

Complication Rates From Otoplasty at a Tertiary Facial Plastic Surgery Center: A Retrospective Analysis

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Abstract: Prominent ears are considered the most common congenital external ear deformity among Caucasians. Affecting approximately 5% of the population, it runs in families and exhibits equal sex incidence. This study aimed to determine the complication rate from otoplasty in a tertiary facial plastic surgery center. This retrospective cross-sectional study included all patients with prominent ears deformities who underwent otoplasty at King Abdul-Aziz University Hospital between January 2019 and June 2021. The records of 116 patients who underwent otoplasty during the study period were examined and only 44 matched the inclusion and exclusion criteria. The total of 85 operated ears from 44 patients were included. Of these, 17 were pediatric patients and 25 were male patients. Forty-one patients underwent bilateral otoplasty and 3 underwent unilateral otoplasty. Complications occurred in 17/85 (20%) patients and the complications included recurrence 4 (4.70%), hypertrophic scar 3 (3.52%), keloid 2 (2.35%), granuloma 2 (2.35%), infection 2 (2.35%), discomfort 1 (1.17%), wound dehiscence 1 (1.17%), hematoma 1 (1.17%), and retracted ear 1 (1.17%). The overall patient satisfaction was 38/44 (86.36%). Our study is first study conducted in middle east about otoplasty complications. It showed that the complications from otoplasty surgery varied from severe to mild, with acceptable overall

satisfactory results. The most common complication was recurrence. Fortunately, serious complications, such as wound dehiscence and hematoma, were rare. However, our study's small sample size remains a major limitation.

Key Words: Complications, ears, middle east, otoplasty, prominent, Saudi Arabia

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Prominent ears (PE) are considered the most common congenital external ear deformities among Caucasians. Affecting approximately 5% of the population, it runs in families and exhibits equal sex incidence rates.¹ Protrusion of the auricle typically develops from 2 anatomical irregularities that occur when hyperplastic cavum conchae lead to conchal hypertrophy, and a dysplastic/hypoplastic antihelix leads to poor development of the anti-helical fold.^{2,3} Multiple psychological impacts have been reported among school-age children with PE including teasing and bullying from peers, which can lead to social avoidance, low self-confidence, and poor school performance.⁴ As a result, children with PE typically undergo otoplasty surgery at preschool age. Surgical techniques in otoplasty have been described by multiple surgeons and can be classified into 2 main categories: cartilage sparing and cartilage cutting. Cartilage sparing otoplasty is widely used and has multiple techniques with 2 most used techniques explained by Mustarde and Furnace. In the Mustarde technique, otoplasty is performed using nonabsorbable sutures to create an antihelix fold.⁵ In contrast, Furnas⁶ described the use of sutures to position the concha to the mastoid. Other techniques describing multiple modifications of incisionless otoplasty and percutaneous non-absorbable suture techniques have also been reported.^{7–10} Complications of otoplasty have been reported in multiple studies, including hematoma, bleeding, infection, recurrence, skin/wound healing problems, scarring, suture-related problems, pain, and itchiness.^{2,11,12}

The aim of this study was to determine the surgical outcomes and complications of otoplasty among patients who underwent this procedure at a tertiary facial plastic surgery center at King Abdulaziz University Hospital in Riyadh, Saudi Arabia.

METHODS

The retrospective cross-sectional study targeted all patients with PE deformities who underwent otoplasty at a tertiary facial plastic surgery center at King Abdul-Aziz University Hospital, Riyadh, Saudi Arabia, between January 2019 and June 2021. The inclusion criteria were all patients with PE who underwent otoplasty surgery. The exclusion criteria included revision cases, no follow-up after surgery, smoking, and comorbidities that

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affected cartilage healing. Of the 166 records belonging to patients who underwent otoplasty at King Abdul-Aziz University Hospital during the study period, only 44 records were included, 72 were excluded because they did not match the inclusion criteria. All 44 records were reviewed and studied retrospectively, and a descriptive analysis of the data was performed.

Surgical Procedure

Under general anesthesia with endotracheal intubation, the PE was measured, and the patient was prepared and draped in a sterile manner. Next, perioperative antibiotics were administered and local anesthesia xylocaine with epinephrine 1:200,000 was infiltrated in the operated ears. Then, an elliptical skin excision was made on the posterior surface of the ear to access the underlying cartilage to allow adequate dissection and good exposure of the perichondrium and conchal bowl. Next, the cartilage was scored to create an antihelix in the adult ear or hard cartilage, followed by a sutureguided point using a 27-gauge needle. Then, Mustarde suture were placed using 4-0 Mersilene (Ethicon US, LLC, Neenah, WI) with a needle length of 19 mm, and Furnase suture was placed using 3-0 Mersilene (Ethicon US, LLC) with a needle length of 24 mm. The skin was closed using a 5-0 Vicryl Rapied (Ethicon US, LLC), after which Gelonet dressing and pressure dressing were applied.

Data Collection and Analysis

All records reviewed and the following information was extracted: age, sex, Fitzpatrick skin type, smoking, date of surgery, comorbidities, outcome of the surgery, and complications. The data were recovered from the Esihi documentation system and patient files. The data were transferred to an Excel sheet with all the required variables. Data were entered from the Excel sheet and analyzed using Statistical Package for the Social Science (SPSS) 22 software for Windows. For categorical variables, the proportion (%) and continuous variables were calculated as means ± standard deviation. The study was approved by the institutional review board of the College of Medicine at King Saud University.

RESULTS

A total of 44 patients with 85 PE deformities were included. Mean patient age at the time of the surgery was 21.04 years. The youngest patient was 6 years old, and the oldest was 53 years (range: 6–53 years). Of the 44 patients, 25 (56.81%) were male and 19 (43.19%) were female patients. Twenty-seven (61.36%) patients were adults and 17 (38.63%) were pediatric patients. Bilateral otoplasty was performed in 41 (93.18%) patients and unilateral otoplasty was performed in 3 patients (6.81%): 1 on the right side (2.27%) and 2 on the left (4.54%). Seventeen (38.63%) patients were between 0 and 18 years of age, 26 (59.09%) were between 19 and 40 years old, and only 1 (2.27%) patient was above the age of 40 years. The number of surgeries per year was calculated from 2019 to 2020: 20 (45.45%) patients underwent otoplasty in 2019, 8 (18.18%) in 2020, and 16 (36.36%) in 2021 up until June (Supplementary Digital Content, Table 1, <http://links.lww.com/SCS/D703>).

Among the 44 patients, only 12 (14.11%) experienced post-otoplasty complications, some of whom had more than 1 complication. Of the 85 operated ears, 17/85 (20%) had reported complications that ranged from recurrence 4 (4.70%), hypertrophic scar 3 (3.52%), keloid 2 (2.35%), granuloma 2 (2.35%), infection 2 (2.35%), discomfort 1 (1.17%), wound dehiscence 1 (1.17%), hematoma 1 (1.17%), and retracted ear 1 (1.17%) (Supplementary Digital Content, Table 2, <http://links.lww.com/SCS/D703>). Overall patient satisfaction was 38/44 (86.36%).

DISCUSSION

Up to our knowledge, no study has been done regarding post otoplasty complication in the middle east, so we conduct this study to look for any differences in complication rate with other ethnicity. King Abdulaziz University Hospital in King Saud University Medical City is considered 1 of the referral center for otolaryngology and facial plastic surgery in the region. Our study describes our hospital's experience with post-otoplasty complications and the management of patients with PE who underwent the Mustarde and Furnase techniques. These complications varied between very mild and severe.

Regarding demographic data, our patients were predominantly adults, 27 (61.36%) out of 44 patients. Kajosaari et al¹³ reported on various age groups undergoing osteoplasty. Men comprised 76% of our patients and bilateral otoplasty was performed in 41 patients with only 3 undergoing unilateral otoplasty. Of the patients who underwent unilateral otoplasty, 2 of them were performed on the left side and 1 on the right side. This finding is consistent with previous reports in the literature. Sinah and Richard¹⁴ reported a sex distribution (60%) in favor of men and that bilateral otoplasty for PE was the predominant procedure at 91% compared to unilateral otoplasty. However, another publication by Kajosaari et al,¹³ who conducted a demographic literature review on otoplasty for PE, showed a sex distribution in favor of females rather than male patients. Binet et al¹⁵ showed that left-sided otoplasty is more common than right-side otoplasty by over 60%, which is consistent with our findings.

Concerning postoperative complications, we reported that 12/44 (14.11%) patients had post-otoplasty complications with the total number of reported complications among the operated ears being 17/85 (20%). Three patients had 2 different complications at the same time, and 2 patients had bilateral complications. This percentage of overall complications is similar to what has been found in other studies.^{13,16}

Recurrence was the most common complication in our study, reported in 4 (4.70%) ears and 4 (9.09%) patients: 3 in the right and 1 in the left side. Two of these patients underwent uneventful revision surgery, and the other 2 patients denied any further interventions. Notably, 3 out of the 4 patients who experienced recurrence complications were adults, and 1 of them was a smoker. In our case, the recurrence rate was slightly higher than that reported by Sadhra et al,² who published

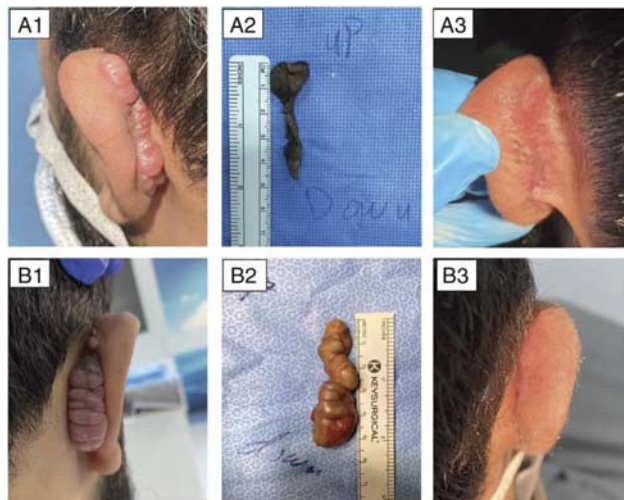


FIGURE 1. Bilateral post-otoplasty keloid formation with management results.

a systematic review of otoplasty complications in 2017 and reported a recurrence rate of 5%.

Hypertrophic scars were seen in 3 (3.52%) ears and 2 (4.54%) patients, both of which were mild and did not require intervention, and overall patient satisfaction was good. One patient with bilateral hypertrophic scars was an adult and a smoker, and the other patient was a child, both of whom had type 4 Fitzpatrick skin. Our hypertrophic scar complication rate is slightly higher than those reported by Binet et al.¹⁵

Keloid complications were reported bilaterally in 2 (2.35%) patients and unilaterally in 1 (2.27%) patient and was the most difficult complication to treat. The patients were managed with the standard 4 cycles of triamcinolone acetonide intralesional injection (Kenacort) followed by surgical excision and intraoperative intralesional 5-fluorouracil injection and application. Kenacort injection, 5-fluorouracil, and silicone gel were started 4 weeks postoperatively for a total of 5 cycles (at 2 weeks intervals) with good results and there was no recurrence for 1 year (Fig. 1).

Granuloma complications were reported in 2 (4.54%) patients and 2 (2.35%) operated ears, 1 adult and 1 pediatric. Both cases were considered mild and removed in the clinic under local anesthesia without any subsequent complications.

Post-otoplasty infection was reported in 2 (4.54%) patients and 2 (2.35%) operated ears. One case was on the right side and associated with recurrence, the other was on the left side and associated with discomfort; both were pediatric patients and medically free and were treated with antibiotics. Based on the literature, this complication was reported to be 0% to 10% in multiple previous studies and reviews.² All our patients were discharged home with oral antibiotics, and antibiotic compliance was equivocal when discussing the possible reason with the family. Furthermore, we think that infection itself may be the reason for recurrence in 1 of the cases. Further, we cannot judge the discomfort in another patient, whether it was from the procedure itself or from the infection as the patient's family reported resolution of infection and discomfort 1 month postoperatively.

Post-otoplasty hematoma was found only in 1 (2.27%) patient and 1 (1.17%) operated ear. The hematoma occurred on the left side and was not serious; it was treated conservatively with needle aspiration, pressure dressing, and oral antibiotics. This may be due to the infiltration performed before surgery and hemostasis by bipolar coagulation, which minimizes such complications postoperatively. A systematic review by Sadhra et al² found that the rate of post-otoplasty hematoma ranged from 0% to 15%. Furthermore, Boroditsky et al¹⁶ recently reported the outcome of 119 operated ears using the Mustarde technique and found that the percentage of hematoma complication was 0.8%, which is close to our findings.

The incidence rates of discomfort, wound dehiscence, and retracted ear were 2 (2.27%) patients and in 1 (1.17%) operated ear each. Retracted ear occurred in the left ear of a medication-free, nonsmoking adult female patient who had very thin and viable auricle cartilage. Wound dehiscence occurred in the left ear of a keloid patient, following surgical excision. This case was mild and resolved spontaneously, and steroid injection before excision may have been a possible risk factor.

Overall, we conclude that among otoplasty patients treated using the Mustarde and Furnace technique, postoperative complications varied from mild to severe, but that all complications were manageable, and the incidence rates were close to those previously reported in the literature. Our study highlighted keloid complications as the most difficult complication, and found acceptable overall satisfactory results.

The limitations of this study include its retrospective nature, small sample size, and variation in patient ages. Nevertheless, these factors should be studied separately to understand the possible risk factors associated with each complication.

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