtained and was sutured to the defective region with the concave side facing the eye. In one patient whom the nasolacrimal duct was affected by the tumor, reconstruction of the lacrimal duct (Table 1) was done with a silicone tube (Jones tube) after tumor excision. Composite grafts are sutured under slight tension to the defect of the conjunctiva using inverted interrupted 6-0 vicryl sutures.

Seventeen of the 24 patients were anesthetized with local infiltration of 2% lidocaine with 1:200,000 epinephrines. Other patients, whose tumor affected the eyelids, medial canthus or nasolacrimal ducts required general anesthesia. We do not use a corneal protector.

### ***Surgical Procedures***

Following tumor resection with a proper intact surgical margin, the resultant defect is surgically converted to an acute triangle (ABC) as the base of this triangle (AB) corresponding to the intercanthal line (Fig.1). The flaps are outlined on the patient, using a ruler and a sterile skin marker. First, an imaginary point (a) is defined on the lateral margin (AC) of the triangle as the distance from the corner A to this point is equal to the base of the

triangle. Then, two flaps are outlined in an unequal-Z (45°/60°) manner. For this, beginning from point “a”, the central limb of Z-plasty equal to the long margin (AC) is drawn with an angle of 60°. Then, by drawing the upper limb of the Z-plasty with an angle of 45°, two triangular flaps as Flaps A and B are obtained. Once the flaps are elevated, Flap A is transposed over the defect area, and Flap B has used for closure the donor defect of Flap A. According to various alternatives of defects, different flap positions shown in figure 2.

A chondral graft was placed to the posterior lamella of the lower eyelid to avoid scleral show and to reduce the lower eyelid laxity. The flaps were hanged by a 3/0 round needle monofilament non-absorbable suture to the holes opened over the inferior orbital rim to avoid ectropion and flap drooping due to gravity at the late period (Figure 6B). The wound closure was done in layers, using 4/0 vicryl for subcutaneous tissue and 5-0 polypropylene for the skin. In all patients, the sutures were removed at the 6th postoperative day. No systemic antibiotic was used.

### ***Illustrative Case Reports:***

***Case 1:*** A 58 years old male was referred to our institution with a basal cell carcinoma involving the entire left lower eyelid that was present for ten years (Fig.3). He is an outdoor worker. He has been working at his work for 45 years. He has no family history. On local examination, he had an ulcerative lesion involving medial canthal region, 1 to 4 of upper eyelid medially, lacrimal caruncle, superior and inferior lacrimal papilla and puncta and lacrimal canaliculi besides total of the lower eyelid. There were no palpable lymph nodes at the parotid region. The excision was done 5 mm far away from the surrounding of the lesion under general anesthesia. The lacrimal canaliculus and the lacrimal sac and nasolacrimal ducts were included in the specimen. The total defect was reconstructed with a horizontally planned V-Z flap. The conchal cartilage of the left ear was used for inferior tarsus reconstruction, and the saphenous vein was used for lacrimal canaliculi and conjunctiva reconstructions. Upper

and lower eyelids were separated from each other following three weeks after the first surgical operation.

**Case 2:** A 64 years old male admitted our clinic for ectropion resulted with a chronic ulcerative lesion on his right lower eyelid (Fig.4). He had this lesion for six years. He has been working a farmer for 50 years. He has no family history. On local examination, he had a scarrical ulcerative lesion on total of right lower eyelid and inferior lacrimal papilla and puncta. There was no any palpable lymph node at the parotid region. A complete tumoral resection was performed 5 mm far away from the surrounding of lesion, including the (1) complete lower lid, (2) lower ocular conjunctiva, (3) lower extraocular muscles, (4) lacrimal lower canaliculus, under local anesthesia. The surgical reconstruction was planned as follows: (1) soft tissues by a V-Z flap, (2) tarsoconjunctival layer by conchal cartilage and skin composite graft from right ear, and (3) lacrimal drainage by a conjunctivorhinostomy with tube of Jones.

**Case 3:** A 56 years old female patient admitted to our clinic with an ulcerated lesion which involved the  $\frac{3}{4}$  of the right lower eyelid, lateral canthal region and  $\frac{1}{4}$  of the upper eyelid (Fig.5). The incisional biopsy revealed that the lesion was BCC. The patient underwent surgical resection under general anesthesia. The involved tissue resected with a 5 mm surgical border. For the reconstruction of the lower eyelid tissue defect, a chondrocutaneous composite graft was used for restoring posterior lamellar region and a vertically planned triangle flap was used for reconstructing the anterior lamellar layer. For the reconstruction of the upper eyelid defect, a two stage Fricke flap was planned. View of the first stage. Late period view.

**Case 4:** A 54 years old female patient admitted to our clinic with an ulcerated lesion which involved the  $\frac{4}{4}$  of the right lower eyelid, the lateral cantal region and  $\frac{1}{3}$  of the upper eyelid (Fig.6). The incisional biopsy revealed that the lesion was BCC. The patient underwent surgical resection under general anesthesia. The involved tissue resected with a 5 mm surgical

border. For the reconstruction of the lower eyelid tissue defect, a chondrocutaneous composite graft was harvested from the right ear and used for restoring posterior lamellar region. The composite chondral graft was stabilized to the infraorbital rim by suturing with non-absorbable sutures the holes that created over infraorbital rim by a drill. A horizontally planned triangle flap was used for reconstructing the anterior lamellar layer and lower eyelid. For the reconstruction of the upper eyelid defect, a one stage Fricke flap was designed. The Fricke flap was transferred to the defect area by a tunnel and the part of the flap that was under the tunnel tissue was deepithelised.

**Case 5:** A 54 years old male patient admitted to our clinic with an ulcerated lesion which involved the 4/4 of the lower eyelid (Fig.7). The incisional biopsy revealed that the lesion was BCC. The patient underwent surgical resection under general anesthesia. The involved tissue resected with a 5 mm surgical border. For the reconstruction of the lower eyelid tissue defect, a chondrocutaneous composite graft was harvested from the right ear A vertically planned triangle flap was used for reconstructing the anterior lamellar layer.

## **RESULTS**

The authors successfully carried out this procedure on 24 patients. Afterward, the lower eyelid was reconstructed by performing the proposed technique. There were totally four patients whose medial and lateral canthal regions and upper eyelids influenced. 2 of these four patients' medial canthal region and ¼ upper eyelid influenced. The glabellar flap was applied for 1 of these two patients, and two stage Mutaf's unequal-z-plasty procedure was applied to another patient. Other 2 of these four patients' lateral canthal region and 1/3 upper eyelid affected. Lateral canthal region and upper lateral eyelid were reconstructed by Fricke flap for another two patients. 6 patients had lower eyelid tumors located medially and very closer to the canaliculus. Thus, 4 of the six patients, underwent conjunctivorhinostomy by Jones tube.

For the 2 of 6 patients the lacrimal drainage system reconstruction was performed by a saphenous vein graft. There was no patients had received radiotherapy before the operation.

Antibiotic-corticosteroid eye drops are recommended three times a day for 1 week. There was no patient with flap failure, hematoma or infection in the orbital area and none of our patients needed artificial tears beyond the postoperative period. There was no patient with ectropion and epiphora. A mean follow-up of  $4.7 \pm 2.15$  years (2-8 years) revealed a functionally and aesthetically acceptable result in all patients. There was no tumor recurrence in any patient. The results were entirely satisfactory from a functional and aesthetic point of view.

## **DISCUSSION**

The eyelids are complex structures, and their ideal reconstruction should repair as many of the missing elements as possible, replacing them with tissues of identical or similar structure. When a total lid reconstruction is planned, three main layers must be restored: (1) the external or skin, (2) the medial, and (3) the internal or conjunctival. The defects of the lower eyelid smaller than 1/3 of the whole lower lid's lengths are suitable for primary closure. However, the larger defects require further surgical procedures. Although many operative techniques were defined for the lower eyelid reconstruction, there is no ideal technique to be used for all defects yet.

In the previous literature, when a defect is larger than 1/3 of the whole lower lid's length, <sup>2</sup>, it is advisable to use the advancement or transposition flaps from the cheek <sup>3-6</sup>; Hughe's tarsoconjunctival flap <sup>5,6</sup>, the medial and lateral forehead regions flaps or nasolabial flaps, nasolabial composite free flap, should also be considered <sup>4,7-17</sup>. The most commonly used donor site for the reconstruction is the ipsilateral eyelid, and some well-established procedures have been described <sup>13,18,19</sup>. This excellent source of tissue is, of course, available for reconstruction only in limited supply and sometimes the need for other donor sites areas.

The Mustarde's cheek flap needs a full dissection, and it can be done in elderly patients, but it is not suitable for young patients. Ectropion in the late period due to gravity and wound contraction is another disadvantage of this flap <sup>20</sup>. Rotational tarsal flaps from the lid remnant avoid the problem but can be used only for small defects. Orbicularis oculi myocutaneous flap must be raised by careful dissection and the size of the flap sometimes is not enough for reconstruction of the ultimately lower lid <sup>21</sup>. Upper eyelid musculocutaneous flaps were used for lower eyelid <sup>22</sup>. This flap wide is limited with upper eyelid. So it could not use for wide lower eyelid defect. Forehead flaps may be used for total lower eyelid reconstruction. However, they often require a two-staged surgical procedure. Moreover, forehead skin is extremely thick and bulky for lower eyelid, donor site scar is quite visible, and in late period depending on gravity, ectropion develops <sup>23,24</sup>. The glabellar flap can reconstruct the wide defect on lower lid <sup>25</sup>. Donor site defect is covered with skin grafting, and also two stage operations are needed. The Hugh's tarsoconjunctival flap is another alternative method for the reconstruction of lower eyelid defects. However, this method inevitably must raid the unaffected upper eyelid for donor tissue, which is a major disadvantage. Besides when a full thickness defect is substantial, it can not be reconstructed with a tarsoconjunctival flap alone. Moreover, this technique is a two staged procedure in which the eye must remain closed until the second stage <sup>26</sup>. We believe that the technique of Scuderi et al. <sup>27,28</sup> in which they reconstructed the posterior lamellar layer by chondromucosal island flap is limited by some factors as need of a skin graft for anterior lamella reconstruction, loop dissection, scarring of lateral aspect of the nasal skin, need of late period revisions, the nasal valve distortion resulted by scarring due to the incision of nasal cartilages and late onset of ectropion of the eyelid because of the skin graft contracture which is used for anterior lamellar reconstruction.

Even deltopectoral flap and free flaps (such as the dorsalis pedis, radial forearm flap, free posterior auricular chondrocutaneous flap)<sup>29-32</sup> have been considered as an option, but only for simultaneous upper and lower reconstructions. Although such flaps are suitable alternatives for large defects of the periorbital region, they have a high morbidity due to removal of large tissue. Also, these flaps are very bulky, and thinning of the flap is often required. Eyelid retraction in the long term is another disadvantage of such techniques. In partial defects, the color and tissue compatibility of these flaps are unfavorable<sup>33,34</sup>

The Mutaf triangular closure procedure, was first described by Mutaf et al.<sup>35</sup> in 2007. They reported the use of MTC procedure for the closure of large meningomyelocele defects. To our knowledge, this is the first clinical series of the use of this procedure for the reconstruction of total lower lid defects. We present this new technique for reconstruction of the entire lower lid defects by manufacturing a three layer composite skin-cartilage-mucosal unit that is three-dimensionally and anatomically tailored. The V-Z flap is a random local flap technique. There is no need for skin graft for cover donor site defect. Donor site could closure primarily. The cheek tissue is use for closure of lower eyelid defect and so this flap can cover the wide defects. However, V-Z flap is not cover only lower lid. It may use for near the total defects of both eyelids at same side. However, as shown in case 1 whom, loss of the total lower eyelid, medial canthus and with 1/5 of the upper eyelid and had a defect and all the skin defects were repaired with a single flap. Three weeks after the first operation is divided into upper and lower eyelids cut off from each other. This method is a simpler, single-stage process; does not damage the upper lid; and, above all, is less invasive than other techniques, and at the same time allows a good functional and aesthetic reconstruction. It presents the reconstructive surgeon with several advantages over other methods. Our technique has the advantage of being a one-stage procedure. There have been other descriptions of pedicle or free prefabricated flaps for the reconstruction total and subtotal defects of the lower eyelid in

the literature. Unfortunately, they are complex and time-consuming procedures. Our procedure is a simpler, does not require long term eye occlusion and time-saving alternative for eyelid reconstruction.

If the advantages of this technique to count; similar colors and textures was used, the flaps has an good and reliable blood supply and provides adequate and sufficient tissues, excellent aesthetic and functional reconstruction of lower eyelid to be provided, one stage operations are more acceptable surgical procedures for patients. Flap donor area is closed primarily due to graft and the graft donor area scar formation of the complications were encountered in the field. Tarsus reconstruction using cartilage to keep the eye open and prevent the development of ectropion.

The major disadvantage of this technique is that it is not convenient for the patients with the large unclosable defects by local flaps whom underwent surgical excisions and patients who received radiotherapy or need egzanteration. Also residuel scarring over the cheek region and a distortion of the cheek and nasolabial region may occur after flap transposition.

## **CONCLUSION**

As a result of other flap procedures, the procedure seems to be superior since it requires considerably shorter operating time with no risk of flap failure. Moreover, in this technique, a like local skin presenting an excellent color and textural match reconstructs total and subtotal lower eyelid defects extending the infraorbital area. In the same operation, the four-layer reconstruction and lacrimal canal drainage could be done. With careful surgical planning, the final scars can be aligned with the relaxed skin tension and/or the contour lines.

Total lower lid reconstruction is a one-stage procedure that can take place even under local anesthesia with sedation. The procedure ensures good functional and aesthetic results because it repairs all the missing tissue levels.

## **ETHICAL APPROVAL**

All procedures performed in studies involving human participants were by the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## **CONFLICT OF INTEREST**

The authors declare that they have no conflict of interest.

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## FIGURE LEGENDS

**Figure 1.** The design of Mutaf's triangular closure technique adapted to the lower lid region.

- A. Flap design for vertically oriented to total lower lid defects.
- B. Once the flaps are elevated, "flap A" is transposed over the defect area and "flap B" is used for closure the donor defect of "flap A".
- C. The skin flaps were fixated with non-absorbable sutures upwardly to the infraorbital rim
- D. The wound closure was done in layers.

**Figure 2.** Various designs of Mutaf's triangular closure technique for different defect positions and view of final scars

- A1-2. The horizontal flap planning for the total laterally located lower lid defects and the view of proposed scarring.
- B1-2. The horizontal flap planning for the total medially located lower lid defects and the view of proposed scarring.
- C1-2. The vertical flap planning for the total medially located lower lid defects and the view of proposed scarring.
- D1-2. The vertical flap planning for the laterally located total lower lid defects and the view of proposed scarring.

**Figure 3.** A 58 years old male was referred to our institution with a basal cell carcinoma involving the entire left lower eyelid that was present for ten years.

- A. The BCC that involved the total lower eyelid and the  $\frac{1}{4}$  of the upper eyelid.
- B. Computer-assisted preoperative planning.
- C. The intraoperative markings of triangular defect closure technique.
- D. The reconstruction of the conjunctiva and the tarsus by condral graft.

E. The reconstruction of the lacrimal drainage system by the saphenous vein and one of its branches.

F. The view of the opaque solution drainage from the conjunctiva to the lacrimal system.

G. The fusion of the lower and upper eyelids after the first operation.

H. The anterior view of the upper and lower eyelids after the separation of the eyelids.

I. The lateral chin-up position view of the bilateral lower eyelids focused on the symmetry. The picture is taken in the late postoperative period (1st postoperative year).

**Figure 4.** A 64 years old male patient.

A. The view of the preoperative anterior aspect

B. Computer-assisted preoperative planning.

C. Surgical plan

D. Excisional defect

E. Immediate postoperative view

F. Late postoperative view after one year.

**Figure 5.** A 56 years old female patient.

A. Surgical plan

B. Excisional defect

C. View of the first phase. Incisions and flap elevation with supra-SMAS dissection.

Transposition of flaps and view after suturation.

D. The postoperative 2nd-week oblique position views taken after the second stage.

E. The postoperative 1st year views taken at the closed situation of the eyelids.

F. Late postoperative anterior view after 1 year.

**Figure 6.** A 54 years old female patient.

A. The view of the tumor that involved the whole lower eyelid and the 1/3 of the upper eyelid and the horizontally planned triangular flap.

B. A chondrocutaneous graft was taken from the right ear for the posterior lamellar reconstruction of the lower eyelid defect which covered by triangular flap previously. For the posterior lamellar reconstruction, a Fricke flap and a triangular flap was transferred. The chondral graft was secured to the infraorbitally created holes by polypropylene sutures for stabilizing the tarsus.

C. View after suturation

D. The postoperative second-month view.

**Figure 7.** A 54 years old male patient with a tumor invaded total of the lower eyelid.

A. The intraoperative planning.

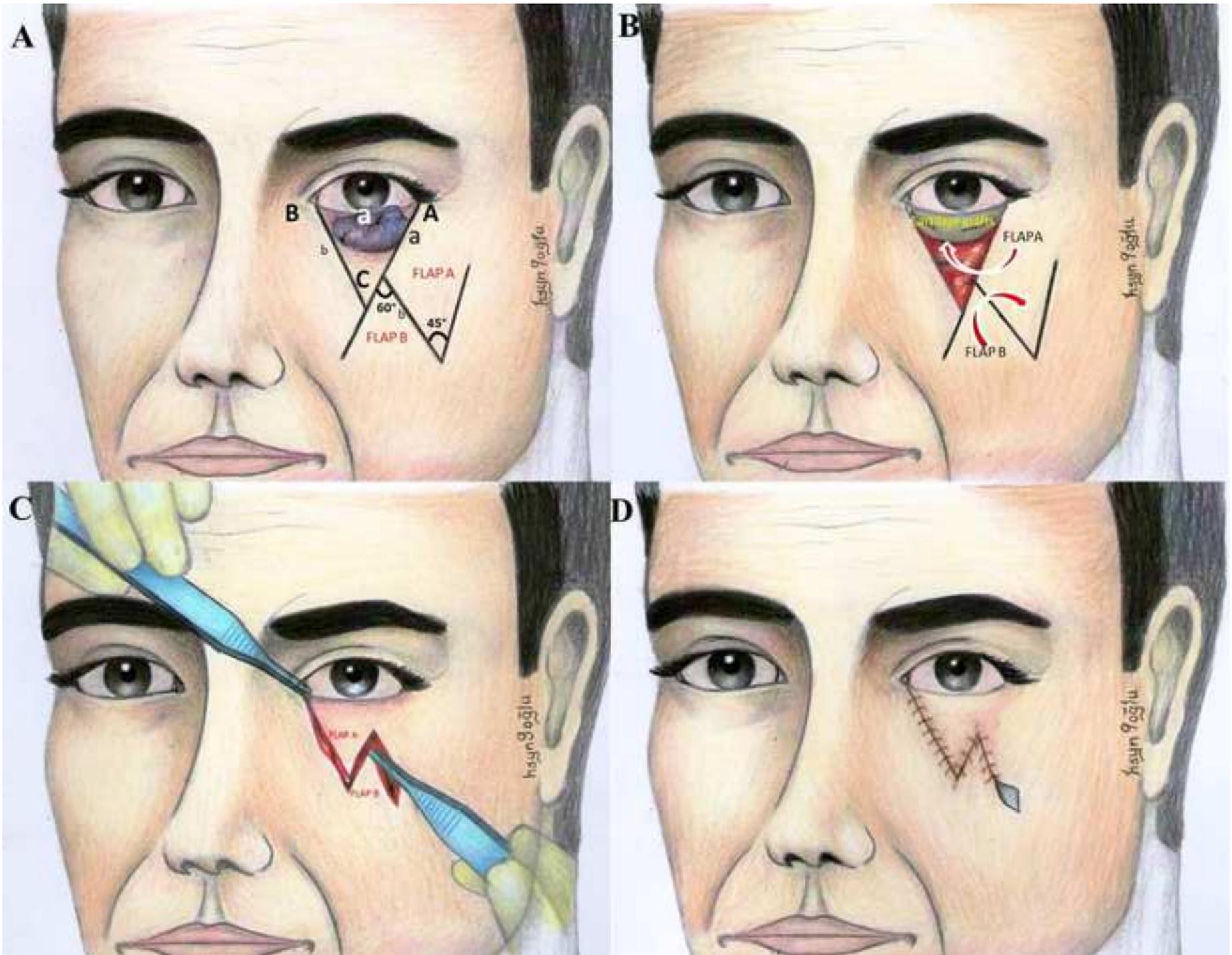
B. Excisional defect and incisions and flap elevation with supra-SMAS dissection.

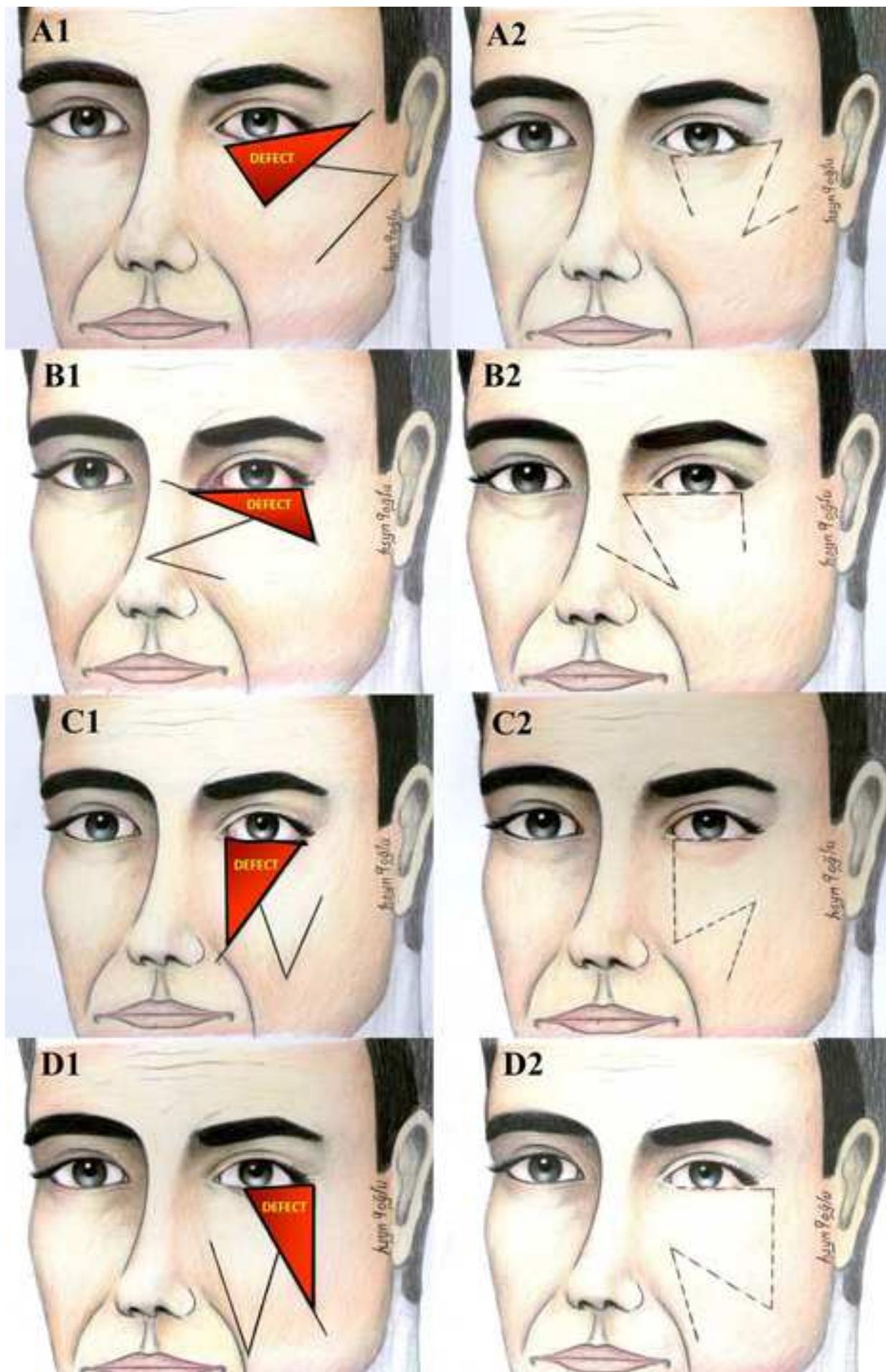
C. View after suturation.

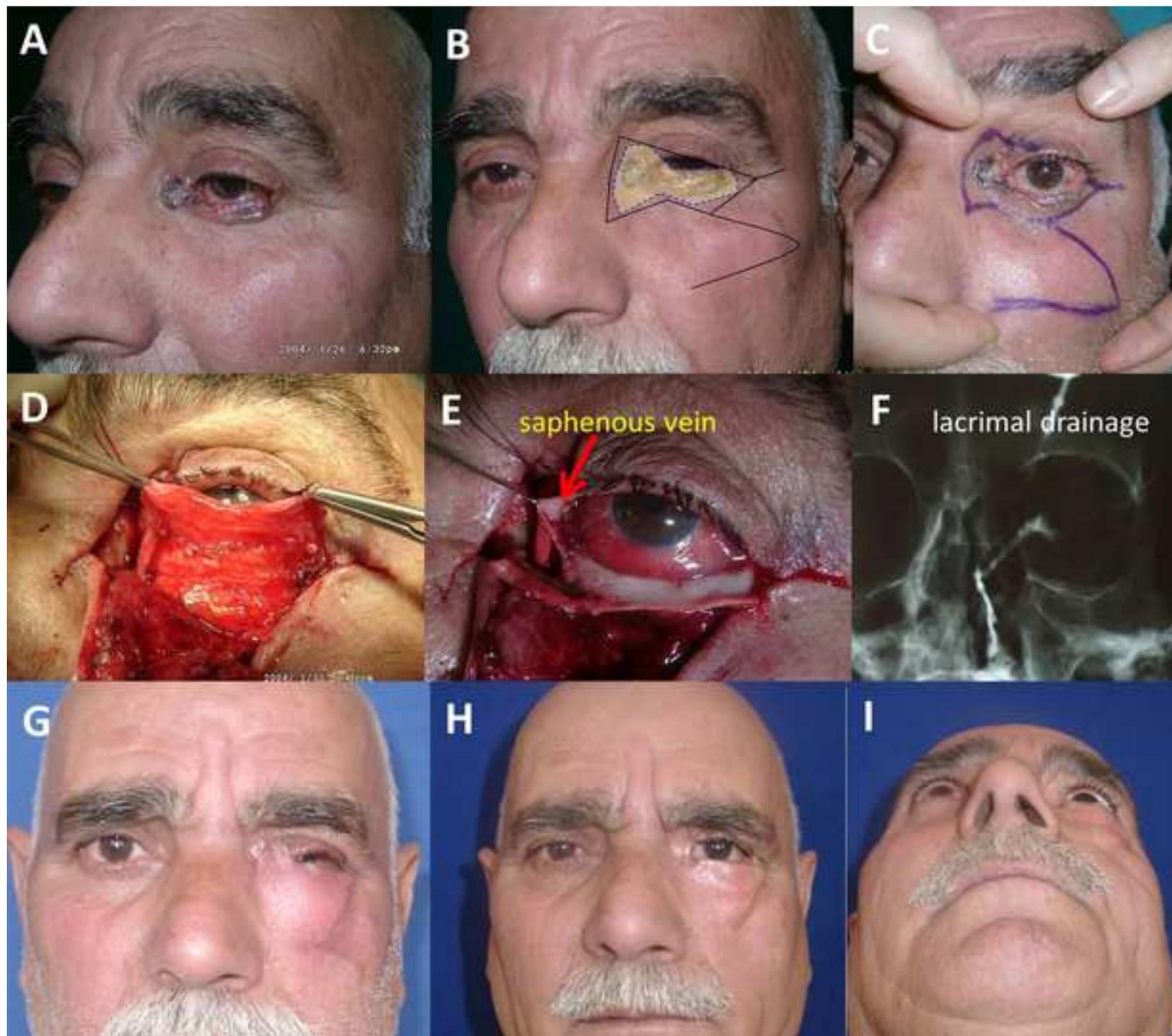
Table1. Clinical data

Demographic data of Patients	N=24 / Med±SD
Mean age (years)	56.8 ± 8.3
Follow-up period (years)	4.7 ± 2.15
Sex (Male-Female)	13M / 11F
General / local anesthesia	7 / 17
Location of the lesions	
Medial total lower eyelid	n=5
Lateral total lower eyelid	n=6
Central lower eyelid	n=13
Etiology	
Trauma	n=2
BCC	n=22
Primary	n=18
Recurrent	n=4
Reconstruction of conjunctiva and tarsus	
Chondrocutaneous composite grafts from ear	16
Mucocondral composite grafts from nasal septum	8

Median±SD: Median±standart deviation















Dear Editor,

Thank you very much for the responses and comments to you and the reviewers. We made the necessary corrections as you mentioned. Many thanks again.

The changes made in text accordance with Reviewers. All comments were answered point by point.

**ANSWERS TO THE REVIEWER:**

Dear Reviewer; we are so grateful for your kind consideration about our study. We have carefully considered your advices and tried to revise our manuscript as you have advised.

**Reviewer #1:** *The authors describe a novel technique to achieve total reconstruction without the use of microsurgery. I think they present a good work.*

Thank you for your comments.

*Nevertheless, please divide materials and methods section into 2 separate section.*

As for your recommendation we divided the material and method into two sections.

*Please clarify if the BCC the treated were all primary lesion or recurrences.*

We added the features of the primary of recurrent BCC lesions in the material and method sections.

*If I understood the technique, the flap they use, has a random vascular pattern and as such some factors would limit the use of this flap: radiotherapy (minor skin movements) and prior surgery in the locoregional tissue of the orbit.*

I agree with your comments. We plan the flaps as random pattern. As you mentioned, the application of this technique may be difficult for the patients who previously received radiotherapy. The residual defect area may be larger after the excision of the recurrent

tumors due to the insufficient surgical excision of the lesion , as like some of our cases. If the flap (Flap A and B) dimensions are planned as for the defect area size, no difficulty is encountered. None of our patient is received radiotherapy. It is added to the material and method sections.

*Did the authors perform some aesthetic refinements in the post operative?*

*did the flap present some kind of risk regarding late ectropion?*

*please clarify these points*

We didn't evaluate the patients as for postoperative aesthetic refinements. But none of the patients had postoperative ectropion or scleral show. A chondral graft was placed to the posterior lamella of the lower eyelid to avoid scleral show and to reduce the lower eyelid laxity. The flaps were hanged by a 3/0 round needle monofilament non-absorbable suture to the holes opened over the inferior orbital rim to avoid ectropion and flap drooping due to gravity at the late period. (Figure 6B)

*Reviewer #2: In this paper the author has described a new technique for the reconstruction of total lower lid defects. He modified unequal Z-plasty for the reconstruction. This might give to the readers for a new alternative reconstruction option for the lower lid defects.*

Thanks for your comments.

*1- Five demonstrative cases were presented only 2 cases with a long follow up and late result pictures are fair enough for the manuscript.*

We arranged the early and late post operative period pictures as for the presentation of all stages. We aimed to share the healing process of the patients at the early, intermediate and late periods with the readers.

*2- Figure legends texts are too long and also they are the same as in the main text.*

The figure legends are shortened and differentiated from the main text.

*3- Some limitations must be mentioned by the author about this flap. For example the distortions seen on nasolabial and cheek area after the transposition of the flaps and the remarkable scars (all are seen on the patients pictures) on the cheek. The major disadvantage of this flap according to the Mustarde flap is the scar that is on the cheek. Although the authors claimed that he didn't see any ectropion, ectropion can also be seen after this flap because of the gravity and etc. So the author should explain the advantages and disadvantages of this new technique regarding the scars and the late complications very clearly.*

The limitations of this new technique are minimal distortion of the cheek due to flaps' transpositions and the scar formation. For relieving of the scarring and distortion a silicone gel is prescribed and masage is recommended to the patients. A chondral graft was placed to the posterior lamella of the lower eyelid to avoid scleral show and to reduce the lower eyelid laxity. Before the coverege of the defect area the flaps were hanged by a 3/0 round needle monofilament non-absorbable (polypropylene) suture to the holes that opened over the infaraborbital rim to avoid ectropion and flap drooping due to gravity at the late period. (Figure 6B). There is a great effect of hanging procedure for avoiding the ectropion at the early and late periods. None of the patiens had ectropion so we can attribute this result to hanging procedure. This is added to the material and method sections with additional acknowledgments.



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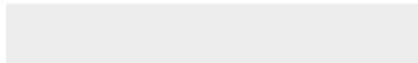
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