

# The Purse-String Reinforced SMASectomy Short Scar Facelift

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**BACKGROUND:** Over the last two decades, short scar facelifts, often referred to as “mini” facelifts, have gained popularity. We use a purse-string reinforced (PRS) superficial musculoaponeurotic system rhytidectomy (SMASectomy) shortscar facelift that combines a SMASectomy in the vertical direction and suspension sutures in order to improve structural facial support. In the case of visible platysma bands and/or local fat deposition, liposuction (frequently followed by an anterior platysmaplasty procedure) was added to correct features that are not consistently correctable using only a short scar facelift.

**OBJECTIVE:** This study retrospectively analyzes our experience with a new type of short scar facelift technique that combines both a superficial musculoaponeurotic system rhytidectomy (SMAS-ectomy) and suspension sutures with a thorough approach to the anterior surface of the neck.

**METHODS:** Over a period of three years, the PRS short scar facelift was performed in 137 patients with a mean age of 55 years (range 23-79 years). In almost half of the patients, the PRS short scar facelift was preceded by a separate treatment of the anterior neck contour by liposuction (67/137 patients; 49%). In two-thirds of these patients (42/67 patients), this liposuction was followed by an anterior platysmaplasty.

**RESULTS:** Most patients (129/137; 94%) were satisfied or very satisfied with their results at the end of the follow-up period. Eight patients were not satisfied: five because of higher expectations, two because of insufficient improvement of the platysma bands (which had not been treated by a platysmaplasty procedure), and one because of the improper recognition of midface sagging (which had not been treated and was not properly discussed preoperatively). In the case of platysma bands, platysmaplasty ( $n = 42$ ) did improve the presence of these bands. There were no major complications in this series: 1 case had temporary neuropraxia of a buccal branch, which resolved after two months; two cases had hematoma, requiring evacuation on the outpatient clinic after one week; two cases with traction dimpling in the neck over the sternocleidomastoid region required late surgical revision; and one case had hypertrophic scarring in the preauricular area.

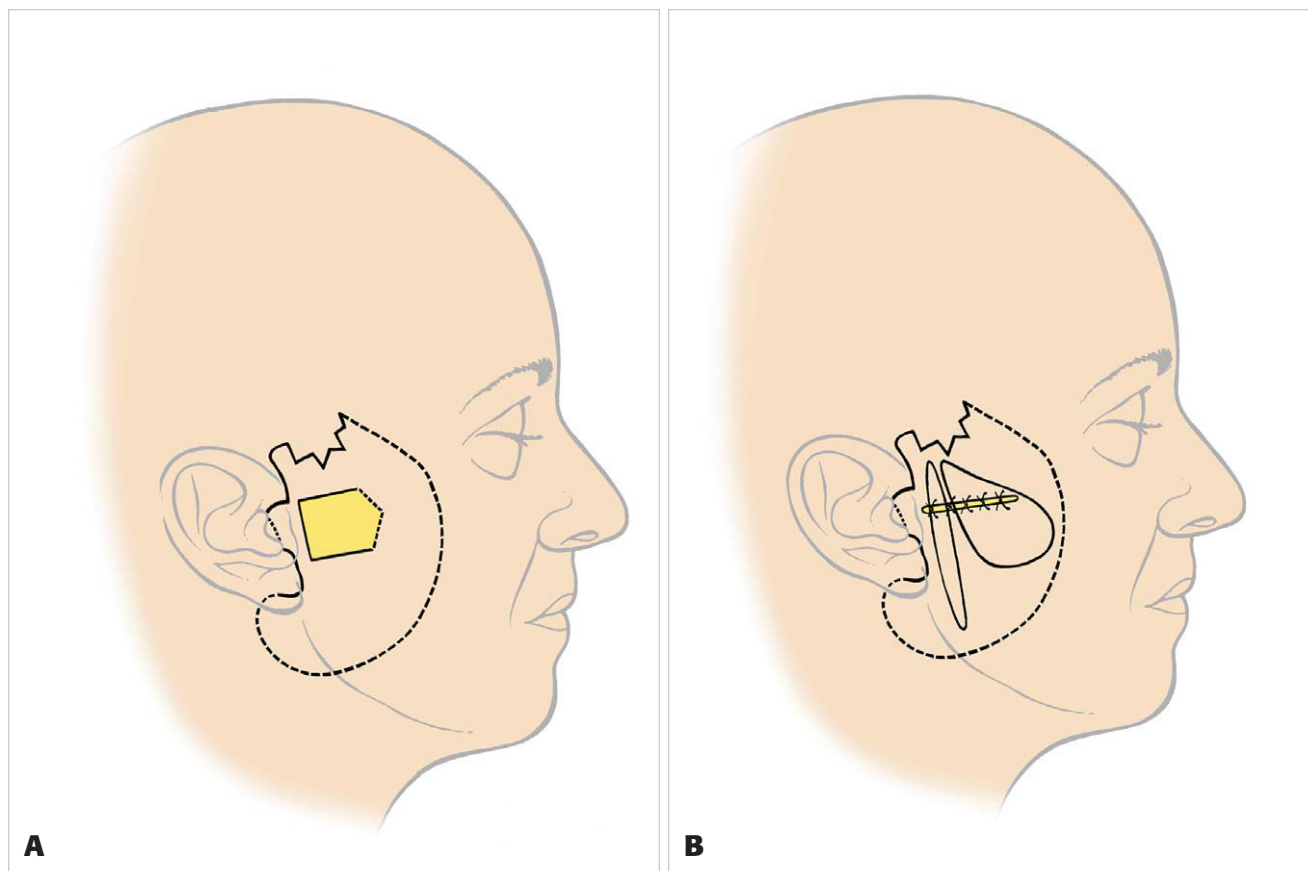
**CONCLUSIONS:** The PRS technique is a short scar facelift technique that is both simple and safe. Complications are uncommon and usually minor. However, in the presence of platysma bands and/or local fat deposition, an anterior neck procedure—liposuction and/or anterior platysmaplasty—should be incorporated in order to optimize the results. (*Aesthetic Surg J* 2009;29:180–188.)

Patients increasingly demand aesthetic facial procedures with shorter recovery times and fewer potential complications. Moreover, most patients who want an aesthetic facial procedure simply want to improve their appearance, rather than to have a face that looks 30 years younger. In general, this means removing

jowling and neck characteristics that are typically characterized as elderly, which are local fat deposition and the presence of platysma bands. These factors have led to the development of several types of short scar facelift techniques, often called “mini” facelifts. Many of these short scar facelift techniques give acceptable or good results; however, there are some limitations, especially with regard to the anterior neck area.

Based upon the work of Baker,<sup>1,2</sup> who introduced the SMASectomy short scar facelift, and that of Tonnard et al<sup>3,4</sup> and Tonnard and Verpaele,<sup>5</sup> who advocated the use of a cranial vector-based short scar facelift performed with suspension sutures (the minimal access cranial suspension [MACS] lift), we began using a short scar facelift that combines both a superficial musculoaponeurotic system

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**Figure 1.** The purse-string reinforced SMASectomy short scar facelift. **A**, The dotted line represents the areas of initial skin dissection and the yellow area represents the strip of SMAS that is excised. **B**, The SMAS gap is closed with 3-0 Vicryl or polydioxanone sutures, resulting in a reduction of the height of the undermined area. Subsequently, additional undermining is performed until the original height is attained and then a narrow U-shaped purse-string suture (grasping the lateral border of the platysma) and an O-shaped purse-string suture are placed to lift the tissues further. Finally, some additional skin undermining may be performed to reduce skin irregularities.

rhytidectomy (SMASectomy) and suspension sutures with a thorough approach to the anterior surface of the neck.

In this report, our experience with this purse-string reinforced (PRS) SMASectomy short scar facelift in a series of 137 patients is presented. The results are discussed in view of the short scar facelift techniques published in the English-language literature.

## PATIENTS AND METHODS

### Patients

A total of 137 patients with a mean age of 55 years (range 23–79 years) underwent the PRS short scar facelift procedure between 2004 and 2007. There were three relatively young patients treated (23, 25, and 35 years old, respectively): one patient because of hemifacial microsomia and two patients because of post-irradiation hemifacial sagging of the soft tissue. Eight patients had undergone a previous facelift procedure. Patients were assessed retrospectively following an analysis of their medical charts, including both pre- and postoperative photographs. The group consisted of 123 women and 14 men.

All patients had a minimum follow-up of six months, but most patients (102; 74%) were evaluated one year postsurgery. Patients typically returned for

suture removal at five to seven days postsurgery. Follow-up visits were scheduled at six weeks, three months, six months, and one year after the operation for evaluation of the end result; the patients were then asked to indicate their satisfaction level.

### Operative Technique

**Skin marking.** The incision lines were made with a waterproof marker and consisted of inverted L-shaped prehairline and preauricular incisions with a maximal postauricular extension of 1 cm. The prehairline incision line can be made in a zigzag pattern (Figure 1, A), as suggested by Tonnard et al<sup>3,4</sup> and Tonnard and Verpaele.<sup>5</sup> In addition, a submental (stab) incision was made if either a liposuction and/or platysmaplasty procedure was planned for contouring the anterior neck.

**Anesthesia.** The operation was performed under local anesthesia in the majority of cases (68%). Disinfection was performed with aquas chlorohexidine (0.5%; Frisian Hospital Pharmacy, Leeuwarden, The Netherlands). In all cases, the anterior surface of the neck (if necessary) and preauricular areas were infiltrated with an average of 40 mL of a mixture of 100 mL saline, 20 mL lignocaine 2%, and 1:100,000 epinephrine (Astra Zeneca BV, Zoetermeer, The Netherlands).



**Figure 2 . A, C, E,** Pretreatment views of a 66-year-old woman. **B, D, F,** Posttreatment views six months after a purse-string reinforced SMASectomy short scar facelift. No submental procedure was performed.

**Improving anterior neck contour.** In many cases (67 patients; 49%), the operation began with contouring of the neck; in essence, a liposuction procedure of the anterior neck region was performed first. Platysma bands that were clearly visible preoperatively (42 patients; 32%) were our indication for opening the neck by a submental incision and performing an anterior double vested platysmaplasty (excision of a small rim of platysma centrally, with subsequent suturing of the newly created platysma edges with 3-0 Vicryl or polydioxanone [PDS] sutures). In select cases, when the surgeon (SOH) wanted additional tightening of the platysma, an infralobular approach was added to further improve the neck contour. In these cases, the posterior edge of the platysma muscle was grasped with sutures from above and further tightened by fixation to the retroauricular periosteum.

These additional measures, together with the subsequently performed PRS mini facelift, provided excellent tightening of the platysma, which led to improvement of the sagging neck.

**Skin incision, SMAS elevation and shortening, and purse-string suspension sutures.** After incision with a blade, the skin and subcutaneous layers were dissected from the underlying parotid fascia/SMAS layer over a limited area of about 4 cm × 6 cm, either by knife or by a combination of knife and facelift scissors under direct vision. It is important to keep this dissection to a minimum, in order to maintain the skin attachments to the SMAS/platysma. Next, a 2.5- to 3-cm wide strip of SMAS at the level of the zygomatic arch was prepared in the vertical direction, extending downward for about 3 cm. Traction on this strip in the





**Figure 3.** **A, C,** Pretreatment views of a 64-year-old woman from the initial series of patients. **B, D,** Posttreatment views six months after a purse-string reinforced SMASectomy short scar facelift. No submental procedure was performed, despite preoperative visible platysma bands. Note that the platysma bands have reappeared.

vertical direction showed the extent to which it could be excised to allow primary closure; in general, a strip 2.5 to 3 cm wide and 2 to 3 cm tall could be excised. After excision of this strip, closure of the SMAS with 3-0 Vicryl or PDS sutures (Figure 1, B) resulted in a significant reduction of jowling. In cases of excessive bulging of the anterior aspect of the closed SMAS resection, additional SMAS tissue could be trimmed carefully. In most cases, this was not necessary because a SMAS “dog ear” in the zygomatic area enhances the fullness in this region, which is often desirable. Additional skin undermining in caudal direction is often necessary to release skin irregularities and make room for the purse-string sutures. In this area, the platysma-auricular-cutaneous ligaments will be divided. Next, two purse-string sutures using 2-0 or 3-0 monocril or PDS sutures were used, as described by others<sup>3-5</sup> (Figure 1, B). Both suspension

sutures were anchored to the deep temporal fascia, which was exposed at 1 cm above the zygomatic arch and 1 to 1.5 cm preauricularly. The first narrow U-shaped purse-string suture was placed in front of the ear and included multiple bites of SMAS tissue. It reached the already elevated lateral platysma muscle and was tied with maximum vertical traction, thereby lifting even further the SMAS and, consequently, all attached tissues. A second purse-string suture started at the same level from the deep temporal fascia and was directed anteriorly, forming the O-shaped suture. In cases of skin dimpling, the adjacent skin was released additionally.

**Skin closure.** Excess skin could be excised at the level of the helical rim for a length of about 3 to 3.5 cm; it was then redraped and resutured. For skin closure, subdermal 4-0 Vicryl sutures and 5-0 Ethilon sutures (Ethicon, Sint-Stevens-Woluwe, Belgium) were used. The small



**Figure 4.** **A, C, E,** Pretreatment views of a 54-year-old woman with a severely sagging neck. **B, D, F,** Posttreatment views one year after a liposuction of the anterior neck region, anterior double vested platysmaplasty, and purse-string reinforced SMASectomy short scar facelift.

**Table.** Overview of 102 ancillary procedures performed in 68 of the 137 (50%) patients

Ancillary procedure	No. of patients
Upper eyelid blepharoplasty	36
Lower eyelid blepharoplasty	20
SMAS filling procedure	15
Brow/forehead lift	8
Soft tissue filler	5
Chin augmentation	2
Rhinoplasty	2
Other procedures	14
Total no. of ancillary procedures	102

extension of the incision over 1 cm at the back of the ear was used as a port for the Penrose drain, which was our choice for all patients. The undermined skin area that locked up the tightened SMAS area had a maximum dimension of 3 cm × 5 cm.

**Ancillary procedures.** A total of 68 patients had an additional series of 102 ancillary procedures, with upper (n = 36) and lower (n = 20) lid blepharoplasty being most frequently performed (Table).

**Bandage and postoperative care.** The bandage on the face could be removed after 24 hours. An elastic support had to be worn for another four to seven days, depending mainly on the anterior neck procedure. The patient was allowed to shower after 24 hours. The drain was removed before discharge from the outpatient clinic





**Figure 5.** A, C, E, Pretreatment views of a 53-year-old woman. B, D, F, Posttreatment views one year after a purse-string reinforced SMASectomy short scar facelift. A submental procedure was performed. The patient underwent simultaneous upper blepharoplasty with mid-facelift.

(usually four to six hours postprocedure). Sutures were removed after five to seven days.

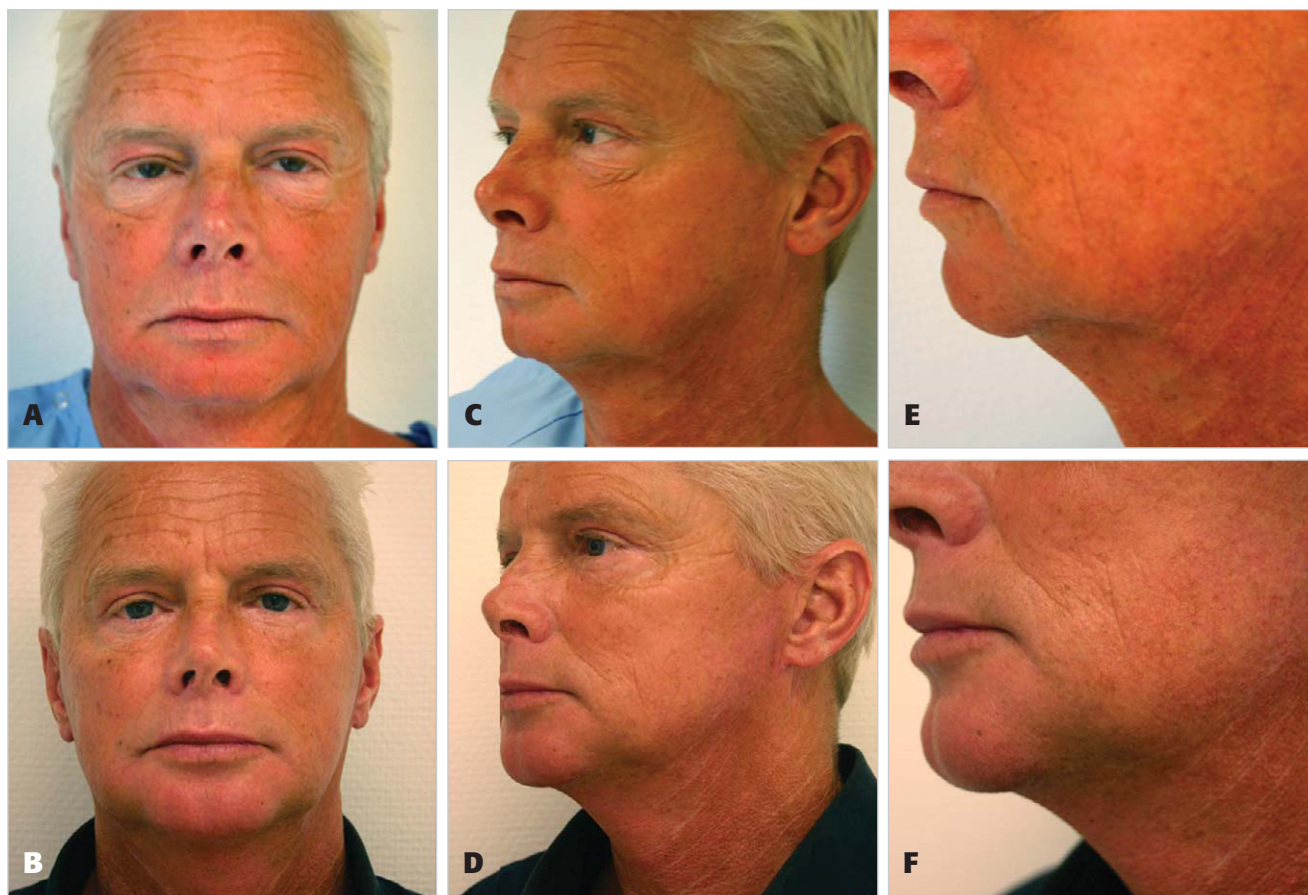
## RESULTS

The operating time was between 120 to 240 minutes, depending on additional ancillary procedures. A neck contouring procedure combined with a PRS short scar facelift took approximately 120 minutes. Most patients experienced pain in front of the ear at the temporal area of the anchoring point for the two purse-string sutures for two to three days.

Most patients ( $n = 129$ ; 94%) were satisfied or very satisfied with their result at the end of follow-up (Figures 2–6). Eight patients were not satisfied; five of these still showed improvement of their preoperative

facial stigmata but were not satisfied because of higher expectations, two patients were not satisfied because of insufficient improvement of the platysma bands of the anterior neck (which had not been treated by a platysmaplasty procedure; Figure 3), and one patient was dissatisfied because of improper recognition of midface sagging (which had not been properly discussed during consultation).

In all patients who had platysma bands treated by platysmaplasty ( $n = 42$ ), there was initially some swelling and firmness palpable, which vanished gradually over the first three months. In addition, there was no increased morbidity and there were no complications related to this procedure. In all patients, platysmaplasty did improve their platysma bands.



**Figure 6.** A, C, E, Pretreatment views of a 53-year-old man. B, D, F, Posttreatment views one year after a purse-string reinforced SMASectomy short scar facelift. A submental procedure with placement of a chin implant was performed.

Four patients (three from our initial series) had insufficient improvement of the anterior neck (Figure 3). Analysis of their preoperative photographs showed that the platysma bands had not been addressed separately. Although the platysma bands had disappeared in the initial period after the PRS mini facelift, they reappeared within six to 12 weeks.

There were no major complications in this series; there was one case with a temporary neuropraxia of a buccal branch that resolved after two months, probably because of either injection with the local anesthetic or compression of the purse-string suture. Minor complications consisted of a minor hematoma in two cases, requiring evacuation on the outpatient clinic after one week; traction dimpling in the neck over the sternocleidomastoid region in two cases, requiring late surgical revision (in an older patient); and hypertrophic scarring in the preauricular area in one case.

## DISCUSSION

The history of short scar facelift techniques actually begins with the history of facelifts.<sup>5,6</sup> Initially, facelifts were performed by resection of the preauricular skin without extensive undermining. This provided only a minor rejuvenating effect that lasted for a very limited period of time. After the introduction of the classic facelift technique by Skoog<sup>7</sup> in 1974, the importance

of the SMAS in facelift surgery was appreciated.<sup>8,9</sup> Subsequently, various modifications in facelift techniques addressing both skin and SMAS techniques have been devised, varying from extensive deep dissection rhytidectomies to the more recent limited short scar facelift techniques.<sup>10</sup>

It is clear to all of us that an extensive classic facelift procedure will include more improvement of the stigma of the aging face in elderly patients. However, because of the potential risks, the variability of surgical skills, and cost-effectiveness, there is a strong trend toward less dramatic facial rejuvenation surgery. In addition, many patients request less dramatic improvements, wanting to avoid the classic “overcorrected” look, which is often characterized as looking “too young” for one’s age. Therefore, short scar facelift techniques have become increasingly popular.

According to Tonnard and Verpaele,<sup>11</sup> Virenque was probably the first surgeon (or one of the first surgeons) to use a mini facelift technique with limited skin undermining and three tension sutures. Ansari<sup>12</sup> reported on a short scar facelift and coined the term “S-lift,” addressing both skin and SMAS, in the German-language literature in 1983. In that series, the SMAS was lifted by plication. Duminy and Hudson<sup>13</sup> from South Africa and Fulton et al<sup>14</sup> from Germany subsequently have used this S-lift short scar facelift incision in combination with two purse-string



sutures to lift the SMAS in a cranial direction. Both reported good results with minimal complications. In Brazil, Stocchero<sup>15,16</sup> used a short scar facelift technique with another type of suspension suture applied in a circular line around the ear.

Baker<sup>1,2</sup> started with a short scar facelift, addressing the SMAS by means of a SMASectomy. An excellent result could be achieved, especially in younger patients. Baker, however, already clearly recognized the limitations of short scar facelift techniques in elderly patients with regard to the anterior neck.

Tonnard et al,<sup>3,4</sup> and Tonnard and Verpaele<sup>5</sup> have popularized the purse-string assisted short scar facelift technique; they named their modification the MACS lift. The purse-string sutures imbricate the elongated SMAS tissue, which is subsequently locked by the redraped and shortened skin envelope.

The results presented in the literature and in this report show that there is a clear indication for short scar facelifts with SMAS elevation. The advantages include a shorter recovery time, shorter scars, and limited skin undermining with potentially fewer wound complications and hematomas. There is also minimized risk of damage to branches of the facial nerve and the greater auricular nerve, along with preservation of the anatomic continuity of the SMAS unit with the skin, thereby enabling lifting of the skin with less tension on the scars. An additional advantage of SMAS resection in our PRS short scar facelift is that this excised tissue can be used to augment the nasolabial folds or lips, which we have performed in several cases as an ancillary procedure.

On the other hand, the present study results concur with those from the published literature, which shows that in cases of preoperatively visible platysma bands, this problem is not adequately solved without a platysmaplasty procedure (Figure 3). In the four patients from our initial series who had visible platysma banding, the PRS short scar facelift was performed without an anterior neck procedure, which resulted in insufficient improvement of these stigmatizing bands. Nevertheless, two of these patients still were satisfied with their moderate improvement.

Very recently, Prado et al<sup>17</sup> published an excellent retrospective study in which they compared the aesthetic outcome of two types of short scar facelift techniques: the SMASectomy technique by Baker<sup>2</sup> and the MACS lift by Tonnard and Verpaele.<sup>5</sup> The results of both techniques did not differ and were judged to be equal after one month and two years when grading the results according to the system of Strasser. After two years, however, they found that more than 50% of patients had sufficient relapse of jowling and anterior neck contour such that an additional tightening could be performed; in both of their applied techniques, no anterior neck procedure had been performed. They also noted the limitations of these two short scar facelift procedures with regard to cervical contour. If

this area was not addressed separately, especially in the presence of platysma bands, suboptimal results were achieved.

Based upon our experience, which is also supported by the remarks of Stuzin<sup>18</sup> in the discussion section of Prado et al,<sup>17</sup> we believe that an anterior platysmaplasty incorporated into the short scar facelift as soon as platysma bands are barely visible or even as a standard part of the procedure may well optimize the results of short scar facelift techniques addressing the SMAS. A prospective study evaluating these observations is needed to further support these statements.

## CONCLUSIONS

Our results with the PRS short scar facelift technique confirmed the findings in the literature and indicated that there is a definite place for short scar facelift procedures that incorporate the SMAS (eg. our PRS facelift). An anterior cervical neck contouring procedure comprised of liposuction followed with a submental platysmaplasty procedure seems important for improving the anterior neck contour; prospective studies on this subject are warranted to elucidate the specific effects more clearly, especially over the long term. ▀

## DISCLOSURES

*The authors have no financial interest in and receive no compensation from manufacturers of products mentioned in this article.*

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Accepted for publication October 28, 2008.

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1090-820X/\$36.00

doi:10.1016/j.asj.2008.10.010

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