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Research Article | Araştırma Makalesi

APICAL SET-BACK, A SIMPLE MODIFICATION OF MUSTARDÉ-FURNAS TECHNIQUE OTOPLASTY

APICAL SET-BACK, MUSTARDÉ-FURNAS OTOPLASTİ TEKNİĞİNİN BASİT BİR MODİFİKASYONU

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ABSTRACT

Objective: To introduce an alternative way to perform otoplasy, a modified Mustarde-Furnas technique that decreases significantly the revision surgery.

Methods: Between 2015 and 2021, a total of 43 consecutive patients underwent otoplasty using a modified Mustarde-Furnas techique. All patients were followed-up for a period of 3 years after surgery.

Results: Reoperation was needed in just 2.5% of our patients. Some minor complications like suture extrusion(%12.5) and infection (%2.5) were encountered in the late postoperative period. No major complications occured in any of our patients.

Conclusion: Otoplasty is one of the most performed aestethic surgeries in younger patients. Based on our clinical experience, we observed that the results of our modified technique were more successful than those of standart techniques.

Keywords: Otoplasty, apical set back suture, Mustardé-Furnas technique

ÖZ

Amaç: Otoplasti ameliyatını yapmanın alternatif bir yöntemini anlatmak.

Yöntem: 2015-2021 yılları arasında yeni modifiye Mustardé- Furnas tekniği kullanarak opere edilen 43 primer hasta çalışmaya alınmıştır. Tüm hastalar en az 3 yıl süreyle takip edilmiştir.

Bulgular: Hastalarımızın sadece %2,5'inde yeniden operasyon gerekti. Geç postoperatif dönemde sütür atması (%12,5) ve enfeksiyon (%2,5) gibi bazı minör komplikasyonlarla karşılaşıldı. Hiçbir hastamızda majör komplikasyon gelişmedi.

Sonuç: Otoplasti genç hastalarda en çok uygulanan estetik ameliyatlardan biridir. Klinik tecrübemize dayanarak modifiye tekniğimizin sonuçlarının standart tekniklere göre daha başarılı olduğunu gözlemledik.

Anahtar Kelimeler: Otoplasti, apical-set back sütürü, Mustardé-Furnas tekniği

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Introduction

A prominent ear is a common deformity, affecting approximately 5% of the population. The two main causes of this deformity, which is commonly known to be autosomal dominant in inheritance, are a deep cavum concha and the absence of an antihelix curve.[1,2] These factors, individually or together, increase the concha-mastoid angle to more than 30 degrees, thereby increasing the distance between the auricle and the head. In the early 1990s, a prominent ear was described as an ear with a helical-mastoid distance of 20 mm or more.[3]

Although this deformity does not cause functional problems, it can have psychological effects on patients. Consequently, over the years, otoplasty has become one of the most commonly performed aesthetic procedures in children and adolescents.[4]

Various otoplasty techniques, categorized as either cartilage-sparing or cartilage-destructive methods, have been described since the early 20th century. Cartilage-destructive methods are primarily based on longitudinal incisions of the cartilage, resulting in a sharp contour of the antihelix.[5] We believe that cartilage-sparing techniques provide a more natural result.

We have observed that cases with unsatisfactory results are often those showing some laxity in the apical part of the auricle. It appears that permanent stability is lacking in this area.

Herein, we present our ten-year experience with a simple yet noteworthy modification of the Mustardé-Furnas technique.

Methods

This eight-year retrospective study was approved by the Antalya Education and Research Hospital Ethics Board (Decision No. 15/15, 11.08.2022). Informed consent for participation in the study was obtained from all patients. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committees and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

A total of 43 patients (29 women, 14 men) underwent surgery between 2015 and 2021. The patients' ages ranged from 6 to 45 years (mean age, 17 years). In total, 42 bilateral otoplasties and one unilateral primary otoplasty were performed. All patients underwent primary surgery using a modified Mustardé-Furnas technique. Patients with isolated deep cavum concha who did not require antihelix intervention were excluded from the study.

Surgical Technique

All adult patients were operated on under local anesthesia accompanied by IV sedation, while pediatric patients were operated on under general anesthesia. Prophylaxis included preoperative antibiotics.

Preoperative preparation of both ears was performed to ensure that both could be equally viewed to allow intraoperative comparison. Before the local anesthetic was injected, the neo-antihelix position was planned and marked (Figure 1a). Then, the distance between the pinna and mastoid was measured in the apical, middle, and lower positions.

On the posterior face of the auricle, an "8" shape or sandglass shape (Figure 1b) was drawn to mark the course for skin excision. Then, local anesthetics (Figure 1c), including lidocaine and 1:200,000 epinephrine, were injected into the postauricular area, mastoid tip, and temporal fascia region. Next, the skin was excised. The perichondrium was then carefully dissected and exposed (Figure 2a). Skin excision allowed easy access to the conchal bowl if cartilage excision was required, and simultaneously allowed the surgeon to work freely in the area where the antihelix was planned. Careful excision of the mid-auricular skin avoids the risk of postoperative sulcus synechiae. Moreover, it is important to have realistic expectations regarding the impact of skin excision on the final shape due to its elastic structure. Nevertheless, skin excision was necessary because if not performed, skin redundancy would have been apparent at the end of the operation.

At this stage, we exposed the mastoid tip and the temporal fascia but did not cut or touch the posterior auricular muscle in any way to maintain existing stability. If conchal bowl reduction was needed, we performed it at this stage.

Next, Mustardé sutures were placed using the suture guide points. Three 4.0 round white Prolene sutures were applied using the horizontal mattress suture technique (Figure 2b). We applied and simultaneously tied all sutures to ensure equal tension and to create a natural antihelical curve. Immediately thereafter, the setback suture, commonly known as the Furnas suture, was stitched between the conchal bowl and the mastoid tip.

At this stage of the operation, we realized that the apex of the auricle could not be aligned exactly as planned in a large proportion of patients. Even in patients where we achieved exact alignment as planned, laxity occurred in the late postoperative period. Based on our clinical experience, we were convinced that additional fixation would be needed for the auricular apex.

As the final step before skin closure, we placed an additional setback suture parallel to the original Furnas suture. This critical suture bonds the apex of the auricle to the temporal fascia (Figure 3a, b), ensuring stability in a region prone to postoperative laxity. The temporal fascia, known for its robust and resilient nature, provides a strong anchor point for the auricular apex. By incorporating this extra layer of fixation, we aimed to maintain the desired alignment and contour of the auricle over the long term, addressing the common issue of late postoperative laxity observed in many patients. This additional apical setback suture was instrumental in achieving the structural integrity and aesthetic outcomes we sought, highlighting the importance of comprehensive fixation in otoplasty procedures.

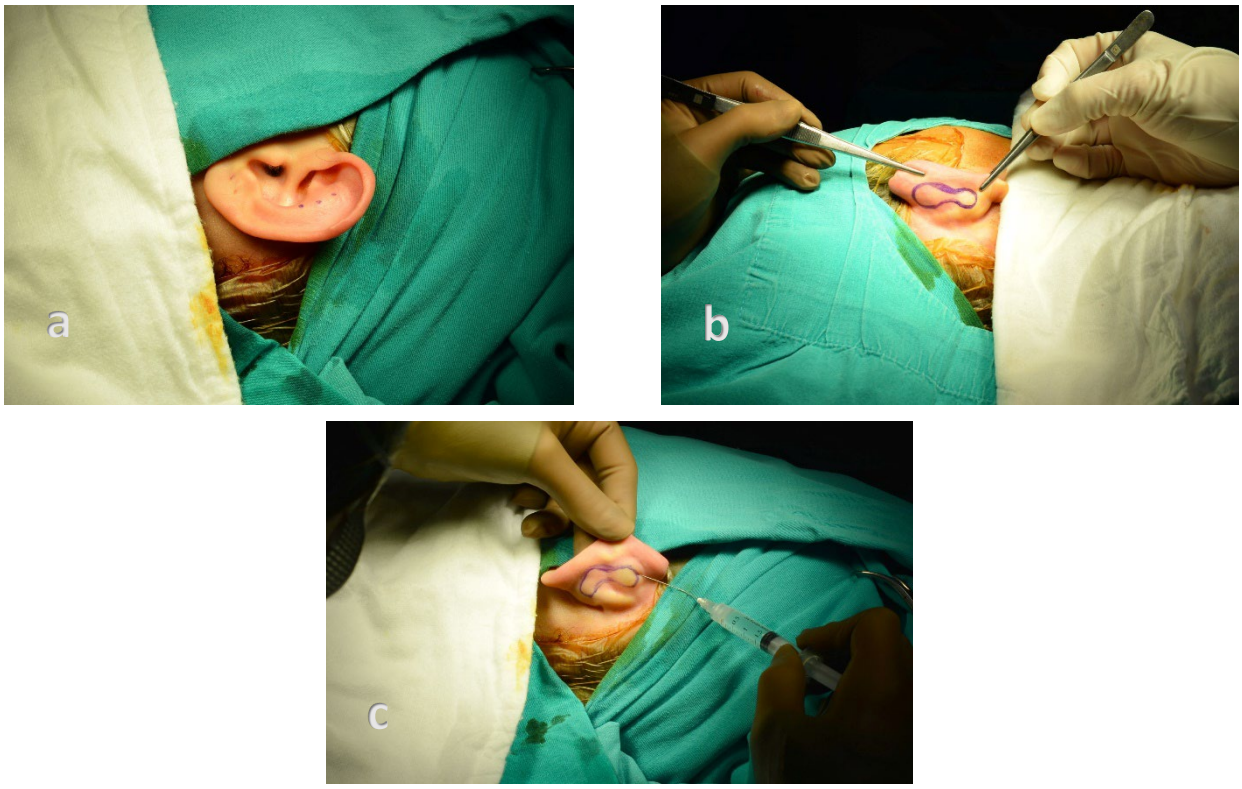

Figure 1. The neo-antihelix position was planned and marked in advance (a), In the posterior face of the auriclen an "8" shape/sandglass shape is drown (b), local anaesthetic application (c)

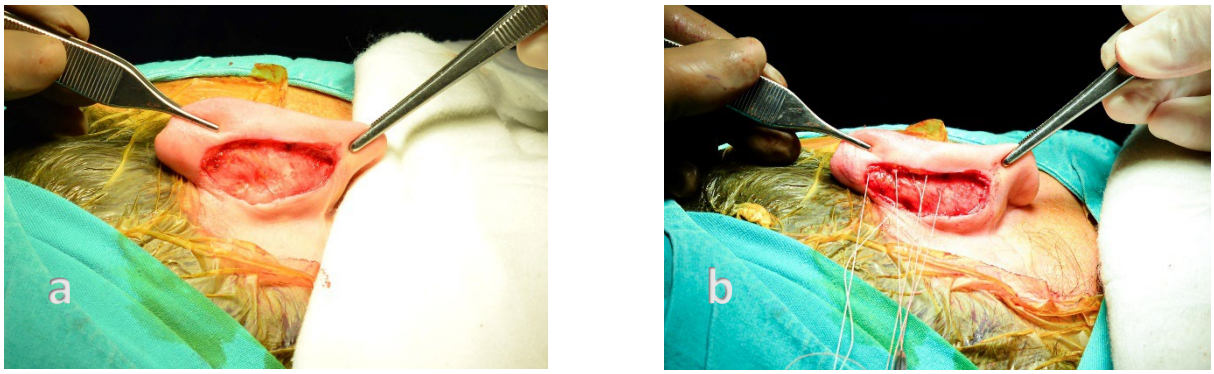

Figure 2. Postauricular skin excision and pericondrium exposition is performed (a), a minimum of 3 Mustardé sutures is placed using the suture guide points (b)

Figure 3. Demonstration of apical set back suture (a) and its schematic drawing (b)

Finally, the skin was closed with 5.0 Prolene sutures (Figure 4a). Postoperatively, we placed a cotton ball with antibiotic ointment within the newly created contours of the ears and then wrapped the head. This ensured that the ears maintained their new shape and were protected from infection. Patients were instructed to wear a headband continuously for 24 hours a day during the first week to support the ears in their new position and minimize movement. After the first week, patients were advised to wear the headband only at night for the following two weeks to ensure continued stability and optimal healing.

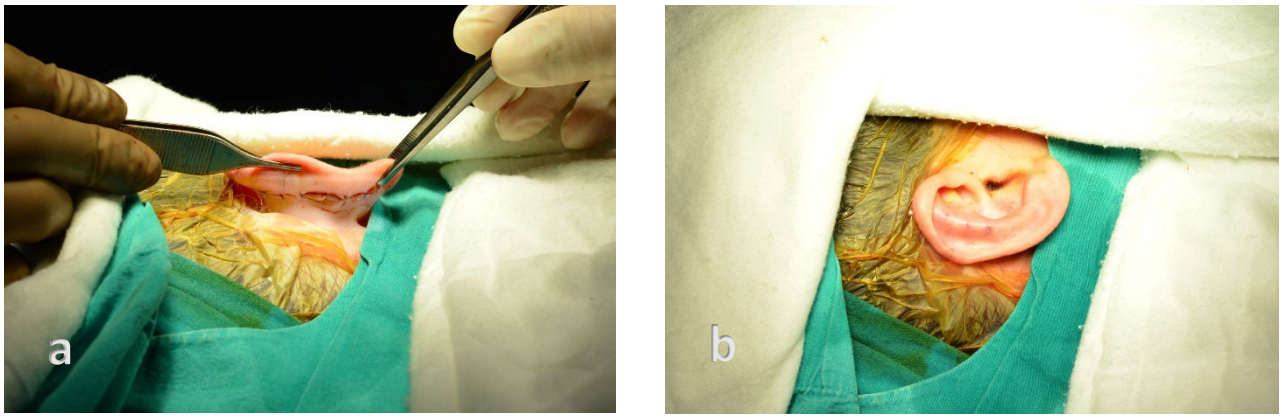

Figure 4. The closed incision is shown (a) , The anterior view of the ear at the end of the operation (b)

Results

In this study, the follow-up period ranged from 6 to 36 months after surgery. The postoperative clinical evaluation included inspection and photographic documentation at 1 month (Figure 5), 6 months (Figure 6), and annually thereafter (Figure 7). No notable complications, such as hematoma, perichondritis, cellulitis, or skin/cartilage necrosis, were observed. Some minor complications were encountered in the late postoperative period: suture extrusion in 5 patients (12.5%) and infection in one patient (2.5%). One patient, who underwent unilateral otoplasty, required reoperation due to partial relapse one year postoperatively.

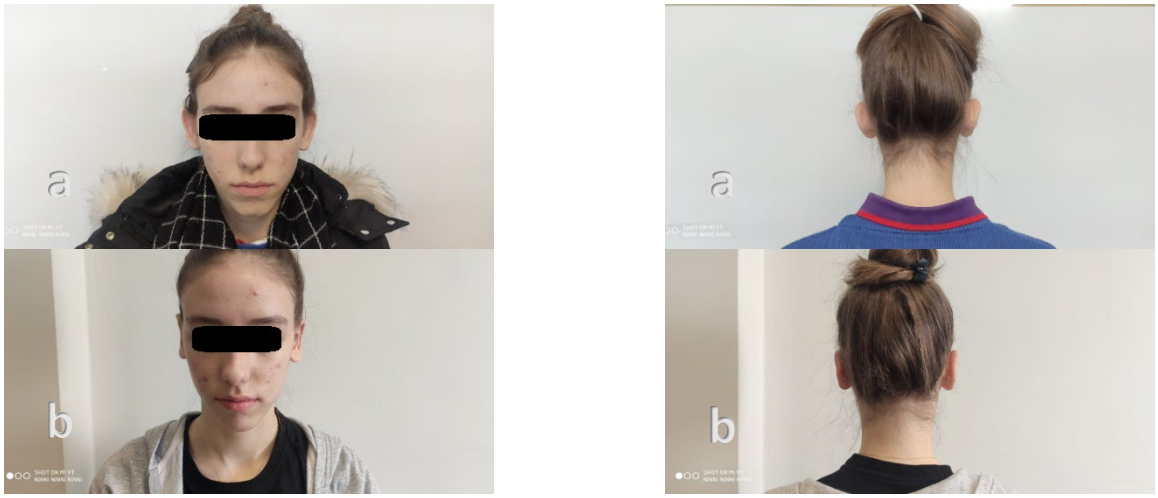

Figure 5. Preoperative (a) and 1 month postoperative (b) photo

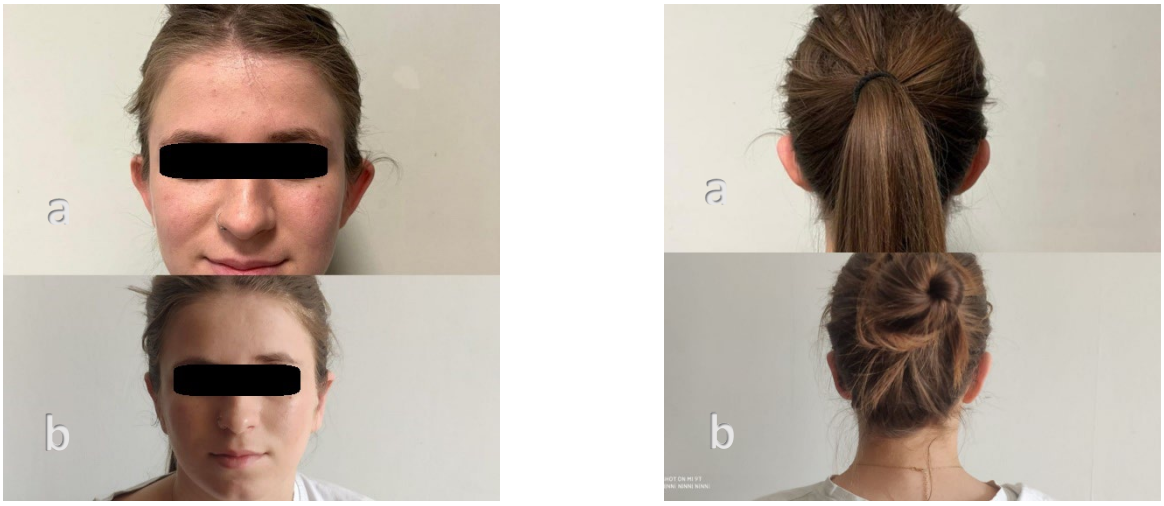

Figure 6. Preoperative (a) and postoperative 6 month (b) photo

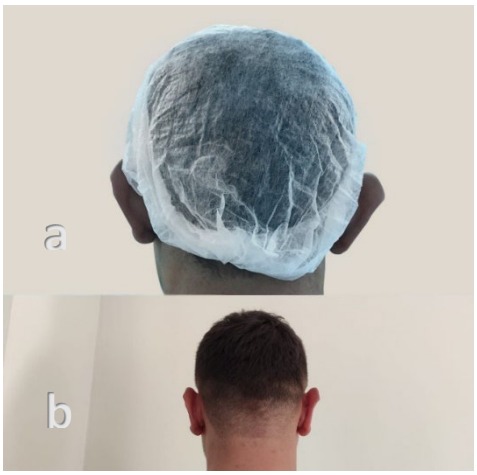

Figure 7. Preoperative (a) and 3 year postoperative (b) photo

Discussion

At present, otoplasty is one of the most commonly performed aesthetic surgeries in younger patients. Although it can be performed at any point in the lifespan, it is known that as patients age, cartilage motility is reduced, which may lead to less successful outcomes. Mustardé et al., in their 10-year otoplasty follow-up study[4], reported that 1.8% of patients operated on before age 6 showed relapse, whereas approximately 30% of patients who underwent the operation at an older age showed relapse. In our study, the median age of patients was 17 years.

It is important to note that in the literature, cases reported as failures are mostly due to undercorrection, particularly in the upper third of the auricle.[6] In our study, we introduced a technique that effectively addresses this issue. After the posterior skin was excised and undermined, we applied at least three horizontal mattress sutures, as recommended by Mustardé.[7] We then placed at least two Furnas sutures, followed by a critical innovation: the apical setback suture. This apical setback suture, stitched between the auricular apex and the temporal fascia, plays a pivotal role in maintaining the planned position of the ear and ensuring long-term stability. By anchoring the auricular apex securely to the strong temporal fascia, this technique not only reinforces the contour but also reduces the need for excessive Mustardé sutures, which can sometimes lead to complications or overcorrection. Our apical setback modification has proven highly effective, meeting the goals outlined in the literature[8] and demonstrating its value in preventing relapse and improving aesthetic outcomes. No infections or other complications were observed during the follow-up period, underscoring the success of this approach.

Although a prominent ear does not typically have significant physiological effects, it can have a profound psychological impact on patients.[9] The appearance of the ear can significantly affect self-esteem and social interactions, making it a sensitive issue for many individuals. Therefore, no surgeon wants to repeat a surgery on a deformity that is such a sensitive topic for the patient. Addressing the issue effectively in the initial procedure is crucial to avoid the need for revision surgery and to ensure the best possible outcome for the patient's psychological well-being.

Conclusion

Based on our clinical experience, we observed that the results of our modified technique were more successful compared to standard techniques. However, it is important to note that this is a preliminary study. We believe that as more patients undergo the surgery and the follow-up periods extend, a more comprehensive evaluation of the results will be possible. Continued assessment will help to validate the efficacy of our modified technique and provide further insights into its long-term outcomes.

Compliance with Ethical Standards

This article does not contain any studies with animals performed by the authors.

All procedures performed in the study involving human participants were in accordance with the ethical standarts of the institutional and/or national research comittee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standarts.

Informed consent was obtained from all individual participants involved in the study.

Conflict of Interest

The author declares that they have no conflicts of interes.

Author Contribution

The study was designed and written by the author. We feel it would be important to emphasise that all the patients were operated by one surgeon, who is the author herself.

Financial Disclosure

The author did not get any grant support from any institution

Main Points:

Prominent ear is a commonly seen deformity that has important phsycological effects on patients.

In the last century numerous otoplasty techniques have been described. As already has been mentioned in the literature the majority of cases showing unsatisfactory results are often the ones showing some laxing in the apical part of the auricula. It seems that we lack permanent stability in this part of the auricle.

We present a simple and effective modification of common otoplasty techniques. In our patients we placed an apical setback suture parallel to the original Furnas suture, bonding the apex of the auricle to the temporal fascia, which is a very strong connective tissue.

This additional suture seems to give us the missing fixation.

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