

Patient Satisfaction with Absorbable Anchoring Facial Threads

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Facial Plast Surg

Abstract

This study aimed to evaluate satisfaction in terms of facial appearance, quality of life, and adverse effects in patients undergoing the facial thread lifting procedure using the absorbable facial threads anchored on the superficial and deep temporal fascias. The charts of patients for whom facial anchored thread lifting was performed using absorbable threads between February 2017 and September 2019 were reviewed. Demographic data including age and gender as well as data from the Face-Q scales were collected. Descriptive analysis was made for the adverse effects 1 week after the procedure. The mean value of adverse effects scales was compared 1 and 2 weeks after the procedure and also the mean values of facial appearance and quality-of-life scales were compared at baseline, 6 months, and 12 months after the procedure. All recruited subjects were females with a mean age of 43.42 years. There was a statistically significant decrease in the rate of adverse effects following the procedure between the first and second week. The mean difference in patients' perceived age 6 and 12 months after the procedure was statistically significant when compared with baseline. The psychological distress significantly decreased and the psychological function improved 6 and 12 months after the procedure. The overall satisfaction with facial appearance increased significantly after 6 months with a mean of 20.08. This was maintained at 12 months. The satisfaction in skin appearance, cheeks, nasolabial folds, marionettes, lower face, and jawline appearances improved significantly 6 months after the procedure. This was also maintained at 12 months. Face lifting using the polycaprolactone threads anchored on the temporalis fascia showed a significant improvement in the quality of life and facial appearance. The adverse effects are tolerable starting 2 weeks after the procedure.

Keywords

- ▶ lifting threads
- ▶ anchored threads
- ▶ facelift
- ▶ polycaprolactone
- ▶ patient satisfaction

Aging affects the face and neck of every person resulting in a feeling of nonsatisfaction among many and a will to counteract its effects. There is usually a loss of facial fat, especially around the eye area, the cheeks, the jowls, and the neck. The connective tissue becomes thinner, and a weakening of the elastic fibers causes a sagging of the prominent parts of the face especially the eyebrows, cheeks, and mandible.¹

The traditional facelift aims to correct the signs of aging by tightening the superficial musculo-aponeurotic layer and

skin. A large scar is left, which creates a feeling of discomfort among the treated patient. Other complications such as hematoma formation, infection, skin necrosis, hyper/hypopigmentation, and alopecia are also reported.²

Much surgical advancement has been made during the past 50 years and new surgical techniques have been described aiming to avoid surgical complications and reduce the downtime of the surgery.³⁻⁵ Although much advancement in surgical techniques was made, a surgical facelift is

still considered a complex procedure from a patient's perspective with a lengthy recovery period.²

Nonsurgical techniques were developed to manage facial sagging, among which we cite radiofrequency technology, high-intensity frequency ultrasound, and thread lifting. The efficacy of thread lifting is still very controversial and different opinions are found in the literature about its efficacy in delivering effective long-term results with less complications and greater patient satisfaction.⁶⁻⁹

The controversy in the results can be associated with the wide variety of the thread material used and the shape of the thread along with the shape of the barbs or cones. In addition to that, the advances in techniques have been shown to be a major element of efficacy and ultimately patient satisfaction.¹⁰ One of the major advancements in thread lifting is the anchoring technique in which one side of the thread is anchored to a rigid structure like fascia or periosteum and the remaining part is inserted in the subdermal layer to lift the surrounding soft tissue.

Few studies looked into the efficiency and patient satisfaction in using anchored nonabsorbable polypropylene threads. Horne and Kaminer studied 25 subjects with excellent results at 3 months follow-up. Kaminer et al looked into 20 subjects and concluded that anchored barbed sutures provide moderate long-term and sustained improvement for skin laxity. The clinical improvement was seen up to 16 months postprocedure.^{11,12}

Nonabsorbable threads were associated with many complications and managing those complications was more challenging especially with the irreversibility of the results based on the permanent nature of the thread.⁶

The English literature lacks information about the clinical efficiency of absorbable anchored barbed threads in face lifting. Therefore, the aim of this study is to evaluate patient satisfaction after facial thread lifting using anchored barbed absorbable threads.

Materials and Methods

Data Collection

Data were collected from the principle investigator's clinic database where all patients who performed thread lifting or minor surgeries were asked to fill the correspondent Face-Q scales. Face-Q is a patient-reported outcome questionnaire (FACE-Q 2013 Memorial Sloan Kettering Cancer Center, all rights reserved) used after completion of a user's agreement.¹³ Subjects included in this study were patients for whom a facial thread lifting using the anchoring technique on superficial and deep temporalis fascias was performed. Facial thread lifting was done for cases of mild to moderate facial sagging (grade 2 or 3 out of 4).¹⁴ Patients were given the options for surgical or nonsurgical treatments, and they decided after being counseled about each option on thread lifting. Patients with advanced (grade 4) facial sagging were advised to undergo a surgical facelift for better esthetic results. The data were collected between February 2016 and September 2019.

Demographic data collected included age and gender. The scales about facial appearance and quality of life were filled

before the procedure and 6 and 12 months after the procedure. The Face-Q scales about adverse effects were filled 1 and 2 weeks after the procedure.

Exclusion criteria were previous facial esthetic surgery, previous use of facial threads, previous selected skin rejuvenation therapy that included radiofrequency and high-intensity focused ultrasound therapy, and patients who had other facial cosmetic procedures including the use of fillers or skin treatment within 12 months of undergoing the thread lifting.

Statistical Analysis

Data of the Face-Q scales of the 50 participants along with their age and gender were entered into our dataset. Each scale's questions (continuous variable) were summed based on the Face-Q recommendations.

Descriptive analysis was conducted for the adverse effects 1 week after the procedure. The student's paired *t*-test was used to compare the adverse effects 1 and 2 weeks after the procedure for the three scales: early life impact, adverse effects at the lower face and neck, and adverse effects at the skin level.

Concerning the facial appearance and quality-of-life scales, the mean change in the scales' total values was compared over different time points (baseline, 6 months, and 12 months) using the student's paired *t*-test.

SPSS version 24 was used and a two-tailed *p*-value of less than 0.05 was considered to be statistically significant.

Procedure and Technique

The type of thread used is the Anchorage thread-Happy Lift thread (PromolItalia Company, Milano). It is a 2-0 polycaprolactone (PCL) thread with unidirectional barbs. On one edge a straight sharp needle is attached and on the other one a curved 2-cm needle.

The thread lifting was performed in an outpatient setting using the sterile technique and informed consent was signed prior to the procedure. Lidocaine (1%) with 1:00,000 epinephrine was used for all needle entry and exit points.

One centimeter above the helix, two incisions were made 1 cm apart in the temporal area creating the main entry point (the lower incision) and the knot site (the superior incision; ▶**Fig. 1**). The first thread was introduced using the straight sharp needle from the main entry point, and directed toward the posterior limit of the jawline. The thread was pushed out of the skin at the level of the jawline and then reintroduced through the same exit point, and angled 30 degrees posteriorly to provide a locked system. The same thread was pushed out of the skin 10 cm from the exit/entry point and the remaining thread was cut at the skin level. Another similar thread was introduced in the main entry point and directed toward the anterior limit of the jawline. The same steps previously described were followed. The curved needle of the first entered thread was inserted below the temporalis fascia from the main entry point toward the knot site and the curved needle of the second thread was inserted similarly to the first one but in the subcutaneous plane. The skin and dermis were repositioned over the barbs



Fig 1 The main entry point is made 1 cm above the level of the helix and the knot site 1 cm above it.

manually by lifting the skin up from the jawline toward the temporal area, then the two threads were knotted at the knot site and the created knot was pushed deep and the overlying skin was sutured. The same technique was also performed on the opposite side of the face.

Results

Demographic Data

All subjects included in this study were females. This procedure was performed on few male patients but they were not included in this study because they met one or more of the exclusion criteria. The mean age was 43.42 years (standard deviation = 3.90, range 36–54).

Adverse Effects

Based on the scale of adverse events affecting the cheeks, lower face, and neck, most of the patients mentioned at 1 week after the procedure a lot of tightness, parts not looking smooth, pulling sensation, difficulty with expressions, and difficulty with certain facial movements. Also in the same scale, most of the patients mentioned 1 week after the procedure that they felt “a little” of numbness or hardness in some parts of the face, had sensitive parts to touch, tingling, concerns about how their scars look, swelling, and bruising.

In the scale of adverse events affecting the skin, most of the patients at 1 week noted that some parts are extremely not smooth and also mentioned a moderate skin sensitivity and tightness. Most of the patients also reported a little redness, uneven skin tone, parts looking blotchy, parts looking scared, and burning sensation.

The results of the scale of early life impact showed at 1 week after the procedure that most of the patients avoided most of the time certain head and facial movements and did not perform their usual day-to-day activities. It also showed that most of the patients had sometimes a feeling of regret about the procedure, trouble sleeping, wondered if it was worthwhile, and felt more tired than usual (► Tables 1–3).

Table 1 Face-Q adverse events: cheeks, lower face, and neck

Time points	At 1 wk			At 2 wk		
	Not at all	A little	A lot	Not at all	A little	A lot
Q1: Parts of your face feeling numb	–	100	–	90	10	–
Q2: Tightness	–	–	100	–	100	–
Q3: Parts not looking smooth	–	2	98	90	10	–
Q4: Parts sensitive to touch	–	100	–	–	100	–
Q5: Tingling	–	100	–	98	2	–
Q6: How your scars feel	–	84	16	98	2	–
Q7: Discomfort	–	84	16	84	16	–
Q8: Itching	90	10	–	100	–	–
Q9: How your scars look	–	100	–	90	10	–
Q10: Pulling	–	20	80	–	100	–
Q11: Swelling	–	78	22	98	2	–
Q12: Parts feeling hard	–	88	12	100	–	–
Q13: Difficulty with expressions	–	16	84	58	42	–
Q14: Bruising	–	90	10	98	2	–
Q15: Difficulty with certain facial movements	–	–	100	76	24	–

Table 2 Face-Q adverse events: skin

Time points	At 1 wk				At 2 wk			
	Ratings (in percentages)	Not at all	A little	Moderately	Extremely	Not at all	A little	Moderately
Q1: Redness	–	88	12	–	100	–	–	–
Q2: Uneven skin tone	–	76	24	–	84	16	–	–
Q3: Skin sensitivity	–	–	84	16	–	98	2	–
Q4: Parts looking blotchy	–	98	2	–	100	–	–	–
Q5: Parts not smooth	–	–	22	78	34	66	–	–
Q6: Tightness	–	–	88	12	–	88	12	–
Q7: Itching	88	12	–	–	90	10	–	–
Q8: Parts looking scarred	–	60	40	–	98	2	–	–
Q9: Burning	12	88	–	–	100	–	–	–

When comparing the adverse effects between the first and second week after the procedure, there was a statistically significant decrease in the mean score of early life impact scales (mean difference: 12.48; $p < 0.001$), adverse effects at the lower face and neck (mean difference: 15.28; $p < 0.001$), and at the skin level (mean difference: 9.72; $p < 0.001$) (► **Table 4**).

Patients' Perceived Age

The mean difference in patients' perceived age between baseline and 6 months after the procedure using the visual analogue scale was 8.8 ($p < 0.001$). The mean difference was 8.74 between the patient's status before and 12 months after

the procedure, which was also statistically significant. The numbers were similar 6 months and 12 months after the procedure without any statistically significant difference between them.

Quality of Life

The psychological distress significantly decreased and the psychological function significantly improved 6 months after the procedure with the respective mean differences of 12.08 and 15.56. After 12 months, the decrease in psychological distress and improvement in psychological function was still statistically significant when compared with baseline with the respective means of 11.32 and 14.6 (► **Tables 5 and 6**).

Table 3 Early life impact

Time points	At 1 wk			At 2 wk		
	Ratings (in percentages)	Not at all	Some of the time	Most of the time	Not at all	Some of the time
Q1: Felt regret about the procedure	–	62	38	96	4	–
Q2: Felt more anxious than usual	40	46	14	70	30	–
Q3: Trouble sleeping	–	62	38	10	90	–
Q4: Wondered if it was worthwhile	–	52	48	100	–	–
Q5: Felt more tired than usual	40	60	–	98	2	–
Q6: Avoided certain head movements	–	2	98	12	88	–
Q7: Not done your usual day-to-day activities	–	2	98	84	16	–
Q8: Avoided certain facial movements	–	–	100	–	100	–
Q9: Had difficulty drinking	84	16	–	100	–	–

Table 4 Comparison of scales between 1 week and 2 weeks

Scale	Mean difference (SD)
Face-Q: Early life impact	12.48 (1.74) ^a
Face-Q: Adverse events: cheeks, lower face and neck	15.28 (1.77) ^a
Face-Q: Adverse events: skin	9.72 (1.48) ^a

Abbreviation: SD, standard deviation.

^a $p < 0.001$.

Facial Appearance

The overall satisfaction with facial appearance increased significantly with a mean difference from baseline to 6 months of 20.08.

When compared with baseline, the satisfaction in skin and cheeks appearance improved significantly at 6 months with a mean difference of 19.24 and 8.98, respectively. The satisfaction with cheeks appearance also increased significantly with a mean of 8.98. The improvement in the appearance of the nasolabial folds, marionettes, lower face, and jawline was also statistically significant 6 months after the procedure with the respective means of 5.22, 8.64, and 10.62 (► **Tables 5** and **6**).

When comparing the numbers at baseline and 12 months after the thread lifting, the overall satisfaction significantly improved with a mean of 19.8. The satisfaction with skin appearance was also significantly better with a mean of 19.22. The cheeks appearance maintained a significant improvement with a mean of 8.72. The nasolabial folds, marionettes, as well as lower face and jawline were also still statistically significantly better compared with baseline with the respective means of 5.22, 8.36, and 10.46 (► **Tables 5, 6**; ► **Fig. 2**).

Table 6 Comparison of scales between baseline and 12 months

Scale	Mean Difference (SD)
Face-QTM-patient perceived VAS	8.74 (1.77) ^a
Face-Q: psychological distress	11.32 (2.37) ^a
Age-Q: psychological function	14.60 (2.88) ^a
Face-Q: satisfaction with skin	19.22 (2.10) ^a
Face-Q: satisfaction with cheeks	8.72 (1.83) ^a
Face-Q: satisfaction with facial appearance	19.8 (1.41) ^a
Face-Q: satisfaction with appraisal lines (nasolabial folds)	5.22 (0.81) ^a
Face-Q: satisfaction with appraisal lines (marionette)	8.36 (1.59) ^a
Face-Q: satisfaction with appraisal lines (lower face and jawline)	10.46 (1.25) ^a

Abbreviations: SD, standard deviation; VAS, visual analog scale.

^a $p < 0.001$.

Table 5 Comparison of scales between Baseline and 6 months

Scale	Mean Difference (SD)
Face-QTM-patient perceived VAS	8.80 (1.68) ^a
Face-Q: psychological distress	12.08 (2.54) ^a
Age-Q: psychological function	15.56 (2.46) ^a
Face-Q: satisfaction with skin	19.24 (1.87) ^a
Face-Q: satisfaction with cheeks	8.98 (1.66) ^a
Face-Q: satisfaction with facial appearance	20.08 (1.44) ^a
Face-Q: satisfaction with appraisal lines (nasolabial folds)	5.22 (0.81) ^a
Face-Q: satisfaction with appraisal lines (marionette)	8.64 (1.64) ^a
Face-Q: satisfaction with appraisal lines (lower face and jawline)	10.62 (1.10) ^a

Abbreviations: SD, standard deviation; VAS, visual analogue scale.

^a $p < 0.001$.

Discussion

Thread lifting was introduced and developed as a treatment for facial tissue sagging caused by aging. It was presented as an alternative to surgery and continuous advancements were made to improve its efficacy and patient satisfaction. The efficacy of thread lifting varies based on many factors. These are the type of thread material, the technique used, the facial site treated, and the degree of tissue sagging.

Threads made of permanent material were used in clinical practice with the main concern of having a permanent substance in the face, which may lead to future complications and difficulty in removing them.⁶ Absorbable threads are now widely used and are mainly composed of one of the three materials: polydioxanone (PDO), polylactic acid (PLA), and Polycaprolactone (PCL).

Practitioners usually rely on the use of PDO to induce a fibrotic reaction around the material to treat sagging, lipomatosis, and rhytides.¹⁵ In PDO threads, biodegradation is caused by penetration of the fluids that break the molecules of the suture material.¹⁶ The three forms of PDO threads (mono, cog, and screw threads) are absorbed into the body over 6 months by hydrolysis and their rate of total loss of resistance occurs in approximately 63 days, which limits their clinical efficiency and long-term patient satisfaction.^{17,18}

On the other hand, PLA threads were developed after PDO threads. They are made from a biocompatible polymer derived from lactic acid. PLA threads regenerate collagen over a longer time than PDO threads. They are manufactured using the forms of cogs or cones aiming for a lifting effect. This can also serve in increasing the volume of saggy areas.¹⁹

PCL threads are the latest threads introduced in the medical field. They consist of monofilament suspension threads of synthetic origin (caprolactone) with a capacity



Fig 2 (A) A patient before the procedure. (B) The patient 12 months after a facial thread lifting using absorbable anchored threads.

to regenerate collagen over a longer time than PDO and PLA threads.^{20,21} The threads used on all patients included in this study were made of PCL.

It is known that the type of material will affect the quality of the tissue and the durability of the results. Also, the lifting effect will depend on the shape of the threads and the technique used.¹⁹ The shape of the thread differs in barb length, density, angle, spatial distribution, and direction of barbs or cones. The techniques used are widely different between physicians. For this reason, the manufacturing companies produce a wide selection of threads (shapes and types of needles) to fit the needs of the practitioners. Some threads are inserted subcutaneously through a conducting needle and they are very familiar to most physicians working in the cosmetic field due to their ease of use. Using threads ending with two straight needles was revolutionary in thread lifting because it gave the thread more lifting effect and stability. To avoid skin retractions and facilitate thread orientation beneath the skin, a double-edged needle with the thread attached to the needle in its central area was also created.^{10,20}

The advancement in thread shapes and techniques led to a higher clinical efficiency and ultimately more patient satisfaction.²²

Although major improvements in thread production and use were made, comparing surgical face lifting to thread lifting is still very controversial. To be fair and effective in drawing conclusions, this comparison needs to take many elements into consideration, including the degree of tissue sagging, the treated facial site, the surgical technique, the thread lifting technique, and the type of thread used. The approach for each case can be different according to the treated area and to the degree of facial sagging.

Gravity affects each area of the face differently and this is essential to be taken into consideration to understand

the degree of tension that needs to be applied to lift the different facial structures. Bulut et al compared the facial morphology between the supine and the upright position using computed tomography and magnetic resonance imaging. Areas around the buccal region, masseteric region, and the nasolabial region were the most affected ones by the change in position. The variation with position can be explained by many factors, among which are the gravity effect and the role of the suspensory ligaments.²³ Lifting areas highly affected by gravity need a higher tension and lifting power. This is better provided by anchoring the thread to a rigid structure like muscular fascia or bone periosteum.

Two studies also showed a high clinical efficiency of using anchored permanent threads.^{11,12} There is a lack of information in the English literature about the effectiveness of absorbable PCL sutures for facial thread lifting using the anchored technique.

The results of this study showed that thread face lifting anchored to the temporalis fascia is not very convenient to the patient during the first week after the procedure but is much more tolerated 2 weeks after. The results of the lifestyle questionnaires showed a significant improvement in the quality of life and self-esteem 6 months after the procedure. The results were overall maintained 12 months after the procedure. The satisfaction in facial appearance of the treated patients increased significantly 6 months after the procedure compared with their baseline. This improvement persisted 12 months after the procedure. The most positively affected sites by the thread lifting were the jawline and marionettes.

Based on the visual analogue scale, the estimated age changed by a mean of 8.8 between baseline and 6 months after the procedure and by a mean of 8.74 at 1 year postsurgery.

This study addresses a topic that is not extensively studied in the English literature. Nevertheless it carries a few limitations that can be areas of focus for future research projects. First, its retrospective nature mainly limits the interpretation of the adverse effects results. This still needs more elaboration to have a better idea about the downtime of the procedure from the patient's and physician's perspectives. Second, the subjective nature of the data may affect the evaluation of the procedure results. Third, there was a lack of professional evaluation that could have been done by two or more nontreating physicians. Fourth, there was a lack of more than 12 months follow-up, which is needed in future studies to draw better conclusions for long-term clinical satisfaction and possible side effects of thread lifting beyond 1 year of treatment.

Conclusion

There is a scarcity of reports addressing the efficiency of facial thread lifting using anchored absorbable long-lasting threads. The results showed an improvement in facial appearance and quality of life from the patients' perspective at 6 and 12 months after the procedure. The adverse effects decreased significantly 2 weeks after the thread lifting.

Conflict of Interest

None declared.

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