Minimally Invasive Technique for Correction of Prominent Ear

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OBJECTIVES: Prominent ear is not an uncommon deformity with 5% prevalence in population worldwide. Although there is no physiological handicap in this deformity, it affects the psychology and social integration, especially in children. Many surgical techniques are performed to correct this deformity. In this study, we illustrate a minimally invasive technique in cases of prominent ear and evaluate its efficacy.

MATERIALS and METHODS: A total of 16 patients were operated by incisonless otoplasty in both ears simultaneously. Therefore, 32 ears were included in the study. Postoperative follow-up was carried out for 6 months to determine the efficacy of this technique, complications, and recurrence of the abnormal shape.

RESULTS: Two ears (2/32) were presented with slight protrusion three months postoperatively. Three ears had postoperatively exposed sutures that needed to be embedded again under local anesthesia. The satisfaction rate was found to be 88% by the visual analog scale. No perichondritis or other complications occurred postoperatively. The technique results in correction of the deformity without any visible evidence of surgery.

CONCLUSION: This technique is effective and safe for correction of prominent ear with negligible rate of complications and rapid recovery time.

KEYWORDS: Ear, auricle, deformity, technique
the lobule and antitragus. Then, a local injection of saline adrenaline 1:100,000 is administered in both surfaces of the auricle.

Each suture passes through four points:
Point A, back of the concha
Point B, back of the concha 1 cm from point A
Point C, back of the scaphoid 1 cm from point B
Point D, back of the scaphoid 1 cm from point C

By using the tip of a surgical blade knife 15, we start to make about 1-mm incisions in the four points, especially entrance A, as it must be wider to embed the final suture inside it (Figure 1).

By using a small-tapered scissor passing through point A, we separate the skin from the underlying perichondrium between the four points.

We pass a curved needle of nonabsorbable 4/0 PROLENE® (Polypropylene sutures, Ethicon Inc, Bridgewater, New Jersey, United States of America) from point A to point B passing through the cartilage of the auricle, but we take care not to pass through the opposite surface of the auricle. We then pass the needle from point B to point C subcutaneously not passing through the cartilage. Then, we pass the needle from point C to point D through the cartilage. Finally, we return the needle from point D to point A subcutaneously not passing through the cartilage (Figure 2).

The entry and exit are through point A, and the thread is looped between the four points and is completely nonvisibly embedded. We ligated the suture several times (so that the tension of the suture will not be lost over time) and completely embedded it nonvisibly. We adjust the tension of the ligature as needed, and overcorrection is suggested because some relaxation may occur later in the tension of the suture during the first 3 months after surgery.

RESULTS
The patients were followed up for 6 months. There was no postoperative hematoma or extrusion of sutures. Three suture knots (at point A) protruded from the incision at 10 and 14 days postoperatively. We embedded them again under local anesthesia in the clinic. There was no perichondritis or granuloma formation during follow-up.

Protrusion is assessed by the distance between the mastoid and the most prominent point on the helix. When this distance is >25 mm, the ear is considered prominent. Therefore, we measured all cases postoperatively, and only two patients had prominent ears; the protrusion distances 3 months after the operation were 26 and 28 mm (slight protrusion) and needed reoperation. Tightening of the sutures was performed. Table 1 shows the preoperative and 3-month postoperative protrusion. The preoperative protrusion distance was 28.625±2.07 mm, and the 3-month postoperative protrusion distance was 18.094±2.97 mm.

Almost all the patients, except two, were satisfied after the operation according to the visual analog scale.

DISCUSSION
Prominent ear is not an uncommon deformity with 5% prevalence in population. Although there is no physiological handicap in this deformity, it affects the psychology and social integration, especially in children. Therefore, surgery is usually required at even a younger age [1, 5]. Since the surgery was first performed by Diefenbach in 1845, many surgical techniques have been developed to correct this deformity. More than 200 techniques are in use for the correction of prominent ears, including the percutaneous technique, cartilage sparing, cartilage splitting, perichondroplasty, and incisionless and endoscopic techniques. The availability of various techniques suggests that there is no single globally accepted and ideal procedure [3, 4].

MAIN POINTS
- This surgical technique is minimal invasive, effective, safe.
- It is cartilage sparing technique.
- Three anchoring sutures is required for each auricle.
- Sutures are embedded and nonvisible.
The incisionless technique is also not completely new. It has been in use for decades including the anterior scoring and suturing percutaneously. Peled et al. [6] defined the technique for the antihelix, where as Fritsch illustrated concho-mastoid and lobe sutures.

In our study, the mean age of the patients was 15 years. There were 11 males and 5 females. There are variations in the literature regarding the age of operation and sex according to each country because the aesthetic complaint is the main indication for surgery. In the literature, the mean age of patients ranges from 7 to 38 years, and 35% to 70% are female patients, and this percentage increases after the age of 20 years [7].

The incisionless technique we are using is safe and easy to perform. It has less complications than other techniques described in the literature. It provides good results with natural appearance, and there is no need for dressing or bandage or hospitalization. Only 2 of the 32 (6.2%) ears had a slight protrusion and needed reoperation to just increase the suture tension. Three ears developed exposure of the suture knot, which were embedded again under local anesthesia in the clinic. There were no perichondritis or hematoma or other complications. Among the 16 patients, 14 were satisfied (88% satisfaction rate).

After analyzing the data of 3,493 patients in the literature who underwent otoplasty for prominent ear, Sadhra et al. [8] stated that the hematoma incidence ranges from 1.4% to 3.8%, infection from 0.4% to 1.3%, wound problems from 1.4% to 5.1%, suture problems from 0.8% to 2.6%, pain from 5.4% to 23%, and revision surgery from 2.9% to 7.7%.

Regarding postoperative complications, Punj et al. [9] stated that bleeding occurred in 2.2%, wound infection in 0.9%, and recurrence rate in 10% in Chongchet technique and 2.9% in Mustarde technique. Both the techniques may need antiemetics (3.2% to 14.3%) and opioid analgesics (30% to 35%) postoperatively.

Smittenberg et al. [10] reported a high percentage of complications in cartilage cutting. It was about 20%, of which 7% needed reoperation. Maricevitch et al. [11] reported a complication rate of 12.8%. Valentines stated that the complication rate is about 10%, and that 10% of these complications needed reoperation [12].

**CONCLUSION**

This technique is effective and safe for correction of prominent ear with negligible rate of complications and rapid recovery time.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the Ethics Committee of Ain Shams University School of Medicine.

**Informed Consent:** Written informed consent was obtained from the patients who participated in this study.

**Peer-review:** Externally peer-reviewed.


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