The Laryngoscope

Partial Inferior Turbinectomy in Rhinoseptoplasty Has No Effect in Quality-of-Life Outcomes: A Randomized Clinical Trial

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Objective: Evaluate the impact of endoscopic partial inferior turbinectomy (EPIT) associated with primary rhinoseptoplasty on quality-of-life outcomes (QOL), complications, and surgical duration.

Study Design: Randomized clinical trial.

Methods: Individuals with nasal obstruction aged ≥ 16 years who were candidates for functional and aesthetics primary rhinoseptoplasty were evaluated from March 2014 through May 2015. Eligible participants were randomly allocated to rhinoseptoplasty with or without EPIT (excision of one-third of the inferior turbinates).

Results: Fifty patients were studied. Most were Caucasian and had moderate/severe allergic rhinitis symptoms. Mean age was 36 (± 14.5) years. Rhinoseptoplasty was associated with improvement in all QOL scores irrespective of turbinate intervention ($P < 0.001$). Analysis of covariance was conducted to control for potential confounders. There was no difference between the groups in absolute score changes for Nasal Obstruction Symptom Evaluation-Portuguese (NOSE-p) (-50.5 vs. -47.6; $P = 0.723$), Rhinoplasty Outcome Evaluation (ROE) (47 vs. 44.8; $P = 0.742$), and all World Health Organization Quality of Life Scale-Abbreviated (WHOQOL-bref) score domains ($P > 0.05$). There were no differences between the groups regarding presence of the complications. Surgical duration was higher in the EPIT group (212 minutes $\pm$ 7.8 vs. 159.1 $\pm$ 5.6; P ? 0.001).

Conclusions: Turbinate reduction through EPIT during primary rhinoseptoplasty did not improve short-term general and specific QOL outcomes. The use of EPIT increases surgical time considerably without improving QOL scores. There was no difference in postoperative incidence of complications, suggesting that EPIT is a safe technique.

Key Words: Rhinoseptoplasty, turbinate surgery, endoscopic partial inferior turbinectomy, quality of life, randomized clinical trial.

Level of Evidence: 1b.

***Laryngoscope*, 00:000–000, 2017**

INTRODUCTION

Rhinoplasty often is performed in the context of otolaryngologic and facial plastic surgery to restore nasal function and form. The development or maintenance of nasal obstruction after rhinoplasty is a complication that negatively affects quality of life (QOL), and priority should be given to prevention strategies.[1] However, objective assessment of the severity of nasal airway obstruction and treatment outcomes has been complicated by the lack of a standardized tool.[2] To address this issue, Stewart et al. recently have developed and validated the Nasal Obstruction Symptom Evaluation (NOSE) scale, a disease-specific QOL instrument designed to determine the presence of nasal obstruction.[3] Since then, several studies have compared pre- vs. postoperative NOSE scores to assess QOL associated with nasal obstruction.[2–8]

Although the plastic surgery literature is replete with publications about refinements in aesthetic rhinoplasty, much less attention has been given to the functional aspects of the nasal airway. Nevertheless, postoperative airway compromise can detract significantly from an otherwise good aesthetic result.[9] In a retrospective review of 184 consecutive revision rhinoplasties, Thomson et al.[10] found that the indication for revision was airway obstruction in 109 cases.

However, the available surgical techniques empirically have been developed and often are used based on the surgeon's preference rather than on objective criteria.[11–15] Guyuron[16] has pointed out that the position of the inferior turbinates contributes to airway narrowing after nasal bone osteotomy. Because of that, surgical treatment of inferior turbinates seems to be a good option to prevent postoperative nasal obstruction. Of the described techniques, turbinectomy and turbinoplasty

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Editor's Note: This Manuscript was accepted for publication July 5, 2017.

Support was provided by the Hospital de Clínicas de Porto Alegre (HCPA) Research and Events Incentive Fund (FIPE/HCPA) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). The authors have no other funding, financial relationships, or conflicts of interest to disclose.

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DOI: 10.1002/lary.26831

TABLE I.
Additional Surgical Techniques

Surgical Technique*	Rhinoseptoplasty With EPIT $n = 25$	Rhinoseptoplasty Without EPIT $n = 24$
Spreader graft	5	1
Lateral strut graft	1	2
Turn-in flap	0	2
Tongue in groove	3	4
Shield graft	1	0
Alar rim graft	1	0
Septal extension	1	0

*Additional surgical technique used as needed.
EPIT = endoscopic partial inferior turbinectomy.

appear to have the best results, with fewer complications.[17] The endoscopic approach seems to be safer because it allows better assessment of the full extent of the nasal turbinate, precise handling, and more efficient hemostasis.[18]

A recent survey by the American Society of Plastic Surgeons shows that 90% of surgeons address the inferior turbinate in at least a portion of their cases, with 8% routinely reducing the turbinate in all cases. However, 10% of the respondents in this survey did not address the inferior turbinate in any of their cases.[9] Such variability in addressing this potential cause of/risk factor for nasal obstruction deserves closer attention.

In 2013, Lavinsky-Wolff et al. compared QOL in patients undergoing primary rhinoseptoplasty, with or without turbinate reduction by submucosal electrocautery. There were no differences between the groups in QOL.[5] Considering these aspects, the aim of the present study was to determine the impact of endoscopic partial inferior turbinectomy (EPIT) reduction on general and nasal obstruction-related QOL in patients undergoing rhinoseptoplasty.

MATERIALS AND METHODS

Trial Design and Participants

This was a single-center, pragmatic, double-blind, randomized, parallel-group clinical trial comparing QOL outcomes (general and specific to nasal obstruction) of primary rhinoseptoplasty with versus without inferior turbinate reduction using EPIT. The study was conducted at the Facial Plastic Surgery Clinic/Department of Otolaryngology of our institution, a tertiary care university hospital in southern Brazil. Eligible participants were candidates for functional and aesthetic primary rhinoseptoplasty who had symptoms of nasal obstruction and were aged ≥ 16 years. Apart from nasal obstruction complaints, other inclusion criteria were anatomic abnormality such as septal deviation.

Exclusion criteria were previous nasal surgery; turbinate hypertrophy explained solely by nasal obstruction; and/or concomitant procedures such as functional endoscopic sinus surgery, adenoidectomy, blepharoplasty, or otoplasty. Written informed consent was obtained from each patient before enrollment. The protocol was registered at Clinical-Trials.gov as NCT02231216 and was approved by the Research Ethics Committee of Hospital de Clínicas de Porto Alegre (13-0516) of our institution.

Randomization

A randomization sequence was generated using an online service (http://randomization.com/) by an independent investigator. Patients were randomized into groups (with or without turbinate reduction) with 1:1 allocation and random block sizes of 4 and 6. The allocation sequence was concealed from those involved in enrolling and assessing participants.

Data Collection and Interventions

At study enrollment, each subject completed a brief questionnaire to provide demographic and baseline characteristics. All patients underwent primary rhinoseptoplasty. During anesthesia induction, patients were randomly allocated to rhinoseptoplasty with or without EPIT. All procedures were performed using an endonasal rhinoseptoplasty technique. Septoplasty, nasal tip refinement, dorsal profile alignment, and lateral and medial osteotomies were performed in all procedures. Depending on the case, other techniques also were employed (Table I). The Nasal Obstruction Symptom Evaluation-Portuguese (NOSE-p) Scale, the World Health Organization Quality of Life Scale-Abbreviated (WHOQOL-bref) questionnaire, and the Rhinoplasty Outcome Evaluation (ROE) were administered before and 90 days after the surgery.

Intervention Groups

In one group, patients underwent inferior turbinate reduction through EPIT. The first step was endoscopic evaluation of the inferior nasal turbinate, followed by preparation of the inferior turbinate with topical vasoconstrictor solution containing oxymetazoline hydrochloride (0.05%). The portion of the turbinate to be removed (lower third of the inferior turbinate) was dislocated medially and clamped with a Rochester clamp for about 3 minutes. The lower third was resected along the entire extension with turbinate or angled scissors. As needed, hemostasis was made with electrocautery.[18,19] This intervention was performed by the same surgeon (B.H.M.) in all cases.

At the second group, patients underwent primary rhinoseptoplasty as described above, without inferior turbinate reduction.

Primary Outcome

The primary outcome was change in NOSE-p Scale scores. The NOSE is a disease-specific health status instrument to assess patients with nasal obstruction. A validated Brazilian Portuguese version of this questionnaire was used.[3,20] A score of 0 means the absence of nasal obstruction and a score of 100 means severe nasal obstruction.

Secondary Outcomes

Rhinoplasty Outcome Evaluation. The ROE[21] scale is a QOL questionnaire validated in Brazilian Portuguese for use in rhinoplasty patients. It includes six questions capturing three QOL domains: physical, mental/emotional, and social; the highest score means "total satisfaction" and 0 means "major dissatisfaction" with rhinoplasty.

World Health Organization Quality of Life Scale-Abbreviated. The WHOQOL-bref questionnaire was designed as an international cross-culturally comparable QOL assessment instrument.[22–25] It comprises 26 questions, two of which measure overall and general health. The other 24 questions are divided into four domains: physical, psychological, social relationships, and environment. Scores range from 0 (the least favorable QOL) to 100 (the most favorable QOL).

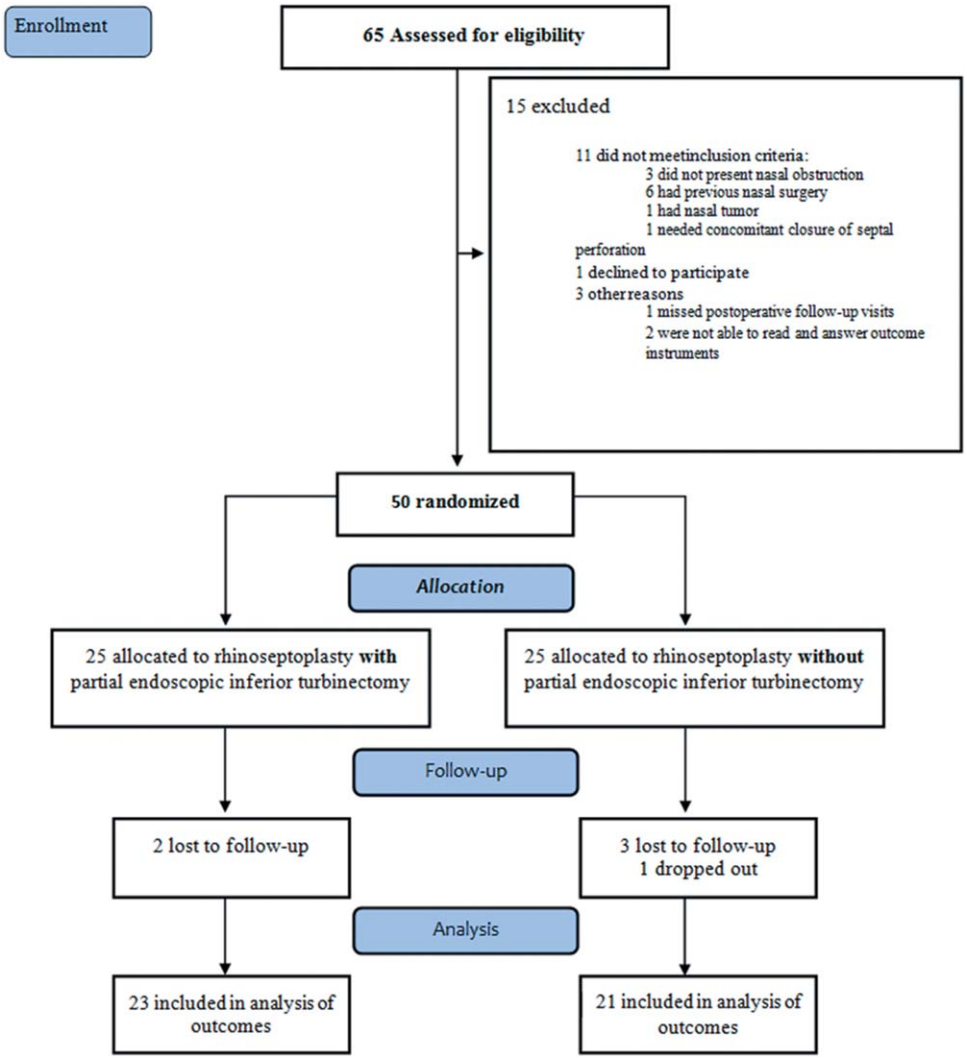

Fig. 1. Study flow diagram. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

Follow-Up

The outcomes were assessed pre- and postoperatively by trained investigators who were blinded to the study group. Patients were clinically evaluated on the seventh postoperative day and then monthly for 3 months. At all medical appointments, patients were asked about allergic rhinitis symptoms and were classified according to Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines[26] as presenting 1) intermittent or persistent or 2) mild or moderate/severe symptoms. Starting at the 30-day postoperative visit, topical corticosteroids (budesonide 100 micrograms twice daily) were prescribed to patients presenting mild persistent or moderate/severe intermittent or persistent symptoms, according to ARIA guidelines.[26] If mild persistent or moderate/severe intermittent or persistent symptoms were still present on the 60-day follow-up visit, high-dose topical corticosteroids were prescribed (budesonide 200 micrograms twice daily). All patients were advised to use oral H1-antihistamines as needed. At each visit, patients answered a standardized questionnaire about medications used for allergic rhinitis.

Sample Size

Sample size was calculated to detect a reduction of 20 points in NOSE-p score, using as reference the study by Stewart et al.[3] A two-sided 5% significance level and a power of 80% were used to calculate a total sample size of 42 patients divided into two groups. To account for a dropout rate of 10% and to enable multivariate analysis, 50 patients were recruited.

Statistical Analysis

Statistical analysis was carried out using the SPSS version 20.0 (IBM Corp., Armonk, NY). Data were reported as mean ± standard deviation (SD) or number and percentage, as appropriate. A two-tailed P value ≤ 0.05 indicated statistical significance.

Student t test was used to compare the groups regarding age at baseline. Pearson's chi square test was used for comparison of the other variables. For intragroup comparisons of pre- and postoperative data, a generalized estimating equation test was performed. To analyze complications and surgical techniques, Fisher's test was used.

Outcomes were described as absolute change (delta) in NOSE-p, ROE, and WHOQOL-bref score (postoperative score – preoperative score). Analysis of covariance (ANCOVA) was conducted to compare differences in outcomes between the intervention groups, with control for baseline presence of rhinorrhea

TABLE II.
Baseline Characteristics

Characteristic	Rhinoseptoplasty With EPIT ($n = 25$)	Rhinoseptoplasty Without EPIT ($n = 24$)
Mean age (SD), years	36.36 (12.87)	35.75 (16.1)
Female sex	11(44)	14 (56)
Caucasian	19 (76)	16 (69.6)
Formal education, years		
≤ 8	8 (32)	12 (50)
9–11	13 (52)	8 (33.3)
≥ 12	4(16)	4 (16.7)
Previous nasal trauma	7 (28)	8 (33.3)
Nasal symptoms		
Rhinorrhea	8 (32)	15 (62.5)
Nasal sneezing	14 (56)	12 (50)
Nasal itching	7 (28)	15 (62.5)
Seasonal nasal symptoms	19 (76)	19 (76.2)
AR symptoms*		
Intermittent	15 (60)	14 (58.3)
Persistent	10 (40)	10 (40.7)
Moderate/severe AR symptoms*	21 (84)	20 (83.3)
Current use of topical corticosteroid	8 (32)	9 (36)

*According to Allergic Rhinitis and its Impact on Asthma guidelines (26–28).

AR = allergic rhinitis; EPIT = endoscopic partial inferior turbinectomy; SD = standard deviation.

and itching as well as use of spreader graft. The use of spreader graft was not independently associated with general and disease-specific QOL scores but was maintained in the multivariate model for clinical reasons.

RESULTS

Screened from March 2014 to May 2015, the first 50 subjects who fulfilled the entry criteria and consented to participate in the protocol were included (Fig. 1). The main reasons for exclusion was previous nasal surgery and the absence of nasal obstruction symptoms.

Most participants were Caucasian and had moderate/severe allergic rhinitis symptoms.[26] Rhinorrhea and itching were more prevalent in the non-EPIT group. Mean age was 36.3 ($\pm$ 12.9) years in the EPIT group versus 35.7 ($\pm$ 16.1) years in the non-EPIT group. All baseline clinical characteristics except for the presence of rhinorrhea and itching were similar in both groups (Table II).

Use of additional surgical techniques is described in Table I. There was no significant difference between the groups, but the use of spreader grafts was more frequent in the EPIT group (20% in EPIT vs. 4.2% in the non-EPIT; $P = 0.189$). Also, the groups had similar postoperative topical corticosteroid use (48% in EPIT vs. 61% in the non-EPIT; $P = 0.382$).

Nasal Obstruction Symptom Evaluation-Portuguese

A significant postoperative decrease in mean NOSE-p scores was recorded in both groups (69.2 ± 25.6 vs. 21.3 ± 20.3 in EPIT [$P < 0.001$]; 80.2 ± 13.6 vs. 23.4 ± 25.8 in non-EPIT [$P < 0.001$]). No difference was observed between the groups in postoperative NOSE-p and delta NOSE-p scores (Table III).

Rhinoplasty Outcome Evaluation

A significant postoperative increase in ROE scale scores was recorded in both groups (28.2 vs. 68.1 in EPIT; [$P < 0.001$] 22.5 vs. 69.7 in non-EPIT [$P < 0.001$]). No difference was observed between the groups in delta ROE score (EPIT: 45.6 vs. non-EPIT: 42.8) (Table III).

World Health Organization Quality of Life Scale-Abbreviated

Postoperative WHOQOL-bref scores were higher when compared to preoperative scores in all domains

TABLE III.
Quality of Life Outcomes in Individuals Undergoing Rhinoseptoplasty With and Without EPIT

	Rhinoseptoplasty With EPIT (n = 23)			Rhinoseptoplasty Without EPIT (n = 21)			
	Preoperative Mean (± SD)	3-Month Postoperative Mean (± SD)	Δ Mean (CI)	Preoperative Mean (± SD)	3-Month Postoperative Mean (± SD)	Δ Mean (CI)	*P* Value
NOSE-p	69.2 (25.6)	21.3 (20.1)	−50.5 (−62.9; −38.0)	80.2 (13.6)	23.4 (25.8)	−47.6 (-62.3; - 32.9)	0.723*
ROE	28.2(15.2)	68.8(20.8)	47 (36.8; 57.3)	22.5(17.0)	69.7(20.0)	44.8 (32.7; 57)	0.742†
WHOQOL-bref domains							
Physical	63.1 (18.7)	67.5 (20.4)	6.2 (−1.6; 14)	65.6 (12.9)	76.6 (14.6)	11 (2; 20.2)	0.342‡
Psychological	66.4 (15)	71 (13.6)	6.9 (1.3; 12.6)	66.3 (13.2)	74.9 (12.4)	8.8 (2;15.6)	0.617‡
Social	69.7 (17.3)	74.5 (15)	6.7 (−1.3; 14.7)	72.6 (18.7)	78.8 (19.2)	9 (−0.6; 18.6)	0.666‡
Environment	57.6 (11.3)	65.6 (13.7)	8.4 (1.7;15.1)	61.2 (15)	63.7 (17.1)	2.6 (−5.4; 10.5)	0.184‡

Dependent variable Δ scores = (postoperative score – preoperative score)

*P value: ANCOVA of Δ adjusted for baseline NOSE-p score, nasal itching, rhinorrhea, and use of spreader graft.

†P value: ANCOVA of Δ adjusted for baseline ROE score, nasal itching, rhinorrhea, and use of spreader graft.

‡P value: ANCOVA of Δ adjusted for baseline WHOQOL-bref score, nasal itching, rhinorrhea, use of spreader graft.

ANCOVA = analysis of covariance; CI = confidence interval; EPIT = endoscopic partial inferior turbinectomy; NOSE-p = Nasal Obstruction Symptom Evaluation-Portuguese; ROE = Rhinoplasty Outcome Evaluation; SD = standard deviation; WHOQOL-bref = World Health Organization Quality of Life Scale-Abbreviated.

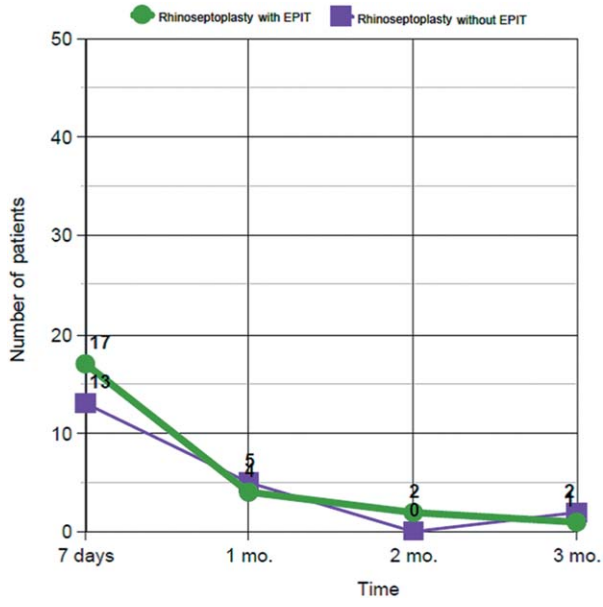

Fig. 2. Crusting after surgery. EPIT = endoscopic partial inferior turbinectomy. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

($P < 0.05$) in both groups. However, the groups had similar WHOQOL-bref delta values (Table III).

Complications

There were no differences between the groups regarding presence of crusting, synechiae, bleeding, or septal perforation during the follow-up (Fig. 2).

Surgical duration was longer in the EPIT group (212 ± 7.8 minutes considering rhinoplasty + EPIT vs. 159.1 ± 5.6 minutes in non-EPIT; $P ? 0.001$). The mean duration of EPIT was 24.1 ($\pm$ 7.1) minutes.

DISCUSSION

Our group[5] previously has performed the first randomized clinical trial to evaluate the impact of turbinate reduction on the QOL of patients undergoing rhinoseptoplasty. In that study, a group of patients submitted to surgical turbinate reduction by submucosal electrocautery during rhinoseptoplasty was compared to a group undergoing rhinoseptoplasty without turbinate reduction. Both groups had similar, significant improvement in overall (WHOQOL-bref) and specific QOL (NOSE and ROE). The main criticism of that study refers to the surgical method employed for turbinate reduction.[17] To address this limitation, we conducted the present study, in which EPIT rather than electrocautery was employed.

Our study was designed to access QOL outcomes using validated instruments instead of nasal obstruction and nasal airflow measurements. Therefore, specific measures of patient-reported nasal airway obstruction (e.g., visual analogue scale) were not utilized. We preferred not to use measurements of area, volume, and pressure because there is no consensus about the correlation of these outcomes and QOL scores. The literature frequently found discrepancies between the objective measurements and patients' complaints.[27]

To the best of our knowledge, this is the first study to use the NOSE-p scale to determine the impact of EPIT reduction on QOL related to nasal obstruction in patients undergoing rhinoseptoplasty. Endoscopic partial inferior turbinectomy partially removes the mucosa and bone of the inferior turbinate, which in theory would increase nasal patency.[17,28] Although some authors advocate the use of nasal turbinate surgery to prevent post-rhinoseptoplasty nasal obstruction, our study showed that QOL was not increased with combined EPIT and rhinoseptoplasty as compared to rhinoseptoplasty alone.

The mean ($\pm$ SD) preoperative NOSE-p score was 69.2 ($\pm$ 25.6) in the group with EPIT versus 80.2 ($\pm$ 13.6) in the group without EPIT (Table III). According to the literature, a preoperative score of 65 ($\pm$ 22) is compatible with nasal obstruction. Our postoperative values of 21.3 ($\pm$ 20.1) in the group with EPIT versus 23.4 ($\pm$ 25.8) in the group without EPIT (Table III) also are consistent with the postseptoplasty NOSE-p scores reported in the literature (mean of 23 ± 20).[29] These results indicate a significant improvement in nasal obstruction after surgery in both groups after 3 months of follow-up ($P < 0.001$).

The ROE scores in our sample increased by 47 and 44.8 points, respectively, in both groups. A significant increase ($P < 0.001$) in satisfaction with nasal cosmetic outcome was observed at 3 months. No difference was detected between groups.

Another interesting finding was the increased surgical time in patients with EPIT, requiring on average an additional 53 minutes (212 minutes in the EPIT group vs. 159 minutes in the non-EPIT group). This difference was clinically and statistically significant and may be attributed to the duration of EPIT (25 minutes on average) as well as to the time required for assembly of the optical system, initializing the video system, and positioning the surgical table.

Nasal obstruction is a subjective symptom with possible frequence variability. Moreover, seasonality, the presence of allergic rhinitis, and clinical treatment with topical corticosteroids, in addition to other unknown mechanisms, may change the intensity of nasal obstruction and thus affect measured outcomes. We attempted to control these potential confounders through randomization by distributing potential confounders evenly between the two groups (Table II).

Despite randomization, rhinorrhea and nasal itching were significantly different at baseline in the two groups (Table II), with more symptomatic patients in the non-EPIT group. Because no differences in QOL scores between groups were detected, we decided to add preoperative rhinorrhea and nasal itching in the multivariate model as potential confounders.

Another potential limitation of our study was the short follow-up. However, the lack of a positive effect after 3 months makes the emergence of significant benefits of EPIT less likely in the long term because it is expected that the process of scar retraction of the inferior turbinate should be finalized after this period.

We would like to reinforce that inferior turbinate surgery in intervention group was randomly performed regardless of the size of inferior turbinates. This decision was made considering that the size of the inferior turbinates varies significantly along the day and it is not constant with the same patient. Variations are noted according the moment of the day, position of the head, and exposure to allergens, and so forth. In addition, classifications of the size of the inferior turbinates are scarce and the decision to surgical intervention usually is empirical. Also, patients with nasal obstruction exclusivelly due to inferior turbinate enlargement were excluded for ethical reasons.

As a pragmatic clinical trial prioritizing the assessment of effectiveness rather than the efficiency of EPIT in rhinoseptoplasty, the question we intended to answer was: "Does the intervention work when used in real-life conditions, with little or no selection of participants except for the presence of clinical indication and when it is applied in a flexible way, as would be the case in daily practice?" This it is why the study protocol allowed the use of associated grafting techniques according to the specific needs of each patient (Table I). The use of spreader grafts was reserved for patients with collapse in the middle third. These grafts were more frequently used in EPIT patients (Table I). Although this was not statistically different between the groups, the use of spreader grafts was included in the multivariate analysis for conceptual reasons and for control of potential confounding bias.

The latest consensus of the American Academy of Otolaryngology concluded that inferior turbinate reduction is an effective aid for septoplasty in the presence of hypertrophic inferior turbinates. However, it also found that not all investigators favor concomitant surgery of the inferior turbinates with septoplasty due to the potential for adverse outcomes, including decreased nasal ciliary function, increased bleeding rates, and synechiae.[30]

In addition to the analysis of effectiveness, we also addressed safety and complications. Possible complications of inferior turbinate surgery include atrophic rhinitis and ozena, epistaxis, crusting, adhesions, and infection, as well as rare complications such as epiphora and septal perforation.[31,32] The incidence of bleeding in patients undergoing isolated septoplasty is less than 2%, as opposed to 6% in patients undergoing septoplasty with approach of the inferior turbinate. The incidence of adhesions has been reported to increase from 5% to 17% with the addition of turbinate surgery to septoplasty surgery.[33] The incidence of atrophic rhinitis ranges from 5% to 49% with turbinate surgery.[34]

However, unlike the current literature, this study found no difference in the occurrence of complications between the groups, suggesting that the EPIT technique is safe. In the group without EPIT, there only was one case of plentiful bleeding and one case of septal perforation. There were no cases of adhesion. In the group with EPIT, there was one case of adhesion, septal perforation, or bleeding. There was crusting within 7 days in most participants in both groups, with gradual reduction during follow-up (Fig. 2). In the EPIT group, over-resection of inferior turbinate tissue cases were not identified. This lack of difference in crust formation between the groups previously has been reported by Illum et al. in a study comparing postoperative patients undergoing septoplasty versus septoplasty and inferior turbinoplasty.[35]

The WHOQOL-bref provides an assessment of general well-being. The baseline scores found in our sample were worse than those reported for the general Brazilian population[36] and comparable to the scores found for patients with coronary artery disease (except in the physical domain) and depression (except in the social relationships domain).[37,38] These findings highlight the idea that dissatisfaction with nasal appearance associated with nasal obstruction symptoms can negatively impact health-related QOL outcomes. Postoperative scores were higher compared to those observed for the general Brazilian population.[36] These findings show the potential gain in overall QOL provided by rhinoseptoplasty.

Many authors advocate the benefits of inferior turbinate reduction associated with septoplasty. However, these studies have used postsurgical measures such as acoustic rhinometry[39,40] or computed tomography to support this opinion.[41–43] The findings of two systematic reviews on surgery of the inferior turbinate, published in 2009 and 2015, were controversial. Both studies concluded that surgery of the turbinates offered improvement of nasal obstruction in patients with inferior turbinate hypertrophy refractory to medical therapy; however, given the scarcity of level 1 and 2 data, they also indicated that further prospective studies should privilege randomization, inclusion of control groups, rigorous prestudy methodology, and the use of validated instruments to assess the results as applied in the present study.[44,45]

CONCLUSION

The present article has answered the call for studies of high methodological quality focusing on surgery of the inferior turbinate associated with rhinoplasty using outcomes related to QOL. Our findings demonstrate that EPIT reduction of inferior turbinates during primary rhinoplasty was not associated with improvement in overall (WHOQOL-bref) and specific (NOSE-p and ROE) quality-of-life scores in the short term. The use of EPIT increased surgical time without adding benefits, as measured by QOL scores. However, it is important to emphasize that there was no difference in postoperative complications, suggesting that EPIT is a safe technique.

Acknowledgments

Author's participation: Substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data: Bianca H. de Moura, Raphaella O. Migliavacca, Rafaela K. Lima, José E. L. Dolci, Martina Becker, Cássia Feijó, Elisa Brauwers, and Michelle Lavinsky-Wolff.

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Becker, Cássia Feijó, Elisa Brauwers, and Michelle Lavinsky-Wolff.
Final approval of the version to be published: Bianca H. de Moura, Raphaella O. Migliavacca, Rafaela K. Lima, José E. L. Dolci, Martina Becker, Cássia Feijó, Elisa Brauwers, and Michelle Lavinsky-Wolff.
Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: Bianca H. de Moura, Raphaella O. Migliavacca, Rafaela K. Lima, José E. L. Dolci, Martina Becker, Cássia Feijó, Elisa Brauwers, and Michelle Lavinsky-Wolff.

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