A Comparison of the Full and Short-Scar Face-Lift Incision Techniques in Multiple Sets of Identical Twins

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Background: Choosing the ideal face-lift technique for a patient presents an added challenge for the plastic surgeon. With the multitude of well-established variations of this procedure, it would be beneficial to define which facioplasty technique produces the optimal result. By comparing the postoperative results from two of the most popularized face-lift incision techniques in monozygotic twins, it is hypothesized that the "best" technique may be determined.
Methods: Four sets of identical twins and one set of identical triplets underwent face-lift surgery performed by the senior author (D.E.A.). Incision technique selection was randomized, with the first-born twin undergoing the full-incision operation. Short- and long-term postoperative photographs were taken at approximately 1 and 5 years and subsequently graded by eight board-certified plastic surgeons with over 100 years of combined experience.
Results: Data obtained from this study suggest that no difference between these incisions exists at the shorter term follow-up. However, analysis of the long-term follow-up revealed a significant difference between the average scores assigned to the neck region, with the full-incision technique receiving a higher score.
Conclusions: These findings suggest that at the short-term follow-up, both the short-scar and full-incision techniques yield comparable results. However, at the longer term follow-up, a significant difference appears between the two procedures exclusively in the neck region. Although a shorter incision is appealing to the patient and surgeon, this study suggests that the full incision may offer a superior long-term result in the neck. (*Plast. Reconstr. Surg.* 137: 1707, 2016.)
CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, II.

Since the advent of the face lift at the beginning of the twentieth century, there has been a proliferation of varying incisions and techniques.[1] However, there is limited scientific evidence to properly ascertain which of these numerous techniques produces the optimal result.[2–4] This

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study proposes to compare two of the most widely accepted face-lift incisions, the traditional full-incision and the "mini" or short-scar lift. The short-scar incision, popularized by Dr. Daniel Baker in the early 2000s, obviates the need for an incision back into the postauricular hairline, thereby reducing the likelihood of apparent scarring in this area.[5] It has also been suggested that the recovery period following surgery may be speedier for the short-scar technique, which is attributed to the smaller undermining area required.[5] Therefore, if an incision in this area could be avoided and equivalent results yielded, this would be beneficial to patients undergoing face-lift procedures. However, other surgeons believe that the short-scar lift fails to provide substantial improvements in the neck area.[6] By randomizing which technique each twin received and using a single surgeon to perform the operations, this study offers a more controlled long-term comparison of these two techniques.

PATIENTS AND METHODS

On receiving institutional review board approval (no. 13-319B), four sets of identical twins and one set of identical triplets (11 patients) underwent face-lift procedures between January and August of 2006 in a fully accredited office-based surgery setting performed by the same surgeon, who had equal experience performing both face-lift incisions. Three sets of the twins and the identical triplets were all female. One set of identical twins were male. Participants' ages ranged between 56 and 73 years at the time of surgery, with a mean age of 65 years.

The choice of facioplasty incision was not selected based on the clinical expertise of the senior author (D.E.A.). Instead, the choice of technique was randomized in this study, with the first-born twin receiving a full-incision lift and the younger sibling receiving a short-scar lift. The remaining triplet underwent a minimal access cranial suspension face lift to provide an alternative form of the short-scar incision for further comparison. The incisions performed and the respective areas of dissection for the short-scar and full-incision procedures are detailed in Figure 1. The extent of dissection varied between the short-scar and full-incision techniques only by eliminating dissection in the postauricular area for the short-scar patients. In all patients, dissection in the upper face included subcutaneous dissection to the lateral orbital rim and beyond the malar ligaments. Subcutaneous dissection in the midface was performed on all patients to within 1 to 2 cm of the nasolabial fold. In the lower face, subcutaneous dissection was performed on all patients into the neck and beyond the mandibular ligaments.

Treatment of the superficial musculoaponeurotic system (SMAS) was also controlled for each set of siblings. Therefore, if one twin underwent SMAS plication, the sibling did as well. Three sets of twins received SMAS plication. The remaining sets of twins received skin-only lifts, as their SMAS was intraoperatively judged to be in satisfactory condition. This amount of dissection

Fig. 1. Short-scar incision (*left*) and full incision (*right*). The incision for each technique is drawn in *red*. The area of subcutaneous undermining is drawn in *yellow*. Note that the two techniques differed, as only the full-incision procedure included an incision and subcutaneous dissection into the postauricular area.

allowed placement of SMAS plication sutures in a line parallel to the nasolabial fold from the malar area down beneath the earlobe over the tail of the parotid gland into the neck. Clinically, there was no apparent difference in the amount of skin that was resected as a result of the SMAS plication.

When ancillary procedures were performed on one twin, they were also performed on the corresponding sibling(s), aside from a lower lip scar revision performed on a single patient (twin 1b). Ancillary procedures performed during this study included submental suction-assisted lipectomy (11 patients), chemical peel to the perioral and lower eyelid areas (two patients), and upper blepharoplasty (seven patients).

Postoperative photographs (of the same face view from twin to twin) were collected at a short-term follow-up appointment, scheduled at approximately 1 year after surgery and again at a longer term follow-up approximately 5 years after surgery. These follow-up photographs were reviewed by eight board-certified plastic surgeons with over 100 years of combined experience. Each grader was blinded as to which procedure the depicted patients received. Graders were asked to evaluate three anatomical regions of each participant's face according to the guidelines previously described by Antell and Orseck: the nasolabial fold, the jawline, and the neck.[7] These regions were graded separately and scored as follows: 1, no improvement (poor result); 2, mild improvement (fair result); 3, moderate improvement (good result); 4, marked improvement (excellent result); and 5, perfect result. Results from all eight graders were compiled and averaged for each anatomical region. Average figures for the full-incision and short-scar groups as a whole were then calculated at both time points studied for each anatomical region to allow for an overall comparison of the two techniques.

RESULTS

Preoperative and postoperative photographs used for grading for twin sets 1 and 2 are shown in Figures 2 and 3. Photographs submitted for grading for twin sets 3, 4, and 5 are shown in Supplementary Digital Content 1 through 3. [**See Figure, Supplemental Digital Content 1**, which shows preoperative and postoperative oblique view photographs of twin 3a (*above*), who received the full-incision lift; and twin 3b (*below*), who received the short-scar lift. Patients were aged 73 years at the time the preoperative images (*left*) were taken. Short-term postoperative photographs (*center*) were taken 1½ years after their operations. Longer term postoperative images (*right*) were also obtained at 6 years 10 months postoperatively, ***http://links.lww.com/PRS/B710***. **See Figure, Supplemental Digital Content 2**, which shows preoperative and postoperative oblique view photographs of twin 2a (*above*), who received the full-incision lift; and twin 2b (*below*), who received the short-scar lift. Patients were aged 56 years at the time the preoperative images (*left*) were taken. Short-term postoperative photographs (*center*) were taken at approximately 1 year 7 months postoperatively. Longer term postoperative images (*right*) were also obtained at 6 years 3 months, ***http://links.lww.com/PRS/B711***. **See Figure, Supplemental Digital Content 3**, which shows preoperative and postoperative oblique view photographs of twin 5a (*above*), who received the full-incision lift; twin 5b (*center*), who received the short-scar lift; and twin 5c (*below*), who received the short-scar minimal access cranial suspension lift. Patients were aged 56 years at the time preoperative images (*left*) were taken. Short-term postoperative photographs (*center*) were taken 1 year after surgery. Longer term images (*right*) were obtained at 5 years after surgery, ***http://links.lww.com/PRS/B712***.]

The face-lift scoring results at both the short- and long-term follow-ups are summarized in Tables 1 and 2, respectively. Figure 4 graphically represents the average scores obtained with the two different incisions in the nasolabial fold region. The average short-term scores for both the full-incision and short-scar methods in the nasolabial fold region were 3.4 and 3.3, respectively. Long-term follow-up yielded average scores of 2.9 for the full-incision technique and 2.5 for the short-scar lift.

The average scores received by both face-lift incision techniques in the jaw line region are depicted in Figure 5. At the shorter term follow-up, the full-incision and short-scar lifts obtained a 3.9 and a 3.6, respectively. At the longer term follow-up, these scores dropped to 3.7 for the full-incision technique and 2.8 for the short-scar lift.

Figure 6 graphically presents the average scores assigned to the neck region. Short-term grading of the neck region results yielded an average score of 3.4 for the full-incision lift and a 3.2 for the short-scar technique. However, of great interest, longer term follow-up of the neck region found that a significant difference exists between these two incisions. Patients who had undergone the full-incision face lift were found to have a significantly higher average score of 3.1 than the average score of 2.4 received by their short-scar counterparts at the longer term follow-up. Unlike the other anatomical areas, there also appeared to be a significant drop in average score assigned to the neck over time for

Fig. 2. Preoperative and postoperative oblique view photographs of twin 1a (*above*), who received the full-incision lift; and twin 1b (*below*), who received the short-scar lift. Patients were 67 years old at the time preoperative images (*left*) were taken. Short-term postoperative photographs (*center*) were taken 1 year after their operations. Longer term postoperative images (*right*) were obtained at 6 years 5 months postoperatively.

the short-scar lift, which dropped from an average score of 3.2 to an average score of 2.4.

With regard to the results obtained with the short-scar minimal access cranial suspension technique, this one patient (twin 5c) received an average rating of 2.1 in the nasolabial fold region at the short-term follow-up. Notably, this score was lower than the average scores given to both the short-scar and full incisions. The same was seen at the longer term follow-up, with the minimal access cranial suspension technique receiving an average of 2.0 versus the 2.9 and 2.5 given to the full-incision and short-scar lifts, respectively. The jaw line region with this lift, unlike the full and short-scar incisions, maintained an equivalent average score of 3.9 at both the short- and long-term follow-ups. Finally, this patient received an average score of 3.9 at the initial time point and 3.8 at their longer term follow-up.

DISCUSSION

According to the American Society of Plastic Surgeons, there were over 125,000 face lifts performed in the United States last year, making this one of the top five cosmetic surgical procedures for both men and women in 2014.[8] With the heightened popularity of face-lift procedures and the ever-expanding range of techniques available to plastic surgeons, there

Fig. 3. Preoperative and postoperative oblique view photographs of twin 2a (*above*), who received the full-incision lift; and twin 2b (*below*), who received the short-scar lift. Patients were aged 73 years at the time preoperative images (*left*) were taken. Short-term postoperative photographs (*center*) were taken 7 months after their operations. Longer term postoperative images (*right*) were also obtained at 4 years 8 months postoperatively.

exists a need to assess the efficacy between the different approaches to determine which yields the optimal result. To address this deficit, our study aimed to make a direct comparison between two well-accepted face-lift incision techniques: the traditional full-incision lift and the short-scar lift. Although the skill of the surgeon is essential to the surgical outcome, it would be closed minded to think that it trumps technique if one approach is shown to be objectively better. Although this study is small, it is the best attempt in the literature to compare face-lift incisions in a controlled and randomized manner.

The results of our study ultimately showed that the reviewers noted no difference between the full-incision and short-scar incisions in any of the anatomical regions analyzed at the shorter term follow-up. However, at the long-term follow-up, a significant difference was detected between these two techniques in the neck region alone. In addition, unlike the full-incision technique, which yielded comparable scores in the neck region at both time points, a significant decline in the average score given to the neck area was observed for the short-scar lift during this same period.

Ultimately, these findings may suggest that the full-incision face lift more effectively targets the neck region. This result is potentially attributable to the larger undermining area available with

Table 1. Short-Term Face-Lift Results

Twin	Type of Face Lift	Ancillary Procedures	Average Score by Evaluators per Anatomical Region		
			NLF	Jawline	Neck
1a	Full-incision	Submental SAL, upper blepharoplasty	3.0	3.8	3.1
1b	Short-scar	Submental SAL, upper blepharoplasty, lower lip scar revision	4.3	4.5	3.8
2a	Full-incision	Submental SAL, SMAS plication, lower lid and perioral chemical peel	4.0	4.8	4.1
2b	Short-scar	Submental SAL, SMAS plication, lower lid and perioral chemical peel	4.0	3.6	3.1
3a	Full-incision	Submental SAL, upper blepharoplasty	3.1	2.6	3.1
3b	Short-scar	Submental SAL, upper blepharoplasty	3.6	3.5	3.3
4a	Full-incision	Submental SAL, SMAS plication	3.6	4.1	3.4
4b	Short-scar	Submental SAL, SMAS plication	2.4	3.1	3.3
5a	Full-incision	Submental SAL, SMAS plication, upper blepharoplasty	3.1	4.1	3.3
5b	Short-scar	Submental SAL, SMAS plication, upper blepharoplasty	2.0	3.1	2.6
5c	MACS	Submental SAL, upper blepharoplasty	2.1	3.9	3.9

NLF, nasolabial fold; SAL, suction-assisted lipectomy; MACS, minimal access cranial suspension.

Table 2. Long-Term Face-Lift Results

Twin	Type of Face Lift	Ancillary Procedures	Average Score by Evaluators per Anatomical Region		
			NLF	Jawline	Neck
1a	Full-incision	Submental SAL, upper blepharoplasty	3.3	4.4	2.9
1b	Short-scar	Submental SAL, upper blepharoplasty, lower lip scar revision	2.1	2.5	2.3
2a	Full-incision	Submental SAL, SMAS plication, lower lid and perioral chemical peel	4.0	4.1	4.0
2b	Short-scar	Submental SAL, SMAS plication, lower lid and perioral chemical peel	3.5	2.9	2.6
3a	Full-incision	Submental SAL, upper blepharoplasty	2.6	2.4	3.0
3b	Short-scar	Submental SAL, upper blepharoplasty	3.3	3.3	2.1
4a	Full-incision	Submental SAL, SMAS plication	2.4	4.0	3.1
4b	Short-scar	Submental SAL, SMAS plication	1.8	2.4	2.5
5a	Full-incision	Submental SAL, SMAS plication, upper blepharoplasty	2.3	3.6	2.5
5b	Short-scar	Submental SAL, SMAS plication, upper blepharoplasty	1.8	3.0	2.3
5c	MACS	Submental SAL, upper blepharoplasty	2.0	3.9	3.8

NLF, nasolabial fold; SAL, suction-assisted lipectomy; MACS, minimal access cranial suspension.

the longer full incision, which allows for a more thorough plication and removal of excess skin from this area. Therefore, it may be advantageous to use the full-incision technique for patients wishing to address facial aging in this particular region. This is especially important in light of recent findings by Jones and Lo that the neck is the most likely area to relapse following face-lift surgery in general.[9] Therefore, a technique that can target this area more effectively would be beneficial for patients undergoing face-lift surgery. These results are therefore consistent with Dr. Baker's assertion that the short-scar face lift is not indicated for patients with mild or moderate cervical laxity.[10] In addition, because the two techniques yielded comparable ratings in the nasolabial fold and jawline at both time points studied, this study may suggest that a short-scar technique may be preferential in patients wishing to address facial aging in only these areas. This selection could thereby avoid scarring in the postauricular area while still yielding beneficial long-term results.

Although these findings are promising, the small sample size of this study prohibited further statistical analysis. Although we were able to demonstrate a difference at a confidence level of 95 percent between the two groups in the neck region, a *t* test, which would require additional study participants, would be ideal to ensure that further differences between these two incision techniques do not exist. In addition, a difference in smoking history was found retrospectively between one set of twins (twins 2a and 2b). Although both twins reported sun exposure and stress as contributors to their facial aging, only the twin that received the full-incision procedure (twin 2a) reported a 20-year history of smoking. This represents a significant confounder to the data, as smoking has been shown by Antell and Taczanowski in 1999 to be a significant contributor to facial aging and thus could have impacted the results.[11] Furthermore, a difference in cosmetic surgical history existed between twins 3a and 3b. Unlike her sister, twin 3b had undergone a prior face-lift procedure

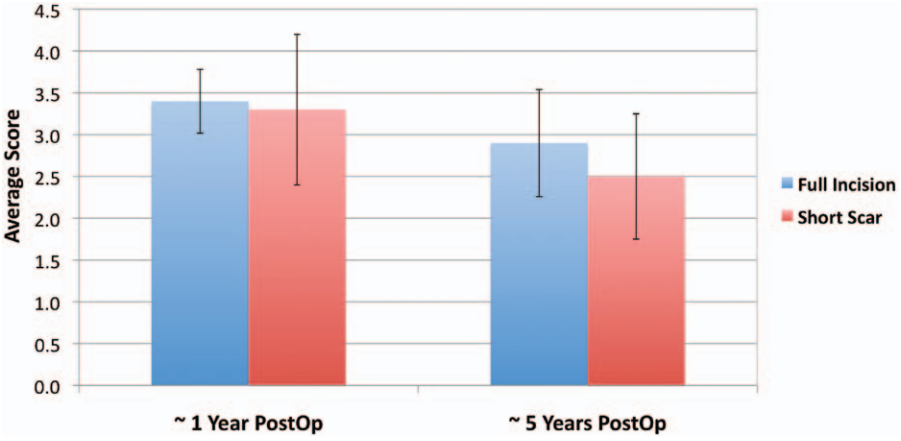

Fig. 4. Comparison of the average score obtained in the nasolabial fold (*NLF*) region following a short-scar or full-incision face lift at approximately 1 and 5 years postoperatively. *Error bars* represent a 95 percent confidence interval and reveal no statistical difference between any of the experimental groups portrayed.

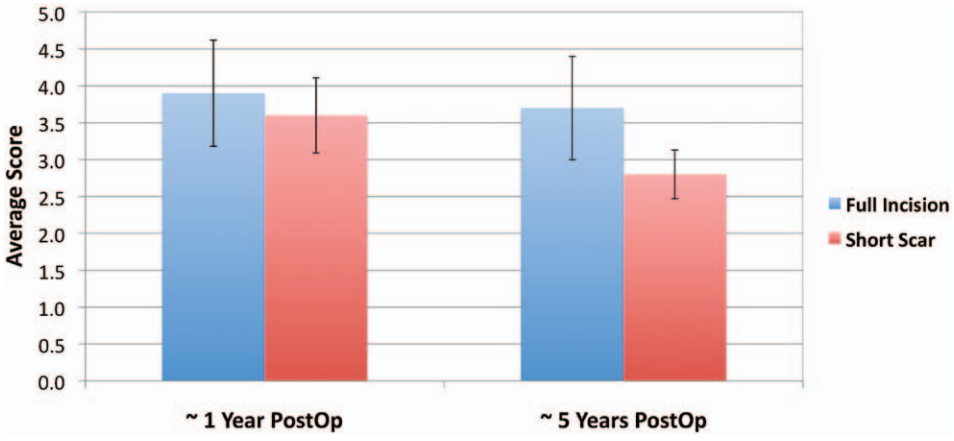

Fig. 5. Comparison of the average scores obtained in the jawline region following a short-scar and full-incision face lift at approximately 1 and 5 years postoperatively. *Error bars* represent the 95 percent confidence interval and fail to reveal any statistical difference between any of the experimental groups depicted.

performed by a different surgeon approximately 20 years earlier. This could have resulted in less initial facial aging preoperatively and perhaps contributed to her receiving consistently higher average scores than her sibling. Because of difficulties arranging follow-up appointments, photographs were also not collected at exactly at 1 and 5 years postoperatively. Therefore, minor variations in the time passed following the patients' operations may have translated to variations in the data collected.

It is important to note that the results obtained by this study represent the judgment of these two incision techniques by blinded graders. Although as plastic surgeons they represent experts on this topic, Friel et al. argued that the "best" face-lift technique is not the one that yields the most impressive results to the plastic surgeon, but the procedure that leads to the greatest patient satisfaction.[12]

The development of verified scales such as the FACE-Q allow for the specific assessment of patient satisfaction with a facial procedure.[13] To this end, future comparison between the plastic surgeon's perspective obtained in this study and the actual patient's perception of their own results can be evaluated. Further investigation will therefore be aimed at both creating a more highly controlled study with a greater number of participants and investigating elements of patient satisfaction, to allow for a richer comparison between the full-incision and short-scar techniques.

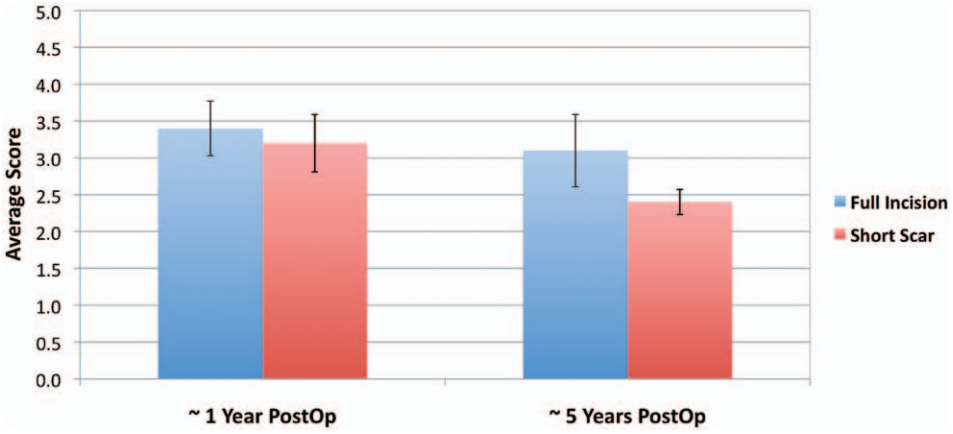

Fig. 6. Comparison of the average score given to the neck region following the short-scar and full face-lift incision techniques. Scoring was performed at approximately 1 and 5 years after the operation. *Error bars* shown represent the 95 percent confidence interval and, unlike the other facial regions studied, reveal a significant difference between the two techniques at the longer term follow-up. In addition, within the short-scar group, a statistical difference is seen between the average scores obtained at the shorter and longer term follow-ups. This suggests that the results obtained with the full-incision technique in the neck region are longer lasting because, unlike the short-scar lift, the average score given at approximately 5 years postoperatively is not statistically different from the score obtained at approximately 1 year postoperatively.

CONCLUSIONS

This study suggests that in the patients studied, the full-incision and short-scar face-lift techniques may not yield equivalent long-term clinical results. Our results suggest that the full-incision face lift may be the preferred incision technique for patients wishing to improve facial aging specifically in the neck area. However, these results may also indicate that comparable results are attained with both techniques in the nasolabial fold and jawline regions over time. The data collected from this study ultimately suggest that the short-scar lift may be a preferred technique for patients wishing to address aging only in these specific areas, because it yields comparable long-term results in the nasolabial fold and jawline regions, and avoids the postauricular scarring possible with the longer incision method.

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PATIENT CONSENT

Patients provided written consent for the use of their images.

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