Journal of Plastic, Reconstructive & Aesthetic Surgery 85 (2023) 425–435

Assessment of deep plane facelift in facial feminization surgery: A prospective pilot study

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Received 11 April 2023; Accepted 16 July 2023

KEYWORDS
Facial feminization surgery;
Malar enhancement;
Deep plane facelift;
Facelift scale;
Assessment scale;
The face and neck lift Objective Photo-Numerical Assessment Scale

Summary Facial feminization surgery (FFS) is often the first procedure requested by patients wishing to undergo gender-affirming surgery. This study aims to evaluate the applicability and effectiveness of deep plane facelifts in FFS. The authors conducted a prospective study that included patients who requested a deep plane facelift as a standalone procedure to achieve a more feminine facial appearance as the only procedure of FFS. These patients underwent deep plane facelifts to achieve a more feminine oval face shape and increased tissue projection of the zygomatic-malar region. To assess the effectiveness of the procedure and patient satisfaction, the Face-Q scales, Face and Neck lift Objective Photo-Numerical Assessment Scale, the Satisfaction With Life Scale, and the Subjective Happiness Scale were applied preoperatively and one year after surgery. Thirty-six patients were included in the study. A statistically significant difference ($p < 0.005$) was observed between pre and postoperative scores. The repositioning of the malar fat pads increased the malar volume, providing a more oval overall shape of the face, which is typically feminine. No major complications were

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https://doi.org/10.1016/j.bjps.2023.07.023

observed. Despite our encouraging results, new studies with a larger sample of patients are needed to support the benefits of the deep plane facelift as part of FFS to elevate this technique from an ancillary to a routine procedure for patients undergoing gender affirmation surgery.

Gender dysphoria is defined as discomfort or distress due to a discrepancy between a person's gender identity and that person's sex assigned at birth.[1,2] Several medical-surgical and psychological treatments are available to the caregiver and the patient to address this distress. Still, the choice should always be tailored to the patient's needs since what might help one patient might be counterproductive or even harmful to another.[3] When good communication and understanding of the patient's needs are present, gender dysphoria can be alleviated through different treatments significantly.[4] Medical treatment options include feminization or masculinization of the body through hormone therapy and/or surgery, which are effective in alleviating gender dysphoria. Gender identities and expressions are diverse, and hormones and surgery are just two of the multiple options available to assist people in achieving comfort with self and identity. Surgery remains the most widely used tool to help many transgender and gender-nonconforming individuals alleviate the discomfort associated with their gender identity.[5] Facial feminization surgery (FFS) is often the patient's first approach to surgical techniques aimed at gender confirmation. The first reports of FFS were presented by Ousterhout in 1987,[6] focusing on the forehead area. The same author described his techniques for feminizing the chin and jaw in 2003.[7] Today the main drawback of the technique is the absence of standardized protocols. FFS is, in fact, a general term including several different procedures, the most common being forehead contouring, hairline advancement, rhinoplasty, gonial angle shave, reduction genioplasty, thyroid cartilage shave, lip reduction and soft-tissue fillers/fat grafting.[8] Despite efforts described in the literature to set up a common ground for surgeons, the many different techniques and the need for personalized procedures do not allow such an easy standardization.[9] During our practice, it seemed that the results from bone modeling could be enhanced in many cases by surgical intervention on the superficial layers using cervicofacial lifting, preventing iatrogenic esthetic sequelae simultaneously. Rochlin et al. described the possibility of intervening on jowling, cervicofacial laxity, and facial rhytides secondary to the reduction of the mandible and chin through a facelift. The most interesting aspect, however, is that two fundamental beauty parameters, such as a more oval shape of the face and increased tissues projection of the zygomatic-malar region, can be sought and achieved through the deep plane facelift. To date, no report has been published on the use of deep plane facelifts to achieve a more feminine contour in male-to-female transgender patients. This prospective study aimed to evaluate the applicability and effectiveness of the Deep Plane facelift for male-to-female patients seeking a more feminine appearance. The study will assess the results using both objective and self-reported rating scales.

Materials and methods

Between December 2019 and October 2021, the authors conducted a prospective study that included patients who requested a deep plane facelift as a standalone procedure to achieve a more feminine facial appearance as the only procedure of FFS. This study was conducted in accordance with the ethical principles of the Declaration of Helsinki (2002) and approved by the local ethical committee (2018-A02310-43). The goals and risks of the procedure were explained to all patients, and all participants gave their written consent. The following criteria have always been checked before any consultation: patients over 35 years of age; persistent and well-documented gender dysphoria; patients living at least 12 months in the gender role that is congruent with their gender identity; ability to make decisions and consent to treatment, patient under hormonal therapy for 12 consecutive months or longer. At the time of consultation, psychiatric assessment certificate, patient informed consent to care and image rights, and endocrinologist evaluation certificate were systematically demanded. The inclusion criteria for enrollment were: age over 35 years, body mass index less than 30, clinical signs of malar hypotrophy, and facial skin sagging. The exclusion criteria were a previous application of filler injection in the mid-third of the face or other facial rejuvenating and feminization procedures in the last year. To investigate the effectiveness of the procedure, we used the face and neck lift Objective Photo-Numerical Assessment Scale (Table 1) developed by La Padula et al.[10] Patient photographs, taken before and 12 months after surgery, were independently assessed by three blinded graders (one plastic surgeon, one maxillofacial surgeon, and one dermatologist). The FACE-Q modules (a scale of 0–100) were used to survey patient satisfaction one year after the surgical procedure (Table 2).[11] Specifically, modules related to appearance-related psychosocial distress, appraisal of the area under the chin, satisfaction with the cheeks, appraisal of nasolabial folds, satisfaction with the lower face and jawline, and appraisal of the neck were used both before and one year after the deep plane facelift. Additionally, the satisfaction with outcome module was used one year after the procedure to assess patient satisfaction. In addition, Satisfaction With

Table 1 The face and neck lift objective photo-numerical assessment scale.

MIDFACE				
Cheek fullness	Full cheek 0	Mildly sunken cheek 1	Moderately sunken cheek 2	Severely sunken cheek 3
Cheek ptosis	No ptosis 0	Mild ptosis 1	Moderate ptosis 2	Severe ptosis 3
LOWER FACE				
Jawline	No sagging 0	Mild sagging 1	Moderate sagging 2	Severe Sagging 3
Nasolabial folds	No folds 0	Mild folds 1	Moderate folds 2	Severe folds 3
Marionette lines	No lines 0	Mild lines 1	Moderate lines 2	Severe lines 3
Perioral wrinkles	No wrinkles 0	Mild wrinkles 1	Moderate wrinkles 2	Severe wrinkles 3
Oral commissures	No downturn 0	Mild downturn 1	Moderate downturn 2	Severe downturn 3
NECK				
Neck folds	No folds 0	Mild folds 1	Moderate folds 2	Severe folds 3
Double chin	No double chin 0	Mild double chin 1	Moderate double chin 2	Severe double chin 3
Platysmal bands	No platysmal bands 0	Mild platysmal bands 1	Moderate platysmal bands 2	Severe platysmal bands 3
Submandibular glands ptosis	No ptosis 0	Mild ptosis 1	Moderate ptosis 2	Severe ptosis 3

Life Scale (SWLS) and Subjective Happiness Scale (SHS) were used and applied preoperatively (T0) and at one year follow-up (T1).[12] All these assessments were performed solely to evaluate the impact of deep plane facelifts on feminizing the face.

Collected data were organized using Microsoft Excel, version 14.0.7104.5000 (Microsoft Excel 2010 by Microsoft Corporation, USA, New Mexico, Albuquerque).

Statistical analysis

Statistics of demographic characteristics were expressed as mean, median, percentage, and standard deviation. Following a normal distribution, scale scores obtained for each patient were compared using a paired t-test. A p-value of < 0.05 was considered statistically significant. All the authors took full responsibility for the integrity of the data. Analyses were performed using PRISM, version 7 (GraphPad, USA). Two medical statisticians reviewed the results.

Surgical procedure

Preoperative skin markings were performed with the patient awake and in an upright position. Following patient positioning, the endotracheal tube was secured on the upper dental arch using a 2/0 metallic wire. The surgical site was then injected using a solution of 2 mg of adrenaline and 2 g of tranexamic acid in 1000 mL of physiological saline (0.9% NaCl) using a cannula (25 G, 50 mm) on the face and neck area and a needle (27 G, 16 mm) in the retroauricular area. When indicated, a submentoplasty was the first performed procedure, realized through a 3 cm incision using Loktal (Loktal Wavetronic 6000, Biomed) 1 mm posterior to the submental crease. This approach allows reasonable control of the dissection in the medial submental region. The subcutaneous dissection was performed first, and then the subplatysmal one, through a midline incision on the platysma. When necessary, the removal of the subcutaneous adipose tissue, subplatysmal, and, in some cases, interdigastric was carried out. Fat removal must be homogenous. It is important not to overexcize central submental fat to avoid a hollowed submental appearance and a "cobra neck" deformity. Then a plastysmoplasty was performed using a running locking suture of the medial edges of the platysma muscle with a PDS II 2-0 suture (Ethicon, Johnson, and Johnson). The running suture was initiated at the submental incision and carried down to a point just superior to the thyroid cartilage and then reversed in a direction to end at the submental incision area. In some cases, suturing the digastric anterior bellies could be necessary before this step.

Then facelift incision was performed using a Loktal (Loktal Wavetronic 6000, Biomed) or, at the hairline level, a 15-blade scalpel performing a trichophytic incision. The cephalocaudal incision design was performed through the hairline at the temporal level, then continued preauricular retrotragal and retroconchal, and ended through the hairline in the mastoid area. In men, a pretragal incision is

Table 2 FACE-Q scales (scored on a scale of 0–100): appearance-related psychosocial distress, appraisal of the area under the chin, satisfaction with cheeks, and appraisal of lines: nasolabial folds, satisfaction with lower face and jawline, appraisal of the neck, satisfaction with outcome modules.

APPEARANCE-RELATED PSYCHOSOCIAL DISTRESS
With your appearance in mind, how much do you disagree or agree with each statement:

	Definitely Disagree	Somewhat Disagree	Somewhat Agree	Definitely Agree
a. I feel unhappy about how I look.	1	2	3	4
b. I feel stressed about how I look.	1	2	3	4
c. I feel down about how I look.	1	2	3	4
d. I feel anxious when people look at me.	1	2	3	4
e. I worry that I don't look normal.	1	2	3	4
f. I worry that I am ugly.	1	2	3	4
g. I tend to avoid being around people.	1	2	3	4
h. I have little interest in doing things.	1	2	3	4

APPRAISAL OF AREA UNDER CHIN
With the area under your chin in mind, in the past week, how much have you been bothered by:

	Extremely	Moderately	A little	Not at all
a. Fullness under your chin (e.g., double chin)?	1	2	3	4
b. Lack of contour (outline) under your chin?	1	2	3	4
c. Sagging of the skin and fat under your chin?	1	2	3	4
d. Loose skin and fat under your chin?	1	2	3	4
e. How does the area under your chin look in the profile (side view)?	1	2	3	4

SATISFACTION WITH CHEEKS
With your cheeks in mind (the side of your face below your cheekbones), in the past week, how satisfied or dissatisfied have you been with:

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied
a. How symmetric (similar) do your cheeks look?	1	2	3	4
b. How smooth do your cheeks look?	1	2	3	4
c. How attractive do your cheeks look?	1	2	3	4
d. The contour (outline) of your cheeks?	1	2	3	4
e. The youthful fullness of your cheeks?	1	2	3	4

APPRAISAL OF LINES: NASOLABIAL FOLDS
With your nasolabial folds in mind (the deep lines that run downward from the sides of your nose), in the past week, how much have you been bothered by:

	Extremely	Moderately	A little	Not at all
a. How do your nasolabial folds look compared with other people your age?	1	2	3	4
b. How do your nasolabial folds look when you smile?	1	2	3	4
c. How old do your nasolabial folds make you look?	1	2	3	4
d. How do your nasolabial folds look when your face is relaxed (still)?	1	2	3	4
e. How deep your nasolabial folds are?	1	2	3	4

(*continued on next page*)

Table 2 (*continued*)

SATISFACTION WITH LOWER FACE AND JAWLINE
With your lower face in mind (lower cheeks and jawline), in the past week, how satisfied or dissatisfied have you been with:

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied
a. How prominent your jawline looks?	1	2	3	4
b. How sculpted (well-defined) your jawline looks?	1	2	3	4
c. How your jawline looks in profile (side view)?	1	2	3	4
d. How nice your lower face looks?	1	2	3	4
e. How smooth does your lower face look (i.e., no jowls or folds of fatty skin)?	1	2	3	4

APPRAISAL OF THE NECK
For each question, circle only one answer. With your neck in mind, in the past week, how much have you been bothered by:

	Extremely	Moderately	A little	Not at all
a. Having to cover up your neck with clothing (e.g., scarves, clothing with a high neck)?	1	2	3	4
b. How your neck looks compared with other people your age?	1	2	3	4
c. How deep the horizontal lines on your neck are?	1	2	3	4
d. How your neck looks in collared shirts?	1	2	3	4
e. Hanging skin on your neck?	1	2	3	4
f. How your neck looks when you grimace?	1	2	3	4
g. How your neck looks in profile (side view)?	1	2	3	4
h. How wrinkled your neck skin looks?	1	2	3	4
i. How old your neck makes you look?	1	2	3	4
j. Sagging skin on your neck?	1	2	3	4

SATISFACTION WITH OUTCOME
For each statement, circle only one answer. We would like to know how you feel about your most recent procedure. Please indicate how much you agree or disagree with each statement.

	Definitely disagree	Somewhat disagree	Somewhat agree	Definitely agree
a. I am pleased with the result.	1	2	3	4
b. The result turned out great.	1	2	3	4
c. The result was just as I expected.	1	2	3	4
d. I am surprised at how good I look in the mirror.	1	2	3	4
e. The result is fantastic.	1	2	3	4
f. The result is miraculous.	1	2	3	4

preferred to not remove the hair sideburn from the inner side of the tragus, whereas in female and transgender patients, a retrotragal incision is usually chosen.[13] After the facelift incisions were made, a lateral subcutaneous flap was raised in the neck and connected with the submental dissection plane.

In the midface, the subcutaneous blunt dissection was extended to the cutaneous excess planned to be removed by not exceeding this limit. This allows to avoid the occurrence of hematomas inside the dead space between the skin and the superficial musculoaponeurotic system (SMAS). SMAS was incised using scalpel or mayo scissors. The entry point of the plane under the SMAS was variable and depended on the quantity and the quality of the tissue to reposition in each patient. For less experienced surgeons, beginning at a pre-masseter level is advisable since the entry is easier to pinpoint, thanks to the different muscular fiber directions. Once the plane is identified, medial dissection is performed, isolating and preserving vessels and superficial facial nerve branches. To do this, the authors prefer to proceed with the dissection by alternating Trepsat spatulated scissors and Stevens scissors.

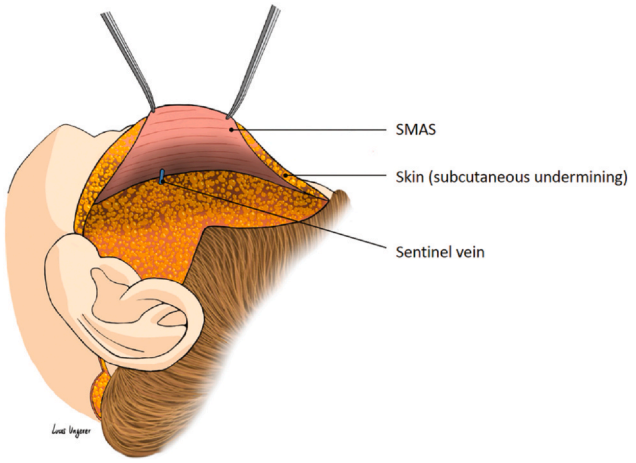

Figure 1 Dissection of the SMAS flap. At the level of the malar region, blunt dissection is more challenging due to the presence of a zygomatic retaining ligament that originates at the anterior third of the zygomatic arch, just behind the insertion of the zygomatic muscles, and is often in the vicinity of a sentinel vein indicating its position.

At the level of the malar region, blunt dissection is more challenging due to the presence of zygomatic retaining ligament, which is the most significant of the retaining ligaments in the midface. It originates at the anterior third of the zygomatic arch, just behind the insertion of the zygomatic muscles, and is often near a sentinel vein indicating its position (Figure 1). Several groupings may occasionally be present. The same applies to the mandibular region at the level of the mandibular ligament, which originates from the bone along a line that is about one centimeter above the mandibular margin and extends along the anterior third of the mandibular body. The resection of these ligaments is pivotal for correctly mobilizing the skin-SMAS flap and the fat pads.[14]

Once the desired mobility of the flap is achieved, an ideal traction vector should be looked for. The vector should be as vertical as possible to achieve long-lasting, natural results and to reposition the fat pads in their original location. In our practice, we typically conduct a wide cranial direction dissection in the sub-SMAS plane. This approach enables us to mobilize the platysma, midfacial SMAS, and the lateral region of the orbit as a single flap. Consequently, we only perform horizontal cuts when the required traction vectors differ among the various components. The excess SMAS was cut, and a lateral SMAS flap was anchored to the mastoid fascia with a PDS II 2-0 (Ethicon, Johnson, and Johnson) suture (Figure 2) (Video 1).

In the midface, the SMAS was fixed to the deep temporal fascia (allowing repositioning of the malar fat pad) and inferiorly to the preauricular fascia using a PDS II 2-0 suture (Ethicon, Johnson, and Johnson). The auricular lobe was anchored to the deep tissues using a PDS 2-0 suture (Ethicon, Johnson, and Johnson) to avoid possible deformity. The cutaneous excess was then resected using Loktal. Resection should be performed step-by-step, temporarily placing metal staples. Such staples were then removed, and PDS 4-0 subcutaneous suture (Ethicon, Johnson, and Johnson) and Vicryl Rapid 5-0 (Ethicon, Johnson, and Johnson) sutures were then used. The suture should always be tension-free at the skin

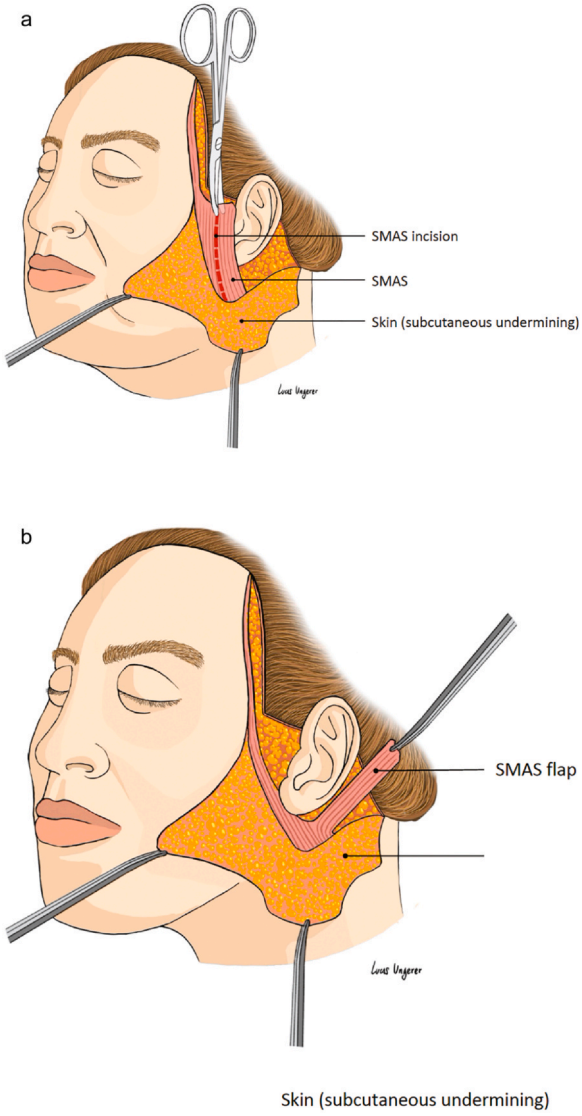

Figure 2 At the end of the dissection, the excess SMAS is cut (a), and a lateral SMAS flap is anchored to the mastoid fascia (b) with a PDS II 2-0 suture (Ethicon, Johnson, and Johnson).

level. Submental access was sutured using Monocryl 4-0 (Ethicon, Johnson, and Johnson). A continuous running Prolene 5-0 (Ethicon, Johnson, and Johnson) suture (hemostatic NET) was placed in the neck subcutaneous plane in a mediolateral direction to prevent possible hematomas (Figure 3). The mastoid suture should be left open until the NET placement is done. NET positioning avoids the use of drainage and is then removed 48 h after surgery.[15]

Results

Thirty-six patients were recruited for this study. The patients' mean age was 41 ± 5.3 years. The most common procedures undergone by patients at least one year before the start of our research were upper lid blepharoplasty (n = 19), followed by hairline advancement (n = 16), lower lid blepharoplasty (n = 9), upper lip lift (n = 6) rhinoplasty

Video 1. At the end of the deep plane dissection, the excess SMAS is cut to create a posterior flap anchored to the mastoid fascia, and then the excess skin is removed. A video clip is available online. Supplementary material related to this article can be found online at doi:10.1016/j.bjps.2023.07.023.

(n = 3), and brow lift (n = 3). The average operative time for the deep plane facelift was 280 ± 23 min. No complications were reported, such as infections, skin slough, or facial nerve injuries. One case of hematoma was identified and treated with active surveillance only. Regarding the face and neck lift Objective Photo-Numerical Assessment Scale (Table 3), the mean score obtained at T0 was 19 ± 1.7. At T1, the mean score was 11 ± 1.3, and a statistically significant difference in the mean preoperative and postoperative scores was observed (p = 0.001). In all 36 patients, the Cheek fullness value (assessed as 0 = Full cheek to 3 = Severely sunken cheek) decreased from a mean preoperative value of 2.9 ± 0.1 to a mean postoperative value at one year of 0.7 ± 0.2. The repositioning of the malar fat pads, possible through the deep plane technique, allowed to increase the malar volume, granting the greater fullness characteristic of this area in a female face (Figure 4). The mean value for the item "jawline" went from 2.4 ± 0.8 in preoperative to 0.7 ± 0.3 in postoperative (where 0 = No sagging and 3 = severe sagging). Concerning the results of the SWLS and SHS, the mean score obtained at T0 was 20.8 ± 6.2 and 13.15 ± 4.7, respectively. At T1, the mean score was 31.3 ± 3.7 and 26.2 ± 1.5, respectively.

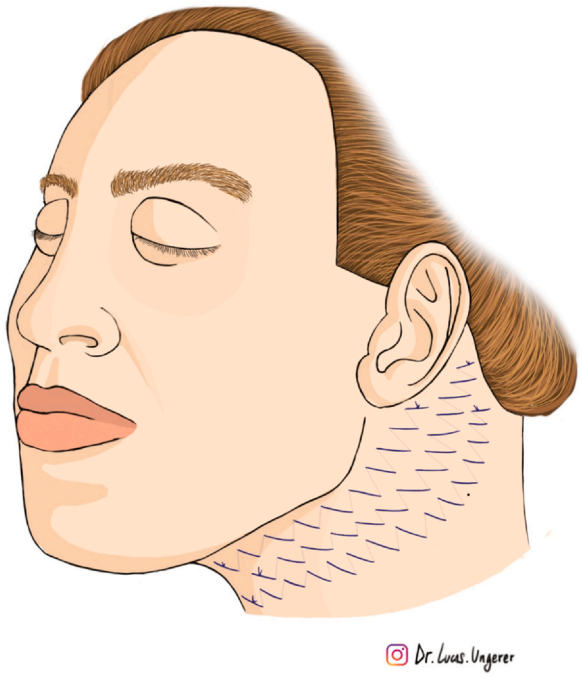

Figure 3 Hemostatic NET. This illustration shows the placement of a continuous running Prolene 5-0 suture in the subcutaneous plane of the neck, following a mediolateral direction. This technique is employed to prevent potential hematomas.

The Face-Q scales proved to be the most effective in evaluating patient satisfaction. Notably, we observed a significant improvement in satisfaction postoperatively regarding the cheeks, lower face and jawline, and neck (p = 0.001), proving that deep plane facelift is effective in feminizing the face. All patients were satisfied after surgery, with a significant difference between pre and postoperative scores (p = 0.002; p = 0.001) (Table 3).

Discussion

Since Skoog in 1974 innovated the concept of a facelift, identifying a new subfascial dissection plane (a.k.a. the SMAS), numerous authors have improved the technique leading to the definition of the Deep Plane facelift by Hamra.[16,17] The deep plane technique was further refined to identify every major retaining ligament of the face, thus, allowing a wider mobilization of the soft-tissue envelope and the face fat pads.[18-21] The results shown on the fat compartments analysis suggest that applying this technique is useful in both face rejuvenation procedures and FFS. Although cervicofacial lifting is mentioned in literature as an ancillary procedure, the deep plane facelift, described by Hamra, is a useful tool for the surgeon during FFS.[16] A deep plane facelift allows to rejuvenate the neck, replenish nasolabial folds and marionette lines, and remodel and augment malar volume through the repositioning of the deep soft tissues of the face and to achieve the desired oval shape of the face. Malar volume restoration or augmentation is generally achieved through injective techniques or prosthetics.[22,23] A deep plane facelift allows for achieving malar

Table 3 Pre- and postoperative scores of the Face and neck lift Objective Photo-Numerical Assessment Scale, Satisfaction With Life Scale (SWLS), Subjective Happiness Scale (SHS), and FACE-Q modules were used to assess patients' satisfaction and surgical outcomes.

	T0. Preoperative score Mean (SD)	T1. One-year postoperative score Mean (SD)	P-value
SWLS	20.8 ± 6.2	31.3 ± 3.7	0.002
SHS	13.15 ± 4.7	26.2 ± 1.5.	0.003
Face and neck lift Objective Photo-Numerical Assessment Scale	19 ± 1.7	11 ± 1.3	0.001
FACE-Q modules:			
Appearance-related psychosocial distress	79.4 ± 9.4	21.3 ± 5.1	0.001
Appraisal of the area under the chin	45.3 ± 8.09	87.13 ± 2.1	0.001
Satisfaction with cheeks	31.15 ± 1.6	97.12 ± 2.5	0.001
Appraisal of nasolabial folds	63.2 ± 3.6	85.3 ± 5.3	0.001
Satisfaction with lower face and jawline	61.12 ± 3.2	89.3 ± 2.12	0.001
Appraisal of the neck	41.3 ± 2.11	91.9 ± 4.2	0.001
Satisfaction with outcome	NA	87.4 ± 1.5	NA

volume augmentation by vertical repositioning the tissues; fat grafting may be considered if further enhancement is required.[24,25] In several articles, Jacono discussed different aspects of deep plane facelifts.[25,38-40] He provided an important overview of facial aging, discussing the rationale for a deep facelift. As the aging process progresses, the malar region experiences a decrease in prominence due to the descent of cheek fat. Volume loss becomes noticeable in the upper and lateral midface, and hollowing is visible at the lower lid-cheek junction. The descent of the cheek fat also leads to an increase and relative widening of the midfacial tissues located just lateral to the nasolabial folds. These age-related changes transform the youthful heart-shaped face into an inverted triangle shape. The deep plane rhytidectomy technique involves creating a composite flap of skin, subcutaneous fat, and malar fat, positioned medial to the zygomaticus major muscle after releasing the zygomatic cutaneous ligaments. Vertically repositioning this composite flap can add volume to the upper midface. Jacono demonstrated that patients gain an average of 3.2 mL of midface volume per side through the complete release of the composite flap, allowing for tension-free redraping of the cheek fat compartments.[38-40] Literature shows how autologous fat grafting procedures have an average of 4-5% complication rates; however, a recent systematic review focused on applying this technique in face lifting confirmed the absence of major complications and a lasting result from six to twelve months.[26] Reports show that over 50% of patients undergo five or more procedures in one session, with a mean complication rate of 3.9%.[27] Therefore, it is pivotal to identify the minimum number of procedures needed to reach a satisfactory result and select the procedures with the lowest complication rate possible. The literature lacks clear evidence or large controlled trials on complication rates of alloplastic malar implant complications.[28,29] Many materials are commercially available such as silicon, MedPor, GoreTex, and mersilene, each one retaining different common complications largely related to the infection and extrusion/migration of the implant itself.[30] Consequently, despite the advantages of custom-made contouring and ease of use, FFS's cost/benefit ratio is yet to be evaluated. Regarding injectable fillers in the malar area, adverse events are very common, mainly material-independent and related to improper injection techniques, although the complication rates reported may be biased due to hidden commercial purposes and inaccurate study designs.[31] Research on permanent fillers like Polymethylmethacrylate (PMMA), hydroxyethyl-methacrylate, polyalkylimide, and polyacrylamide hydrogel (PAHG) report less than 1% complication rate, spanning from granulomas, lower eyelid swelling and late edema to necrosis.[32-36] On the other hand, hyaluronic acid-based fillers possess a higher safety profile than permanent fillers due to the possible use of hyaluronidase as an antidote to the most common and severe complications. Subperiosteal injections allow year-lasting results. Nonetheless, the intrinsic reabsorbability characteristic may relegate the use of HA-based fillers in FFS to small postoperative touch-ups. To date no report has been published on the use of deep plane face lift to achieve a more feminine contour in male-to-female transgender patients. Analyzing the results obtained following evaluation with the face and neck lift Objective Photo-Numerical Assessment Scale, we found a decrease in the score, hence a general improvement in facial appearance in all patients. The most interesting finding, however, emerged when considering the individual items "Cheek fullness" and "Jawline.".

In all 36 patients, the Cheek fullness value (assessed as 0 = Full cheek to 3 = Severely sunken cheek) decreased from a mean preoperative value of 2.9 ± 0.1 to a mean postoperative value at one year of 0.7 ± 0.2. The repositioning of the malar fat pads, possible through the deep plane technique, allowed to increase the malar volume, granting the greater fullness characteristic of this area in a female face. The mean value for the item "jawline" went from 2.4 ± 0.8 in preoperative to 0.7 ± 0.3 in postoperative (where 0 = No sagging and 3 = severe sagging), greatly improving this anatomical area. It has been reported in the literature that after feminizing surgery of the lower third of the face, a facelift procedure may be necessary due to the reduction of the mandible and chin volume. The same procedure allows one to get close to the oval shape of the desired face. Without changes in the overlying soft tissue, redundant and deflated soft-tissue envelope may emerge.[37]

Figure 4 A preoperative aspect of a 51-year-old patient (a-c). The patient underwent a deep plane facelift as a standalone procedure to achieve a more feminine facial appearance. At one year follow-up, she was very satisfied with the result. The procedure resulted in an overall more feminine appearance of the face, with a better-looking jawline. The repositioning of the malar fat pads increased the malar volume, providing the greater fullness characteristic of this area in a female face. (d-f).

In anticipation of a mandibular reshaping surgery, it would be advisable to plan deep plane lift surgery later so that the soft tissues can adapt to the new underlying bone structure. The data obtained through the SWLS and SHS Scales are also encouraging: all patients experienced an improvement in their quality of life after one-step surgery. The Face-Q scales proved to be the most effective means of assessing patient satisfaction, with significant postoperative improvements noted in satisfaction with the cheeks, lower face, jawline, and neck ($p = 0.001$). These findings prove that deep plane facelift is effective for feminizing the face. We believe that the Deep Plane Facelift, a well-established technique in facial rejuvenation, can serve as a valuable tool in FFS for carefully selected patients. This procedure allows for the repositioning and augmentation of malar volume, restoring the oval shape of the face and addressing essential aspects of a feminine facial appearance. It offers benefits not only to aging female patients but also to aging male-to-female transgender patients seeking facial rejuvenation. Specifically, for patients without prominent mandibular angles who desire repositioning the malar fat pads to enhance malar volume and improve the jawline, the deep plane facelift could be considered part of the surgical procedures for facial feminization. However, our study may have some limitations. We recognize that, to date, no specific tools are available to assess patient satisfaction specifically for gender dysphoria. As we regularly encounter feminization cases, we eagerly await the validation process of the Gender Q, which holds great promise.[11] Nevertheless, the instruments used in this study to assess patient satisfaction (SWLS and SHS) have already been used in a previous article on FFS by our team.[12] In addition, another limitation of our study is the small sample size. Although data obtained through the outcome and quality of life assessment scales show an overall benefit of the procedure, new larger sample studies are needed to support these conclusions to elevate this technique from an ancillary to a routine procedure for patients undergoing gender affirmation surgery.

Funding

None.

Ethical approval

Ethical Approval was given by French institutional committee and the relevant Judgment's reference number is 2018-A02310-43.

Compliance with ethical standards

All procedures in the study involving human participants have been performed following the ethical standards of institutional and/or national research committees and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Declaration of Competing Interest

The authors have the following conflicts of interest to disclose.

Acknowledgments

All the authors meet the criteria for authorship.

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