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Extended cervicoplasty: assessment of long-term results

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ABSTRACT

Introduction: Extended cervicoplasty is used to treat the aging stigmas of the lower third of the face, especially in cases of severe tissue sagging. However, the maintenance of its long-term results has been little studied in the literature.

Objective: To assess the maintenance of the results of extended cervicoplasty in the long-term.

Methods: Twenty-three patients with severe tissue sagging underwent extended cervicoplasty, having been followed up for five years. The postoperative results in the first and fifth year were evaluated by 8 plastic surgeons. The analysis of the results was performed using the McNemar and paired t-student tests.

Results: In the first year, 12 (52.2%) patients had the outcome rated as very good, 9 (39.1%) as moderate and 2 (8.7%) as poor. In the fifth year, 9 (39.1%) had the outcome classified as very good, 11 (47.8%) as moderate and 3 (13.1%) as poor. None of the patients had the outcome rated as excellent or bad in any of the analyzed periods. There was no significant difference regarding the classification ($p = 0.450$); and the total score ($p = 0.373$) during the study period.

Conclusion: Even in difficult cases, extended cervicoplasty provided good results that were maintained in the long-term.

Keywords: rhytidoplasty; cervicoplasty; neck

RESUMO

Introdução: A cervicoplastia ampliada é utilizada para o tratamento dos estigmas do envelhecimento do terço inferior da face, especialmente para os casos de intensa flacidez tecidual. Porém, a manutenção de seus resultados em longo prazo foi pouco estudada na literatura.

Objetivos: Avaliar a manutenção dos resultados da cervicoplastia ampliada a longo prazo. **MÉTODOS:** Vinte e três pacientes com intensa flacidez tecidual foram submetidos à cervicoplastia ampliada e acompanhados durante cinco anos. Os resultados pós-operatórios no primeiro e no quinto ano foram avaliados por oito cirurgiões plásticos. A análise dos resultados foi realizada por meio dos testes McNemar e t-Student pareado.

Resultados: No primeiro ano, 12 (52,2%) pacientes tiveram o resultado classificado como muito bom, nove (39,1%) como moderado, e dois (8,7%) como fraco. No quinto ano, nove (39,1%) tiveram o resultado classificado como muito bom, 11 (47,8%) como moderado, e três (13,1%) como fraco. Nenhum paciente teve o resultado classificado como excelente ou ruim em nenhum dos períodos analisados. Não houve diferença significativa em relação à classificação ($p = 0,450$); e entre a pontuação total ($p = 0,373$) no período avaliado.

Conclusões: Mesmo em casos difíceis, a cervicoplastia ampliada proporcionou a obtenção de bons resultados mantidos em longo prazo.

Palavras-chave: ritidoplastia; cervicoplastia; pescoço

INTRODUCTION

A recurrent complaint from patients who underwent surgery for cervical rejuvenation is precisely related to the partial loss of the outcome over time, especially when there is pronounced tissue laxity preoperatively.^{1,2} In addition to frustrating and undesirable, the early recurrence of the complaints that led the patient to undergo cervical surgery makes it difficult for him or her to possibly undergo a second procedure.¹⁻³

The development of facial plastic surgery achieved in recent years offered different techniques, strategies and possibilities to surgeons, however it unfortunately did not determine which option to choose for cervical lifting, and the search for the optimal treatment still continues.^{1,3-5} Regarding the search for the maintenance of long-term cervicoplasty results, the current focus of research appears to be in the approach of multiple anatomical structures and in the use of different surgical strategies.^{1,2,4,6,7}

Aligned with this, the authors of the present paper have been using the so-called expanded cervicoplasty for cervical rejuvenation for over 10 years, with safe, reliable and reproducible results.⁸ The technique is nothing more than a combination of classic precepts advocated by surgeons like Millard et al.,⁹ who privileged a wide cervical access and the direct lipectomy through an incision in the submental region; Connell¹⁰ and Feldeman,¹¹ who demonstrated the importance of more aggressive and direct approaches in the platysma muscle; and Pitanguy,¹² who called for the restoration of the natural anatomy of the tissues approached with the *round lifting* technique.

The present study was designed aiming at presenting the authors' experience with the expanded cervicoplasty and evaluate the maintenance or not of its long-term results.

METHODS

The study included all patients who underwent expanded cervicoplasty at the authors' private practices, from January 2008 to August 2010, and were classified as McKinney grade

IV¹³ – presence of pronounced sagging skin in the lower third of the face and of very visible platysmal bands – the so-called difficult neck.⁸

Before undergoing the procedure, the patients were photographed by a same photographer, in pre-established positions (frontally, right and left profiles) at the same location and with the same image parameters (digital camera Nikon Inc., Melville, New York, USA).

The surgery was performed according to the following methodology: with the patient in sitting position, tumescent anesthetic was injected in the region with about 150 ml of solution containing 0.125% lidocaine with 1:200,000 epinephrine. The liposuction of the cervical region was then carried out. The submentonian groove was then incised (variation of 4cm to 6cm), and the anterior region of the neck was dissected with a Metzembaum scissors, exposing the platysma muscles. The platysma muscles were then partially released from the deep structures in the mid-cervical region through blunt divulsion, allowing the preparation of two muscle flaps with roughly 4cm in length. The subplatysmal fat became clearly exposed, with its central part being excised. Next, the platysmal muscle flaps were drawn closer to each other over the midline, forming a single layer of between 5cm and 9cm long (from the submentonian incision to the thyroid cartilage), using continuous suture with 4.0 mononylon thread. The classic Pitanguy's *Round Lifting* sequence¹² was then performed, starting at the retroauricular incision, with extensive dissection of the cervicofacial skin flap. With the superficial system muscle-aponeurotic exposed, the plication in inverted "L" was carried out, starting in the zygomatic-facial region, running up until the lateral cervical region, near the sternocleidomastoid muscle. The tension of skin at the end of the surgery contributed for the further definition of the cervical region.⁸ (Figures 1 and 2)

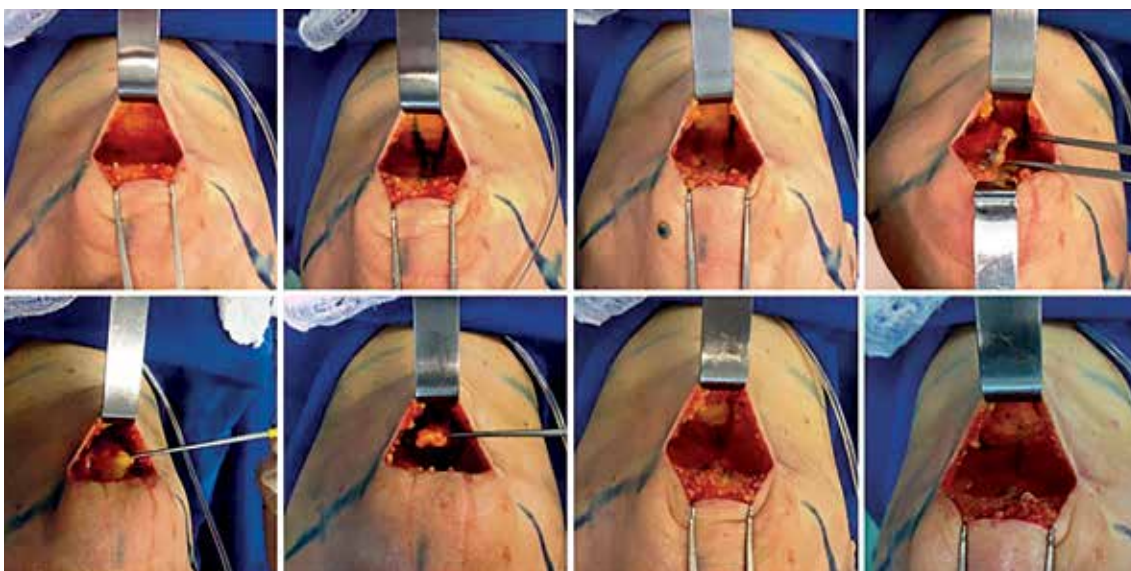
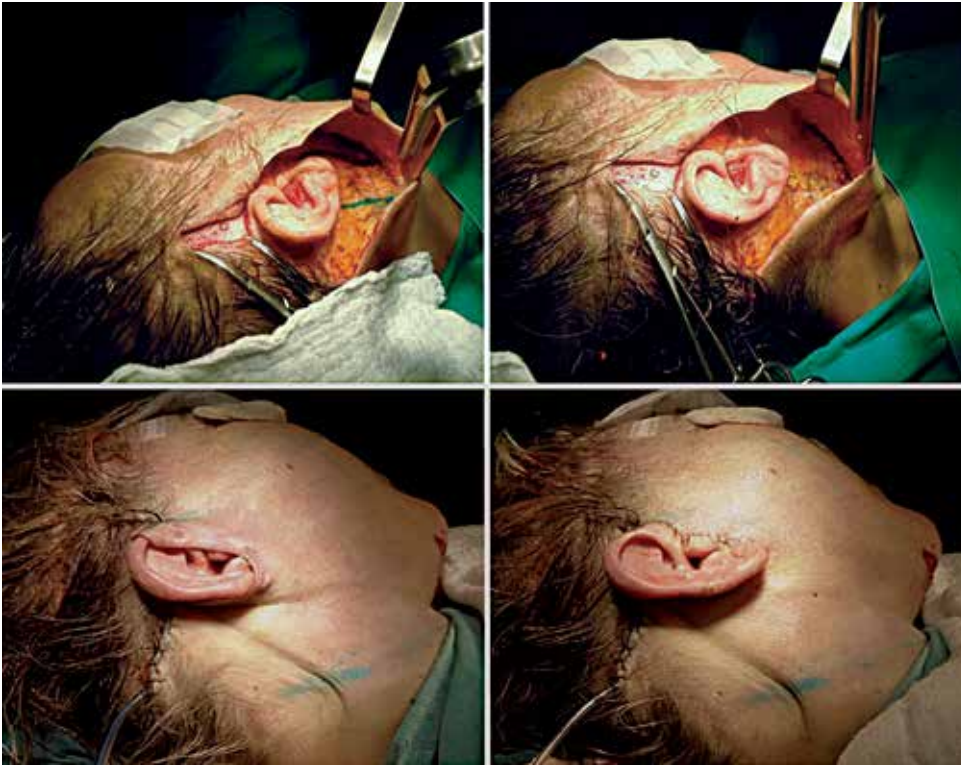


FIGURE 1:

Transoperative aspects of expanded cervicoplasty, mid-cervical approach. Top: broad detachment and visualization of the medial borders of the platysma muscles (marked in blue in the detached area); detachment of the medial borders of the platysma muscle and their elevation. Bottom: visualization and resection of the subplatysmal fat; advancement and suturing of the two muscle flaps in the mid-cervical line

**FIGURE 2:**

Transoperative aspects of the expanded cervicoplasty lateral-cervical approach. Top: broad detachment and visualization of the cervical area to be applied (marked in blue in the detached area); platysmal plication with lateral traction of the tissues. Bottom: traction of the facial flap and resection of excess skin

The patients were monitored weekly during the first month after the surgery, and every two months until the 12th month, when new images (identical to those of the pre-operative) were captured. The patients were contacted in the 5th year after the surgery and invited for a re-evaluation. Those who did not attend the re-evaluation visit were automatically excluded from the study.

In the 5-year postoperative visit, new photographic images were captured (in conditions identical to those of the pre-operative). Patients were also asked whether they had undergone other procedures in the middle or lower third of the face during that period. Those who answered positively were excluded from the study.

The patients had their photos (before the surgery, and one and five years after the procedure) evaluated by eight plastic surgeons, members of the Brazilian Society of Plastic Surgery (SBCP).

The outcome of the expanded cervicoplasty was assessed by the modified method of Antell & Orssek,¹⁴ according to which the eight plastic surgeons carried out two assessments of each patient using subjective criteria (before versus 1 year after; before versus 5 years after).

The evaluator physicians used the following scores for each period analyzed: 0 = worsened, 1 = unchanged, 2 = slight improvement, 3 = moderate improvement, 4 = significant improvement, and 5 = maximum possible improvement.

The scores attributed to each patient were added up in a way that each patient received a final rate classifying the surgery outcome as: unsatisfactory (0-9), poor (10-19), moderate (20-28), very good (29-36), and excellent (37-40).

The analysis of the correlation between the surgery's outcome classification and the instant at which this classification was attributed regarding the preoperative instant was performed using the McNemar test. The comparison between the one-year and five-year instants as compared to the average total score of the surgery's outcome was performed using the paired Student t-test. The statistical analysis was performed using the statistical software SigmaPlot 12.5, using a significance level of 5%.

RESULTS

During the study period, 39 patients classified as McKinney grade IV¹³ underwent extended cervicoplasty. Of these, 16 (41.02%) were excluded from the analysis: 12 of them for not having returned to late post-operative consultations and 4 for having undergone definitive cutaneous filling in the lower third of the face during that period. The 23 patients who completed the study were female Caucasians, with a mean age of 58 ± 13 years.

The surgical procedure had a mean duration of 205 ± 34 minutes. There were no difficulties to perform the platysma muscle flaps or the subplatysmal fat resection. All patients were discharged within about 24 hours of admission. The postoperative recovery was considered satisfactory. Three patients had hematoma, 2 had partial necrosis of the retroauricular skin flap, 1 had temporary paralysis of the submandibular branch of the facial nerve. The remaining patients did not have complications.

The evaluation summary is shown in Table 1, with the classification of outcomes one and five years after the procedure.

None of the patients had her outcome rated as excellent or unsatisfactory in any of the periods. The percentages of the

classification of the surgery's outcomes after one and five years as compared to the preoperative scores are presented in Table 2.

The results are expressed in relative frequency. There was absence of significantly different distributions regarding the classification of results in the assessments one year after and five years after the (McNemar's test, $p = 0.450$).

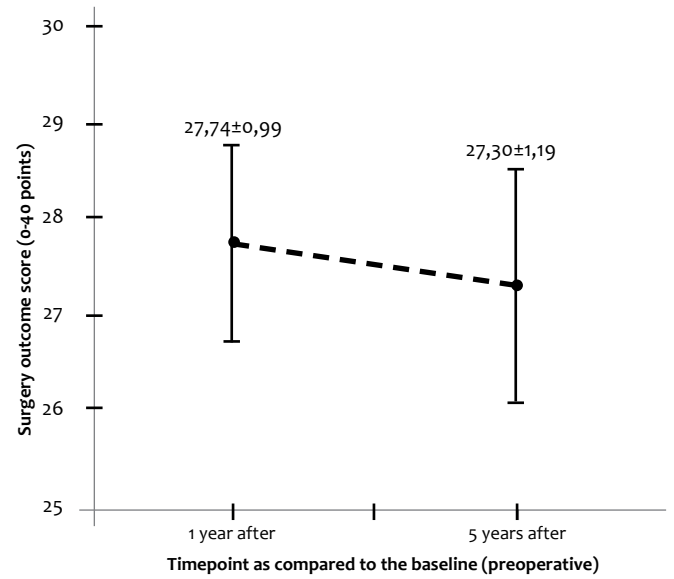
One year after the procedure, 12 patients had the surgery outcomes classified as very good and, of these, 58.3% ($n = 7$) maintained this classification in the 5th year after having undergone the procedure. Eleven (11) patients had a moderate or weak outcomes and, of these, 81.8% ($n = 9$) maintained the outcome in the 5th year after having undergone the procedure. There was not a significantly different distribution regarding the outcomes classification and the period evaluated (McNemar test: $p = 0.450$). In general, the classification of the surgery outcomes in the 1st and 5th years after the procedure were concordant in 69.6% ($n = 16$) of cases.

The average total score of the surgeries outcomes in the 1st year evaluation was 27.74 ± 0.99 points (mean \pm standard error of the mean), while in the 5th year it was 27.30 ± 1.19 points. Likewise, there was not statistical difference in the scores between the evaluation timepoints and the total score evaluating the surgery outcomes (t-Student test, $p = 0.373$) (Graph 1).

In Figures 3 and 4, the operated patients are depicted frontally, and in left and right views, in photographs before the surgery (top), after one year (middle) and after five years (bottom).

DISCUSSION

Several surgical options are available for treating the signs of aging on the lower third of the face.^{5,6} The development of



GRAPH 1: Mean score of the outcome of the surgery, according to the timepoint, as compared to the baseline (before the procedure). Each symbol represents the mean value, and the bars, the standard error of the mean. There was no significant difference between the timepoints one year and five years after the surgery regarding the score attributed to the surgery outcome (paired Student t-test, $p = 0.373$)

techniques has gone through several interesting moments: from the simple initial tractioning of the skin to the most complex cervical muscle flaps.^{3,4} The transient character of the outcomes forced surgeons to seek alternatives to stabilize the tissues of the region and that would maintain the desirable cervicofacial angle obtained in the immediate postoperative period for as long as possible.^{2,5} It seems obvious that the success of the surgery contemplates obtaining a natural result, free from stigmas and, above all, be maintained over time.¹

The expanded cervicoplasty is precisely aimed at offering better long-term results in the cervical rejuvenation surgery. It brings together the three basic factors for obtaining longer lasting results in facial surgery: i) it approaches the structure to be treated in a wide and direct manner, ii) it attenuates the opposing muscle forces accurately and effectively, and iii) it repositions and anchors the detached tissues to stiff and firm structures.² The technique is capable of directly treating the main factors involved in cervical aging: the submentonian lipodystrophy (supra and infraplatysmal), the platysma muscle's sagging, and the face's middle third cutaneous ptosis.^{1,15} Less common deformities, such as prominent submandibular glands and the appearance of the digastric muscles, are also well handled indirectly with the use of the technique, reducing the need for more aggressive procedures with potentially more serious complications.^{1, 2, 15, 16} In general, the technique is used by the authors of the present article in all candidates to cervical rejuvenation. The variation is in the intensity of implementation: in the more pronounced

TABLE 1: Classification of the expanded cervicoplasty outcomes in the assessed timepoints

Outcome classification	1 st year postoperative	5 th year postoperative
Excellent	0 (-)	0 (-)
Very good	12 (52,2%)	9 (39,1%)
Moderate	9 (39,1%)	11 (47,8%)
Poor	2 (8,7%)	3 (13,1%)
Unsatisfactory	0 (-)	0 (-)

TABLE 2: Percentage of patients according to the surgery outcome classification after one year and after five years, as compared to the preoperative timepoint, assessed by eight plastic surgeons

Five years	One year		Concordance
	Very good	Moderate/poor	
Very good	58,3 (7)	18,2 (2)	69,6 (16)
Moderate/poor	41,7 (5)	81,8 (9)	



FIGURE 3:
Top: patient M. preoperative
Middle: 1 year postoperative
Bottom: 5 years postoperative

cases, such as in the previously described McKinney grade IV, the approach and detachment are larger, the markings are wider, and the plications, stronger.⁸ The authors of the present article believe that the technique is particularly recommended for these cases, in which a more conservative treatment would lead to poorer and more ephemeral results for most patients.^{2,4,17} In less exuberant cases, McKinney III for instance, the technique is also used by the authors, with less aggressive detachments, tractions and plications.⁸

Most authors report few complications in cervical rejuvenation surgeries, even in wider approaches, such as in the

preparation of platysmal flaps and in large dissections in the region.¹⁶ The complications described in the present study intensely resembled those published by Montedonio et al.⁵ Fortunately, the authors did not face major bleedings such as those reported by Righesso et al.¹⁷ and Mendelson & Tutino.¹⁶ The authors of the present study believe that the excellent final quality of the submentonian scar undermines the concern reported by some authors who advocate the need to reduce it,¹⁶ and contributes to a broad view of the surgical area, facilitating the cauterization of blood vessels and minimizing the probabilities of hematomas and of the feared nerve lesions.

**FIGURE 4:****Top:** patient H. preoperative**Middle:** 1 year postoperative**Bottom:** 5 years postoperative

The long-term evaluation of outcomes obtained with the expanded cervicoplasty is crucial to define the actual role of technique in the armamentarium of plastic surgeons, especially when its outcome is compared with much less invasive strategies currently advocated by some authors.⁴

Unfortunately, long-term analyses of facial surgeries are scarce in the literature. In general, the late results referred by most authors are to some extent, in fact early.^{4,7,17} Like Crassas³ and Pitta et al.,² the authors of the present study believe that later analysis, such as the one as presented here (5 years after the procedure), are important when the late value of the technique is being questioned. Early assessments can lead to wrong conclusions regarding the procedure's durability.⁶

The methods described in the literature for the evaluation of long-term results also vary considerably and there is no consensus on how to best perform them.⁴ With a view to using an accurate and reproducible assessment technique, the authors of the present article applied the Antell & Orssek modified method.¹⁴ Using subjective criteria, eight plastic surgeons assessed the results, indicating whether or not there was existence and degree of improvement in the postoperative period, in the 1st and 5th year. Authors, such as Rima et al.,⁴ used a very similar method, confirming its effectiveness.

The results reported in the present study demonstrated that expanded cervicoplasty was able to offer satisfactory results that remained stable in the long term, even in difficult cases.

These results qualify the technique as an alternative for the treatment of facial aging, especially when aiming at maintaining the outcomes in the long-term.

CONCLUSION

The balance between the immediate results achieved in the cervical rejuvenation surgery and their durability is an im-

portant aspect to be evaluated when indicating techniques and tactics to be used in cervicoplasty. In this sense, the expanded cervicoplasty is confirmed as an important component in the surgeon's armamentarium, leading to satisfactory outcomes that remain in the long term, even in difficult cases. ●

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