Case Report/Case Series

Reconstructing the Gauge Earlobe Defect

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IMPORANCE The use of gauge earrings causes earlobe defects and, at times, significant contour distortion. Simple closure leads to inadequate results in most cases. We describe a stratified approach to assessing the earlobe deformity as well as specific reconstructive techniques tailored to each type of deformity to restore normal size and contour, which, to our knowledge, has not been discussed in the literature thus far.

OBSERVATIONS This case series reviewed the last 20 patients who requested earlobe reconstruction with at least 1 year of follow-up. Earlobe deformity can be classified into 3 groups: small, which can be closed primarily; medium (with radial earlobe distortion and thinning), which requires advancement flaps or wedge excisions; and large (with inferior displacement of earlobe border and vertical axis abnormalities), which requires advancement flaps and excision of redundant tissue. Excellent final earlobe appearance is usually observed at 6 months postoperatively.

CONCLUSIONS AND RELEVANCE Soft-tissue loss and contour abnormalities of medium and large defects require more complex repairs to prevent excessively narrowed lobes with loss of normal rounded contours. Obtaining a normal-appearing ear is of the utmost importance for patients who require a more professional appearance.

Gauge earrings have been identified throughout history, including as early as the Egyptian pharaoh Tutankhamun. The prevalence of this style of ear piercing continues to present itself in various cultures around the world today. Recently, gauge earrings have become increasingly popular within Western culture as the materials needed to gauge one’s ears are more readily available. A movement known as “Modern Primitive” embodies the practice of adorning one’s body with tattoos, piercings, and objects in the same manner as other primitive and ancient cultures. Such social movements have allowed for the increasing popularity of gauge earrings within popular culture today.

Gauge earrings come in many different designs, but all require an unusually large hole to be made in the earlobe. The earlobes are first pierced with a normal-sized earring and given time to heal. The piercing must then be slowly stretched using graded tapers to ultimately achieve the desired size (Figure 1). Plug-type earrings are kept in place while the lobe adjusts to the new size before attempting to further increase the diameter of the hole. It is recommended to wait at least 1 month between each size upgrade in order to decrease soft-tissue trauma. In general, gauge earrings range in size from 20 gauge to 00 gauge, with lower numbers representing a larger dimension. Diameters larger than 00 gauge are commonly measured in fractions of an inch.

When gauge earring wearers decide they no longer want to wear earrings of this style (often motivated by professional appearance mandated in the workplace), they can be left with a significantly enlarged earlobe defect. Although some contraction of the earlobe may occur over time if a small earring is used for a short period, many earlobes with gauge defects do not typically contract back to the original piercing size.

Methods

Assessment and Surgical Technique

A stratified approach based on gauge defect size and earlobe contours should be used when assessing gauge earlobe defects and selecting a reconstructive plan. The severity of the remaining earlobe defect can range from small to large (Figure 1C-F). Relatively small defects are essentially confined to the central aspect of the native earlobe and do not cause any significant disruption of the natural earlobe border as it transitions from the helical rim. Medium defects demonstrate more thinning of the skin, as well as radial distortion of the earlobe. In earlobes with large defects, this thinning and distortion eventually leads to significant disruption of the earlobe contour to the point whereby the outline of the earlobe becomes inferiorly displaced. This change in earlobe contour can result in long-axis angulation of the ear (15°-30° off a vertical line normally) assuming a more vertical orientation due to severe distortion of the earlobe (Figure 1C and F). With smaller gauge earring defects, this...
normal angulation of the ear is unaffected. Once the earlobe has been appropriately assessed, the correct reconstructive plan can be selected.

We describe the surgical techniques that return normal size, shape, and contour to the affected earlobes. All reconstructions are performed under local anesthesia using lidocaine, 1%, with 1:100 000 epinephrine. Institutional Review Board approval was waived by San Diego Face and Neck Specialties. Patients provided written consent for participation in this study. This research conformed to the tenets of the Declaration of Helsinki.

Small Defects
In such cases, the defect is small enough to not cause any significant distortion to the outline of the earlobe. Because of this, primary closure is usually an acceptable technique for repair, which is comparable with repair of a torn earlobe piercing or cleft earlobe, where the skin edges are already in close proximity.

The repair process begins with full-thickness de-epithelialization of the defect, typically using an elliptical incision. The long axis of the incision should be oriented parallel to the long axis of the defect to minimize earlobe distortion. This procedure is followed by closure of the defect in 3 layers. The medial skin surface is closed with a 5-0 fast-absorbing gut suture. The subcutaneous tissue layer is approximated with a 5-0 polydioxanone suture to promote eversion of the skin edges. The lateral skin surface is approximated with a 6-0 non-absorbable suture.

Medium Defects
Medium earlobe defects are associated with 2 additional challenges: a disruption of the natural curve along the inferior border of the earlobe and a more significant void in terms of soft tissue. The former requires additional consideration to restore a natural earlobe contour. The latter requires recruitment of neighboring soft tissue to close the defect. If primary closure of a medium gauge earring defect is attempted, distortion, narrowing, and elongation of the earlobe with worsening contours will likely result (Figure 2A and B). In most cases involving a medium defect, reconstruction can be performed using a posterior-based advancement flap, which is confined to the earlobe without incisions across the outer border. This procedure can be reliably used to fill the soft-tissue void while helping to restore the natural earlobe contour.
The repair process begins with de-epithelialization as with a small gauge earring defect. A full-thickness posterior-superior-based advancement flap is then designed. The flap is intended to recruit tissue posterior to the defect between the antitragus and inferior margin of the helix where cartilage is not present (Figure 2C and D). The markings for the advancement flap start at the inferior pole of the defect and extend posteriorly, parallel to the inferior border of the earlobe and helical rim. After the flap is mobilized, it is advanced anteriorly with a slight superior vector and sutured into the defect, helping to restore proper volume and shape to the earlobe. The subcutaneous tissue layer and skin edges are closed as described above.

In some cases, a medium defect will be encountered in which the gauge earring has resulted in excessive thinning of the soft tissue along the inferior margin of the lobule. In these cases, the remaining soft tissue along the inferior margin would be inadequate to accommodate proper closure of the defect using a posterior-based advancement flap after defect de-epithelialization. An alternative method of closure involves full-thickness transection of the inferior border of the lobule as part of a wedge excision of the defect. The repair begins with careful marking of the planned wedge excision (Figure 2E). An important technical detail involves making additional markings outside the wedge excision along the outer margin of the lobule indicating where the corresponding cut edges will be realigned. These markings must be drawn before infiltration of local anesthesia since even a small volume can distort the contour sufficiently, leading to improper realignment of the cut edges. Instead of de-epithelializing the defect, the planned wedge excision is marked to include a 1- to 2-mm margin along the sides of the defect. The planned wedge extends inferiorly with full-thickness transection of the inferior margin of the lobule. Once the wedge has been excised, the remaining defect is closed using the technique described above for subcutaneous and skin layers. In this process, the markings made prior to infiltration are used as a guide to properly align the outer margins so that a natural contour is maintained.

Large Defects
Large gauge earring defects also require recruitment of soft tissue to fill the void. However, unlike small and medium defects, large defects necessitate excision of the redundant soft tissue that was stretched inferiorly to the normal inferior border level of the earlobe.

Repair also begins with defect de-epithelialization. However, this step needs to incorporate excision of the redundant soft tissue, which can be accomplished with 2 transverse incisions made across the redundant loop. The first incision is made across the posterior limb, which corresponds to the leading edge of the advancement flap that will ultimately coapt to the designed anterior limb. The second incision is made across the anterior limb several millimeters below the desired location of the inferior border of the earlobe. In essence, 2 pedicled flaps are being created. The creation of the posterior-inferior-based advancement flap is completed by excising a wedge-shaped segment of skin between the antitragus and inferior border of the helical rim. This flap is advanced anteriorly and superiorly to close the defect while restoring a natural contour to the earlobe. The 2 transverse incisions and the wedge excision should be performed in a graduated manner to avoid overly aggressive excision of soft tissue necessary for proper reshaping (Figure 3). The subcutaneous tissue layer and skin edges are closed as described above. However, it is particularly important to evert the skin edges of the inferior border of the earlobe to prevent notching.

Postoperative Course
During the early postoperative course, patients are instructed to keep the incisions clean using chemical debridement of the suture line with hydrogen peroxide followed by application of an antibacterial ointment. The nonabsorbable sutures are removed 5 to 6 days postoperatively. At this time, it is normal for the earlobe to show mild to moderate swelling and tissue distortion. These findings will continue to decrease until the final shape of the earlobe is observed, usually about 6 months postoperatively.

In most cases, the ears can be safely pierced with a small stud earring approximately 3 months after the repair. It is usually recommended to wait more than 1 year before using larger, heavier earrings.

Results
In a retrospective review of the last 20 patients treated with our defect size-based approach with at least 1 year of follow-up, no significant complications were noted. None of the patients have required further reconstruction or excisional scar revision. However, 2 patients with originally larger defects underwent dermabrasion at 1 year to help further blend the appearance of their scar. Figure 4 demonstrates the expected results for small, medium, and large gauge earring defects.
Discussion

Earlobe reconstruction after earring-related defects usually involves 1 of 2 types of acquired deformities: cleft earlobe resulting from laceration of a standard ear piercing and gauge earlobe defects resulting from wider earrings that leave much larger defects within the earlobe. During the past several years, plastic surgeons are seeing increasing numbers of the latter group of patients as gauge earlobe piercings become more popular.

Several techniques have been developed for the repair of cleft earlobes, including straight-line closure, incorporation of Z-plasty, using part of the epithelialized cleft to resurface a new hole while the rest of the cleft is repaired, and use of the remaining earlobe tissue to close the cleft while recreating volume or correcting an elongated contour in an aged ear.

Surgical repair of gauge earlobe defects has not been reported commonly in the literature since use of these earrings is a relatively recent trend. Only one article on this topic was found in our search, in which Williams and Majumder describe their technique used on 2 patients using a straight-line and Z-plasty repair, similar to the technique used in a cleft earlobe, with excision of excess earlobe tissue to correct the elongated appearance of the lobe.

Conclusions

Gauge earrings are a growing source of patient requests for plastic surgery of the ear. Small gauge earring defects can be effectively repaired using primary closure of the skin. Medium defects require advancement of neighboring skin to fill the soft-tissue void and can often be done using incisions contained within the earlobe. Large gauge defects not only necessitate use of local advancement flaps but also require excisional techniques to reshape and restore a natural earlobe contour. This stratified approach to repair of gauge earring defects is easily incorporated into practice and produces excellent surgical results.

ARTICLE INFORMATION

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REFERENCES


