Reducing the Incidence of Ear Deformity in Facelift

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Background: The telltale signs associated with facelift procedures, including tightening of the lower face (lateral sweep), visible scars, a distorted hairline, and the "pixie ear" deformity are grounds for concern among both patients and aesthetic surgeons. It is the author's belief that facelift results can be improved with correct positioning of the ears, so that these signs are reduced or eliminated altogether.

Objective: The purpose of this paper is to study the causes of ear deformity and describe the advantages of the author's technique for the prevention of ear deformities in facelift surgeries.

Methods: Between January 2005 and November 2007, the author performed facelifts on 106 patients using a technique that included autologous fat injections to improve facial volume, hidden incisions in and around the ear, and absorbable bidirectional barbed sutures. Patient charts and photographs were reviewed retrospectively. Pre- and postoperative angles were measured with respect to the ear and face and were documented to determine the degree of improvement or deformity.

Results: Significant improvement of the specified angles was noted in 70% of cases following facelift surgery; in these cases, the ear position was elevated. No change in ear position occurred in 10% of cases. Some distortion and lowering of the ear was seen in the remaining cases.

Conclusions: Recognition of the effects of aging on the ear and the mechanisms leading to ear deformity associated with facelift procedures can aid in achieving improved aesthetic results. The advantages of the author's technique include shorter incisions, a diminished need to remove redundant skin, ear elevation, and a smoother repair with improved contour. Further investigation of long-term results is necessary. (*Aesthetic Surg J 2009;29:264–271.*)

Patients are often aware of and concerned about an unnatural appearance resulting from facelift surgery. The most obvious characteristic of this "artificial" result is an unnatural tightening of the lower face, often called a "Joker's line" or "lateral sweep."[1] The hairline can frequently become distorted, revealing obvious facelift scars, and there can also be visible scars both in front of and in back of the ears. In addition, elongation of the tragus and earlobe may occur. This particular deformity is referred to as a "pixie ear" deformity (Figure 1). The author presents a method for avoiding ear deformities by which he believes such deformities can be reduced or completely eliminated.

The classical facelift, S-lift, short scar, and minimal access cranial suspension (MACS) lift techniques usually involve repairing loose tissue through an incision around part of the ear and into the hairline, elevating and tightening the superficial muscular aponeurotic system (SMAS) and repairing the neck. Regardless of whether the facelift is achieved with the use of a SMAS elevation or imbrication, it may still result in ear deformity because the force of elevation of the SMAS or plication may cause the ear to be distorted. The added effect of the traction lines caused by the various vector repair procedures (Figure 2) can result in the aforementioned artificial-looking tightening of the lower face. This "pulled" look is undesirable to both patients and surgeons. There have been many attempts to correct these deformities, but the distortion of the earlobe tragus (and drooping of the ear related to changes in its longitudinal axis) are often considered inevitable.

The effect of the traction involved in vector repair may distort the lower face and ears by emphasizing and elongating facial shadows (V. Lambros, MD, personal phone communication). Some of the vectors, as shown in Figure 2, increase deformity, especially if the patient has thin or sun-damaged skin. The unnatural look often becomes exaggerated if the patient has horizontal, static sleep lines or deep wrinkles. The angle of these lines changes and thereby exacerbates the unnatural, "pulled" look of the operated face. Changes in the shape, length, or angulation of the ear cause this deformity to become even more obvious. Any attempt to tighten the SMAS to the

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Figure 1. The "pixie ear" deformity. **A**, Preoperative view of a 55-year-old patient. **B**, Postoperative view one year after facelift.

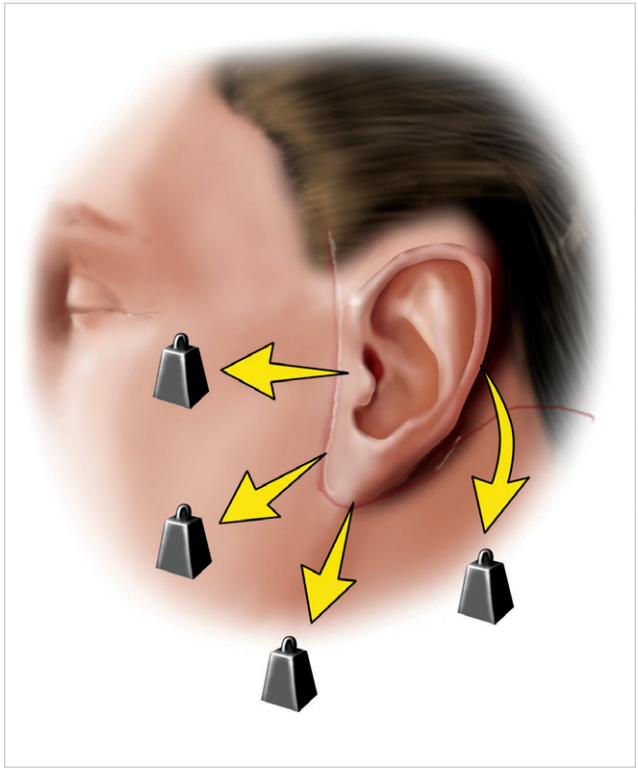

Figure 2. Forces distorting the ear.

surrounding periauricular fascia with vertically- or horizontally-oriented vectors causes further distortion of the ear. This deformity of the ear can be seen before placement of the last suture in the classical facelift technique, while the patient is still supine on the operating table and before gravity worsens the deformity.

The author's impression is that, at the completion of surgery, the superior aspect of the ear already drifts 0.5 cm to 1 cm below the horizontal level of the eyebrow. This situation worsens with time as the impact of gravity further affects the ear; the soft tissue of the ear is very delicate and may become elongated on its own. Heavy earrings can also stretch the earlobe. In addition, the skin envelope is larger and more skin has to be discarded in a sunken face with lowered ears. The use of longer incisions to remove the excess skin results in visible scars and distorted hairlines. In summary, distortion of the face resulting from classical facelift techniques is seen in the form of a flattened midface, changes in the shape and angles of the ears, and the presence of visible scars.

The author recognized that in facelift procedures, reduced skin removal was associated with a shorter scar around the ear. In the author's method, the flaps are elevated; repair of the neck and SMAS is performed according to the patient's need. Midface volume is augmented

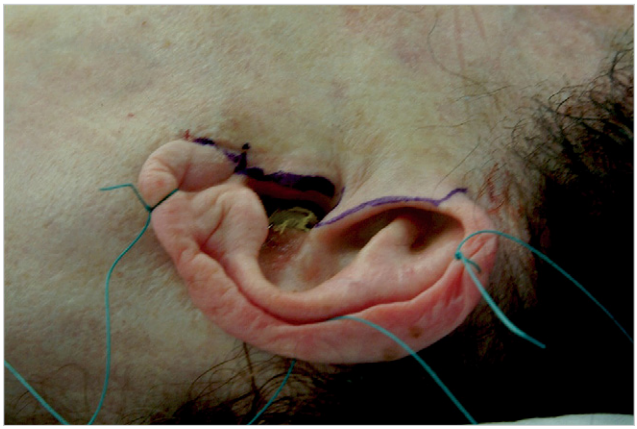

Figure 3. Incisions in the interior part of the ear.

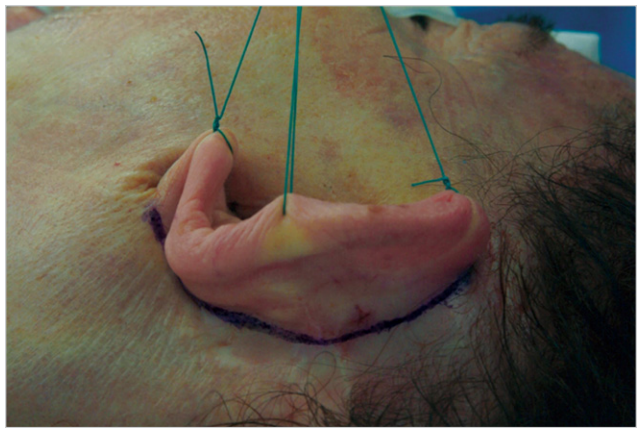

Figure 4. Incisions in the posterior part of the ear.

with autologous fat and the entire ear is elevated relative to its preoperative position. A face with more volume and ears that are positioned higher requires less skin removal, allowing the use of shorter incisions hidden mostly inside the ear, with no distortion of the hair lines.

Many thin patients will benefit from a combination of increased volume and various vector tractions. In patients who present with excess facial skin, a modified technique can be adapted, such as the use of a V–Y advancement flap in the back of the ear. Another option is removal of the hairless skin at the top of the ear.

TECHNIQUE

Between January 2005 and November 2007, the author performed facelifts on 106 patients. At the beginning of each procedure, the patient's own fat was harvested, and 20 mL to 30 mL of fat was injected into various compartments, such as the malar area, nasolabial fold, marionette lines, and lips. This replenished the facial volume that had been lost during aging and created an improved three-dimensional appearance of the face. Hidden incisions were made using a 360° (round block) technique both inside and around the back crease of the ears (Figures 3 and 4).

The connection between the anterior and posterior incision lines was accomplished with a 90° incision over the top of the helix at the junction of the ear and the face, where there is hair-free skin. The skin flaps were elevated all the way down to the midline of the neck, leaving a bridge of soft tissue (ie. a bulge of super- and subplatysmal fat).

Ear Elevation With the Shaped Stitch

In cases of preexisting pixie ear deformity, the pulled-down lobe was released from its fibrosed ligament with scissors or cautery. A 2–0 Quill suture (Angiotech Pharmaceuticals; Vancouver, British Columbia, Canada) was placed at the base of the tragus, which became the new inferior otobasion. Each of the Keith needles (Angiotech Pharmaceuticals) with 2–0 Quill sutures was allowed to run all the way up to the temple—one in front of and one behind the ear (Figure 5). By controlling and distributing the tension in the periauricular area, the entire ear complex was advanced towards the temple in a 360° island round block technique. The typical descent and migration of the ear—forward and downward—was reduced significantly. The anterior border of the ear canal was secured at a higher position without distortion.

Neck Repair: Submental Approach

Dissection was performed through a 4-cm submental incision to the base of the neck. Using a long forceps and cautery, the fibrofatty tissue was removed, leaving the two edges of the platysma exposed. Removal of the axis super- and subplatysmal fat was performed with the use of the direct excisional method. Careful attention was paid to maintain hemostasis.

Using a U-shaped 2–0 bidirectional absorbable barbed suture, the edges of the platysma were approximated in the midline from the chin down to the base of the neck, then back up toward the midline. By returning a needle

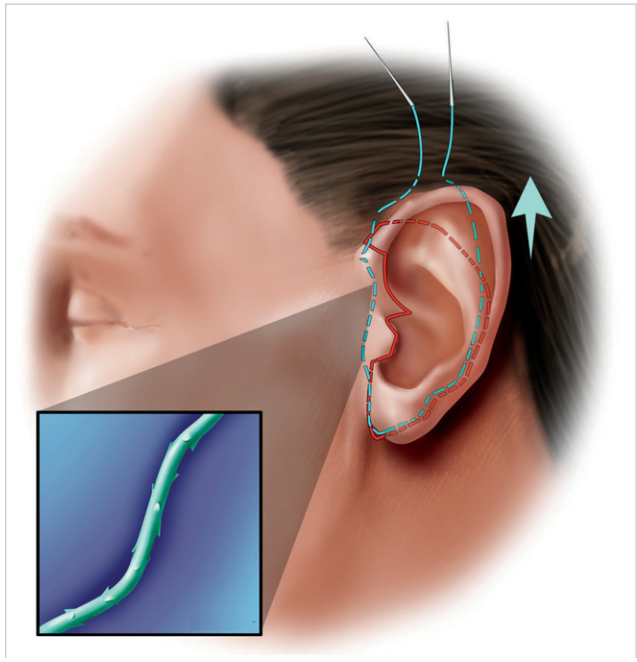

Figure 5. U-shaped sutures were used to elevate the ear. The red line illustrates hidden ear round block incisions. *Inset:* close-up view of U-shaped bidirectional absorbable barbed suture.

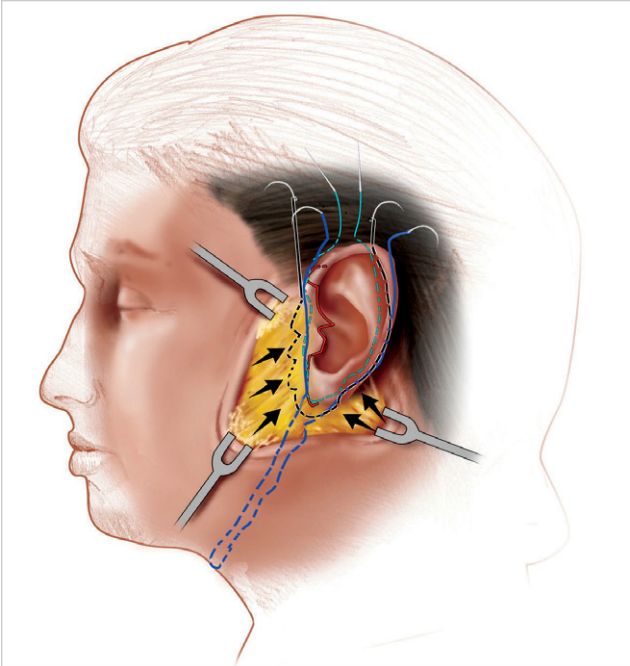

Figure 6. Insert of the flap.

back from the base of the neck toward the midline, a purse-string effect was obtained without bunching the skin and without any need to tie a knot.

The Quill polydioxanone (PDO) self-retaining system suture allows for an increase in both speed and reliability, therefore providing good strength to the repair. These sutures are fabricated with specific barb geometry parameters, creating a superior wound-holding ability when compared with conventional sutures. Each suture contains a spiral array of barbs that are divided into two equal but opposing segments.[2] The barb wound closure device eliminates the need to tie a knot and enables use of running (as opposed to interrupted) sutures. Increased control of the tension within the wound as the suture is advanced is possible without creating any bulk.

In addition, two 2–0 sutures were placed on each side of the neck at the midline. The increased length of these sutures allowed them to run from the cricoid cartilage at a 90° angle to the midline along the jaw line, providing better support to the submandibular ptotic tissues. The suture was inched along the platysma up to the mastoid fascia and the postauricular area, and as high as the temporal fascia. The needle was allowed to exit above the ear, outside of the occipital hair, where it was pulled under tension and cut short under the skin and sunken so that it does not protrude.

Correction of the Aging Face

The facial flaps that were elevated at the beginning of the procedure were inspected and hemostasis was obtained with care. The jowls were trimmed. A long, U-shaped, double 4–0 Quill suture was fixed to the deep temporal fascia at the starting point, 0.5 cm above the zygomatic arch and 0.5 cm in front of the helical rim cartilage of the exposed ear. Care was taken to avoid

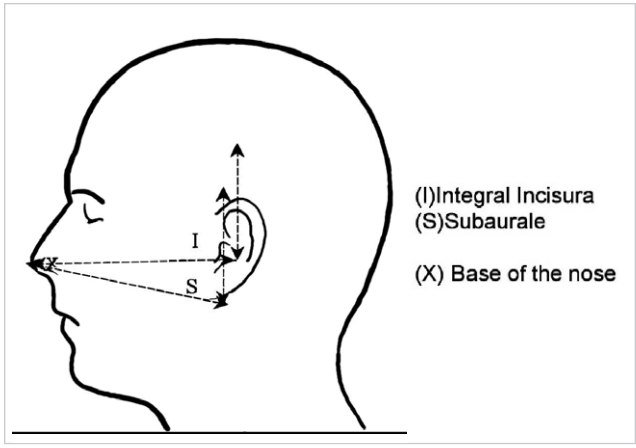

Figure 7. Degrees of ear position improvement.

injury to the superficial temporal vessels and nerves. One needle was directed toward the tragus, parallel to the anterior border of the ear vertically. Firm bites 1 cm to 2 cm apart were used to elevate the loose SMAS tissue. The bidirectional barb sutures controlled and distributed the tension of this loose tissue.

The repair continued down to the region of the mandibular angle. At this point, the first needle was turned vertically upward to the superior portion of the preauricular area, facilitating a purse-string effect and elevating sagging tissue. This needle was brought back to the starting point diagonally, toward the trimmed jowls, gathering the SMAS. Careful attention was paid to taking bites in the superficial fascia to eliminate any danger of injury to the facial vessel and nerves. The needle was then redirected diagonally back to the starting point in a zigzag fashion. Note that, at this time, both the vertical oblique and horizontal laxity of the facial tissue has been corrected. Some tissue protrusion appeared to be present between the suture materials.

The second needle was then directed from the original starting point, thereby correcting the tissue profusion and turning a “hill and valley” into a smooth plain. The full length of the suture was used, bringing the second needle back to its starting point. At this point, all the loose tissue had been gathered, flattened, and repaired, creating a full midface and malar mount. In the end, the two needles were brought to the starting point, and then the suture was cut and knotted together.

Finally, an additional 4–0 Monocryl suture (Ethicon, Somerville, NJ) was placed at the starting point; this suture was used to further even out any irregularities left behind by the Quill sutures.

Skin Reposition and Resection

Unlike the classical facelift repair, the vector of the midface repair in this procedure was mostly vertical and only partially horizontal. It did not compromise or lower the ear. This was possible because the ear had been secured with the U-shaped bidirectional barbed suture, up into the temporalis fascia. The skin flap was subjected to moderate vertical tension and any skin excess was determined and addressed (Figure 6).

Measurements

Through the retrospective examination of preoperative patient photographs, midface vectors and angles were calculated by measuring the angles created by the intersection vertical vectors with lines drawn from the base of the nose (X) to the integral incision (I) and the subaurale (S) (Figure 7). These angles (as they appeared in postoperative photographs) were recalculated at three months for all patients by an independent reviewer to determine the degree of improvement.

RESULTS

A total of 106 patients were treated using this technique between January 2005 and November 2007. The success rate in preventing ear deformities and achieving a natural look was significant. In 70% of patients, the angles between points I, S, and X increased by an average of 9.0°. The entire ear was elevated, creating a better appearance (Figures 8 to 10). In 10% of patients, the ear remained at the original site. In 20% of patients, the angles between points I, S, and X were reduced by 3°. In these cases, the ear was lowered, creating a pulled, deformed look. Using the 360° round block inside-ear incision technique resulted in a more natural-looking facelift. Eighty percent of patients surveyed at one year by a patient educator during follow-up visits were pleased with the overall results.

No hematoma or infection occurred in this series. Twelve patients complained of transitory discomfort in their ears caused by initial swelling, which subsided in two to three weeks. Two patients needed revision of the suspension suture repair; these were in the first group of patients, in whom the repair was performed with 4–0 nylon sutures that were damaged or became loose. The author no longer uses these sutures. Healing proceeded in all patients without major sequelae. Most patients returned to normal activities in 10 to 14 days.

DISCUSSION

In the author's opinion, most facelift techniques leave the top of the helix lower than the horizontal level of the eyebrow, while the bottom of the ear extends to the bottom of the mandible. Before surgery, there is no sign of such a deformity; it develops as the operation progresses.

Several different authors have discussed the anatomy, morphology, and repair of the external ear.[2-4] Connell[5] recommended resetting the earlobe so that the "angle of the dangle" is rotated 12° to 15° posterior to

Figure 8. A, Preoperative view of a 75-year-old woman. **B**, Postoperative view nine months after facelift.

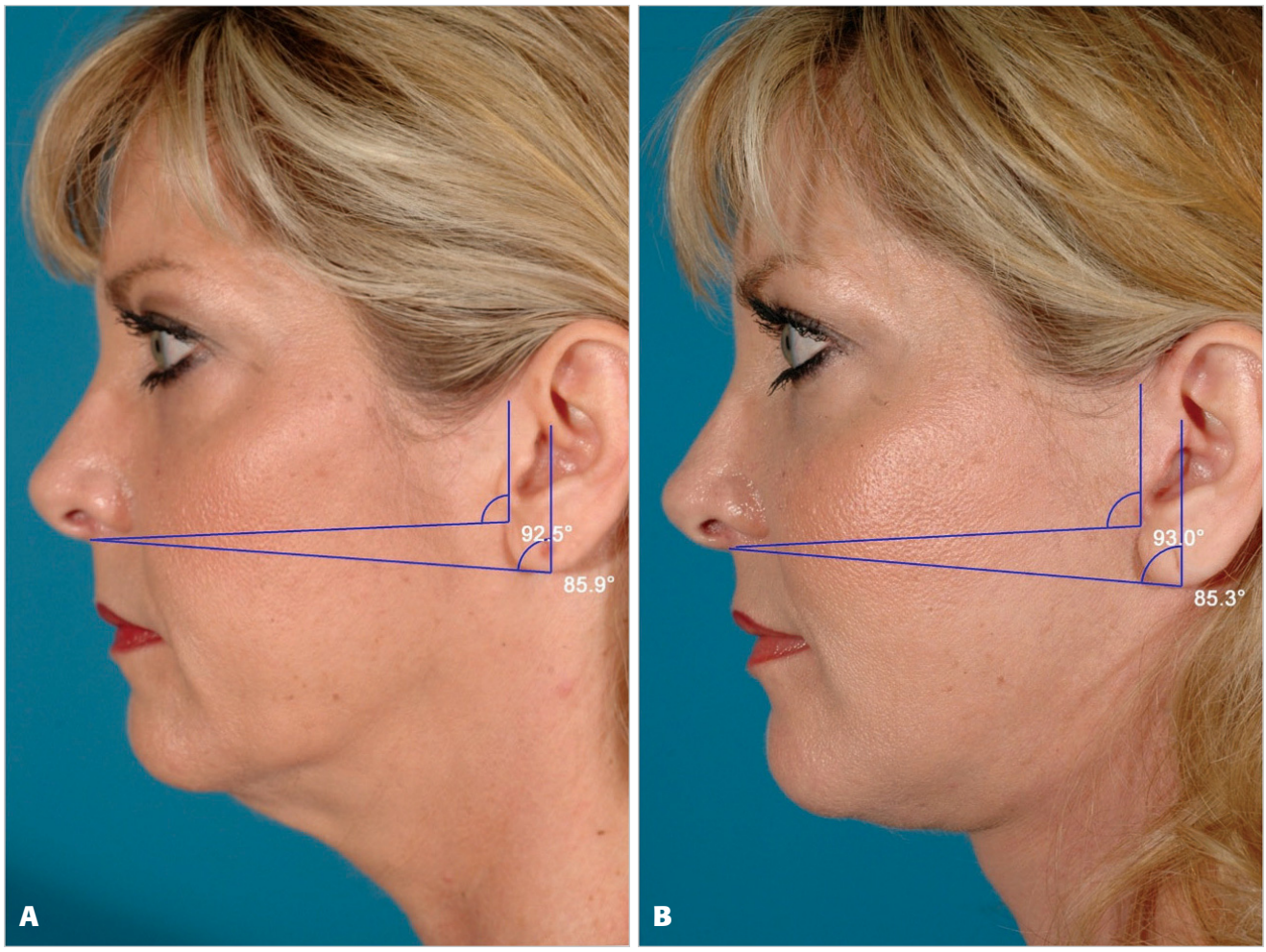

Figure 9. A, Preoperative view of a 53-year-old woman. **B**, Postoperative view 16 months after facelift.

the long axis of the ear. Stuzin[6] recommended converting a lobule without a dangle to one with a dangle by rotating the "O" point upward to round off the front of the lobe, thereby creating a slightly higher inferior otobasion. This is accomplished by removing a small, triangular portion of the earlobe skin. A similar technique was also suggested by Lindgren and Carlin.[7] Clevens and Baker[8] define a pixie earlobe as an attached earlobe that appears to be stretched and elongated caudally. It is an iatrogenic earlobe deformity in which there is increased tension at the earlobe skin flap junction or incorrect placement of the base of the earlobe, and it is commonly seen after a facelift.[4,6-15]

Although various approaches, discussions, and solutions have appeared in the literature, a complete explanation of the cause of this deformity is still lacking. In the author's opinion, the ear deformity is brought about by the repair of the SMAS, the neck, and the distortion of the hairline.

The author first discussed ear deformity in 1996,[9] noting that the ear's original position can change as a result of various facelift techniques that impose a high degree of tension on the soft tissue of the ear. Even without this tension, the ear drifts caudally as the patient ages.

At first, the author connected the ear's island round block sutures with a buried 4–0 nylon suture. This suture was connected to the island sutures at the 12 o'clock position using a long needle, with interrupted incisions in the scalp over the calvarial bone. These island sutures were placed under tension, either elevating the ears or preventing them from drifting downward. Because the entire ear was elevated, a lesser amount of facial skin flap had to be removed and there was no change in the hairline or the shape of the ear. Furthermore, the hidden incisions prevented any pull on the earlobe and the helix. The logic behind this was that the occipital bone is the only stable structure in the head that will not "give," so deformity of the ear and face would be prevented.

This technique was time-consuming and required the use of suture knots that could be palpated and exposed. With the advent of the bidirectional Quill barbed suture, the repair could be accomplished without knots. This suture allows progressive control (and even tension) on the tissue. It is not necessary to pass these sutures over the entire calvarium; instead, they are threaded to the temporalis fascia, pulled through, and cut off. This technique significantly shortened the amount of time needed for the operation.

The results presented in this manuscript are preliminary; a long-term (three-year) follow-up is still under way and a complete analysis of the data has not yet

Figure 10. **A**, Preoperative view of a 61-year-old woman. **B**, Postoperative view 24 months after facelift.

been undertaken. Thus far, we have not encountered any deterioration of the repair other than that caused by the normal aging process. Further data, including an assessment of the long-term results using the Quill sutures, are still needed.

CONCLUSIONS

An explanation of the mechanism leading to ear deformity associated with facelift procedures is presented. A facelift technique is described that uses autologous fat to improve facial volume, hidden incisions made almost totally within the ear with a 360° round block technique, and absorbable bidirectional barbed sutures. The described technique allows less skin to be removed, while the remaining skin flaps heal remarkably. It also results in shorter and more concealable scars, and achievement of a smoother repair, improved contour, and a more natural look. Further long-term assessment of the results is necessary. ◗

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DISCLOSURES

The author has no disclosures with respect to the contents of this article.

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