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ORIGINAL ARTICLE

Endoscopic-Assisted Internal Nasal Valve Reconstruction Using H-Shaped Cartilage Graft

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Abstract:

Background: Several sinonasal procedures can now be accessed more easily through the endoscopic approach. In addition to magnification, the endoscope may light up sections that are otherwise hard to reach. This research aimed to identify if the endoscopic approach is a viable method for accessing the internal nasal valve for the surgical manipulation and to document if H-shaped graft placed endoscopically widens the nasal valve area.

Patients and methods: We carried out this prospective study performed on twelve female patients who had intractable internal nasal valve dysfunction recruited from the ENT outpatient clinic in Zagazig university hospital. Every patient underwent: Anterior rhinoscopy and nasal flexible fiberoptic nasopharyngeal endoscope. Within two weeks prior to surgery and again at 6 months postoperatively, all patients finished the Rhinoplasty Outcomes Evaluation (ROE) and the Nasal Obstruction Symptom Evaluation (NOSE).

Results: As regard nasal congestion and stuffiness: pre-operative all patients 12(100%) complained from severe nasal congestion and stuffiness, whereas post-operative complete relieved of symptom in 9 out 12patients (75%) and 3 patient had mild nasal congestion and stuffiness, with statistically significant difference ($p<0.05$). The mean ± SD of ROE Function improved from (59.4±6.3) (range 50–62.5) preoperatively to (100±0) (range100–100) postoperatively, with statistically significant difference ($p< 0.05$). The mean ± SD of total ROE test improved from (86.4±2.08) (range 83.3–87.5) preoperatively to (100±0) (range100–100) postoperatively, with statistically significant difference ($p< 0.05$).

Conclusion: The endoscopic-assisted internal nasal valve reconstruction using H-shaped cartilage graft technique presents a promising solution for patients suffering from nasal valve insufficiency. By combining the spreader and splay effects, the H-shaped graft increases graft stability on the dorsal septum.

Key Words: Endoscopic-Assisted, H-Shaped cartilage Graft, Internal Nasal Valve Reconstruction

INTRODUCTION

The nasal septum and the caudal edge of the upper lateral cartilage form the boundaries of the nasal valve, sometimes called the internal nasal valve. The medial margin of the upper lateral cartilage is attached to the septum by a fibrous fiber, forming it. The nasal valve area extends from that anatomic complex and includes the septum on the medial side, the floor of the nose on the inferior side, and on the lateral side, the anterior tip of the inferior turbinate and the caudal margin of the upper lateral cartilage [1].

About thirteen percent of adults who have nasal surgery do so because of persistent nasal blockage,

which can be caused, in part, by nasal valve malfunction. Nasal valvular dysfunction can occur statically and dynamically due to aging, trauma, previous rhinoplasty, and septal abnormalities [2].

Spreader grafts, alar batten grafts, flare sutures, 6-splay grafts, butterfly grafts, and nasal valve suspension are some of the surgical procedures that have been previously detailed with the purpose of correcting nasal valve malfunction [3].

The spreader graft is an actual technique for repairing the nasal valve. Inserted between the nasal septum and the upper lateral cartilages (ULC), the spreader graft became popularized by Sheen et al. [4]. When the most anterior section of the ULC has been moved medially, the spreader graft can lateralize it and restore its original position [5].

These days, surgeons can access the internal nasal valve either a trans nasal incision or an open rhinoplasty incision on the outside. Even while the open rhinoplasty technique provides superior visibility and access, it does involve substantial dissection and disturbance to normal tissue planes. A nasal speculum and headlight are used to examine the nasal valve in the trans nasal technique, which also involves developing sub mucoperichondrial septal planes. The method is less invasive, which is a plus, but it only gives you a partial picture. Tissue manipulation is further complicated by the limited surgical space [6].

Subjective and objective evaluations of this approach to resolving nasal valve dysfunction have been positive, according to Hurbis et al. [7]. On the other hand, the thickness of the cartilage utilized as a spreader graft determines how far the ULC can be lateralized from the septum. In clinical practice, there are circumstances that call for different procedures that can lateralize the ULC even more than a conventional spreader graft. Such a technique should allow for intraoperative fine-tuning of the degree of lateralization and produce cosmetically pleasing outcomes.

In contrast to the spreader graft technique with lateral wall support, a new approach to internal nasal valve restoration developed by Tastan et al. [8] allows for a larger degree of lateralization of the superior section of ULC from the septum. The H-shaped graft, according to their reasoning, combines the spreader and splay effects, which promotes graft stability on the dorsal septum. Internal nasal valve dysfunction surgery may make use of this method.

For many sinonasal procedures, the endoscopic approach is now the gold standard. Magnification and illumination of otherwise inaccessible regions are both made possible by the endoscope [6]. In their endoscopic evaluation of the nasal valve, Huang et al. [6] confirmed that this method is a practical choice for accessing the internal nasal value. Spreader grafts can statistically increase the area of the nasal valve when placed endoscopically.

This research aimed to identify if the endoscopic approach is a viable method for accessing the internal nasal valve for the surgical manipulation and to document if H-shaped graft placed endoscopically widens the nasal valve area.

PATIENTS AND METHODS

We performed this prospective study on 12 female patients who had intractable internal nasal valve dysfunction in the period from June 2023 to September 2023 in the Otorhinolaryngology Department, Zagazig University Hospitals.

Written informed consent was collected from all parents of the participants. The approval for the study was obtained from the Institutional Review Board (10855-4-6-2023) and the research was conducted in accordance with the Helsinki Declaration.

Inclusion criteria: We included Every patient who experienced nasal obstruction for over a year, every patient with a positive Cottle test for internal nasal valve dysfunction before surgery, and every patient without concha hypertrophy or nasal polyposis were considered for the procedure.

Exclusion criteria: We excluded all cases who had a history of systemic disease, nasal polyposis, allergic rhinitis, or who required a related surgical procedure (such as endoscopic sinus surgery or concha radiofrequency),

Methods: Complete history taking including: A detailed history including nasal blockage, snoring, mouth breathing, and recurrent rhinitis. Complete ENT Clinical evaluation: focusing on detailed nasal examination. Every patient underwent: Anterior rhinoscopy and nasal flexible fiberoptic nasopharyngeal endoscope: noting any visible congestion, discharge, polyps, adhesions or nasal masses.

Assessment of the degree of nasal valve dysfunction

Within two weeks prior to surgery and again at twelve months postoperatively, all patients were asked to complete the Rhinoplasty Outcomes Evaluation (ROE) and the Nasal Obstruction Symptom Evaluation (NOSE) to compare the aesthetic and functional results (Tables 1 and 2).

Surgical technique (Figure 1).

Under the influence of general anesthetic and sedation, every treatment was carried out via an endonasal route. A conventional hemi transfixion incision was created on the patient's left side. A hemi transfixion incision was created on the left side and linked medially by bilateral inter cartilaginous incisions. The incision between the cartilaginous tissues was continued until it reached the upper third of the left side's hemi-transfixion incision. In a typical subsuperficial musculoaponeurotic system plane, the dorsal skin and soft tissues were elevated cephalic to the rhinion.

We removed the ULC scroll if it was pressing on the nasal valve or limiting its mobility. In the keystone area, approximately 1 cm in height, bilateral sub mucoperichondrial septal flaps were lifted while sparing the septal perichondrium. This was done just distal to the nasal bones. The remaining cephalic section was left intact after separating the caudal two-thirds of the ULC from the septum.

subperichondrial pockets were produced in the intact septal perichondrium area bilaterally using a Masing elevator in a caudal to cephalic manner. Septal cartilage was used to harvest a transplant. Around 20 mm long and 10 mm wide, with a wider end at the caudal end, were the graft's measurements. The graft took on a H shape after two rectangular pieces of cartilage were removed from the template's caudal and cranial ends. Two arms, one at the cranial end and one at the caudal end, now formed the graft's core body. Connected to about 10 mm of body, caudal arms are 3–4 mm long and cranial arms are 6–7 mm long. The thickness of the dorsal septal cartilage dictated the tailoring of the gap that was dissected between the arms

After that, the dorsal septum had a 10-millimeter-long strip of cartilage removed to make room for the H-shaped graft's body. The thickness of the H graft's body dictated the strip's height. In the region of the septal perichondrium that was still intact, the cephalic arms of the H graft were delicately placed into these sub perichondral pockets. These spaces aid in stabilizing the graft's cephalic arms. After that, the graft's body was set on the dorsal septum in the ULC-protected bed that had been prepared earlier. Nose skin was redraped and checked for nasal line continuity and shape abnormalities. This is the time to make adjustments to the graft shape in order to avoid overcorrection or contour abnormalities. The graft-to-ULC transition can be made more seamless by beveling the graft's side edges. The H graft can be shaped to resemble the natural dorsal curvature of the nose by making partial thickness longitudinal cuts to its body without sacrificing its inherent spring function.

Once the graft's dimensions were confirmed, it was attached to its bed using 5/0 polydioxanone suturing, and its caudal arms were fastened to the caudal septum. Subsequently, adequate airway patency was confirmed by checking the area of the internal nasal valve. Moving the ULC to H graft sutures to a more medial or lateral position allows for fine-tuning of the lateralization of ULC. Points of optimal lateralization with respect to both contour and function were chosen for suture placement. In order to prevent dead space formation under the graft, the nasal mucosa that was previously covering the septum was moved anteriorly and a horizontal mattress suture was put to the most anterior part of the septum at the valve location. After that, an intranasal splint was placed and the incisions were stitched up according to usual procedure.

Twelve months following the procedure was the duration of the follow-up. Results for nasal congestion, breathing difficulties, sleep disturbances, and exercise-induced air leakage were significantly improved between pre- and post-operative NOSE score computations.

STATISTICAL ANALYSIS:

We used (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) to gather, tabulate, and analyze all of the data. Number and percentage were used to represent qualitative data, whereas mean ± SD and range were used for quantitative data. To compare paired ordinal variables, the marginal homogeneity test was utilized. When comparing two normally distributed variables, paired t was employed. The tests were all bi-directional. A statistically significant result was defined as a p-value less than 0.05, whereas a p-value greater than or equal to 0.05 was deemed statistically insignificant (NS).

RESULTS

The mean age of studied female patients was 26±6.7 years (range 20–35 years) (Table 3). AS regard Nasal congestion and stuffiness: pre-operative all patients 12(100%) complained from severe nasal congestion and stuffiness, whereas post-operative complete relieved of symptom in 93 out 12patients (75%) and one patient had mild nasal congestion and stuffiness, with statistically significant difference ($p<0.05$). AS regard nasal blockage and obstruction: pre-operative 6 patients out 12 (50%)

complained from very bad and other 6 patients (50%) complained from severe nasal blockage and obstruction, whereas post-operative complete relieved of symptom in 6 patients (50%) and 6 patients had mild nasal blockage and obstruction, AS regard trouble in breathing through nose: pre-operative all patients complained from trouble in breathing through nose, whereas post-operative complete relieved of symptom in 6 patients (50%) and 6 patients (50%) had mild trouble in breathing through nose, with statistically significant difference ($p<0.05$), as regard trouble in sleep: Pre-operative all patients complained from trouble in sleep, whereas post-operative good sleep in 6 patients (50%) and 6 patients (50%) had mild trouble in sleep, with statistically significant difference ($p<0.05$).AS regard unable to get enough air through nose during exercise and exertion: Pre-operative all patients complained from unable to get enough air through nose during exercise and exertion, whereas post-operative complete relieved of symptom in 6 patients (50%) and 6 patients (50%) had mild problem to get enough air through nose during exercise and exertion, with statistically significant difference ($p<0.05$) (Table 4).

There were no changes in cosmetic parameters, ability to breathe through their nose pre-operative 3 patient (25%) unable to breathe through his nose and other 9 patients (75%) had some degree of inability to breath from nose, whereas post-operative all patients completely breathing from nose, the difference not significant, $p>0.05$ (Table 5).

The mean ± SD of ROE Function improved from (59.4±6.3) (range 50–62.5) preoperatively to (100±0) (range100–100) postoperatively, with statistically significant difference ($p<0.05$). The mean ± SD of total ROE test improved from (86.4±2.08) (range 83.3–87.5) preoperatively to (100±0) (range100–100) postoperatively, with statistically significant difference ($p<0.05$) (Table 6).

Table 1: Nasal Obstruction Symptom Evaluation (NOSE)

	Not a problem	Very mild	Moderate	Fairly bad	Severe
1. Nasal congestion and stuffiness	0	1	2	3	4
2. Nasal blockage and obstruction	0	1	2	3	4
3. Trouble breathing through my nose	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Unable to get enough air through my nose during exercise and exertion	0	1	2	3	4

Table 2: Rhinoplasty Outcomes Evaluation (ROE)

1. How well do you like the appearance of your nose?
2. How well are you able to breathe through your nose?
3. How much do you feel your friends and loved ones like your nose?
4. Do you think your current nasal appearance limits your social or professional activities?
5. How confident are you that your nasal appearance is the best that it can be?
6. Would you like to surgically alter the appearance or function of your nose?

Table (3): Demographic characters of studied group (N=12).

Variables	
Age per years Mean ± SD. (range)	 26±6.7 20-35

SD: Standard Deviation

Table (4): Effect of nasal valve reconstruction operation on nasal symptoms (N=12).

Variables	Time		p
	Pre Operative	Post Operative	
Nasal congestion and stuffiness.			
no problem	0.0	9(75.0)	0.047*
very Mild	0.0	3(25.0)	
severe	12(100.0)	0.0	
Nasal blockage and obstruction.			
no problem	0.0	6(50.0)	0.052
very Mild	0.0	6(50.0)	
Fairly bad	6(50.0)	0.0	
severe	6(50.0)	0.0	
Trouble breathing through my nose.			
no problem	0.0	6(50.0)	0.048*
very Mild	0.0	6(50.0)	
severe	12(100.0)	0.0	
Trouble sleep			
no problem	0.0	6(50.0)	0.048*
very Mild	0.0	6(50.0)	
severe	12(100.0)	0.0	
Unable to get enough air through my nose during exercise and exertion.			
no problem	0.0	6(50.0)	0.048*
very Mild	0.0	6(50.0)	
severe	12(100.0)	0.0	

Marginal homogeneity significant test *p<0.05= significant , p>0.05= no significant

Table (5): Effect of nasal valve reconstruction operation on Rhinoplasty Outcomes Evaluation (ROE) test

Variables	Time		P
	Preoperative	Postoperative	
Do you like the appearance of your nose?			
completely	12(100%)	12(100%)	-
Do you able to breathe through your nose?			
not at all	3(25)	0	0.059
some what	9(75)	0	
completely	0	12(100)	
How much do you feel your friends and loved one like your nose?			
completely	12(100%)	12(100%)	-
Does current nasal appearance limits your social or professional activities?			
never	12(100%)	12(100%)	-
Does your nasal appearance is the best that it can be?			
completely	12(100%)	12(100%)	-
Does surgery alter the appearance or function of your nose?			
no	12(100%)	12(100%)	-

Paired significant test p<0.001= highly significant

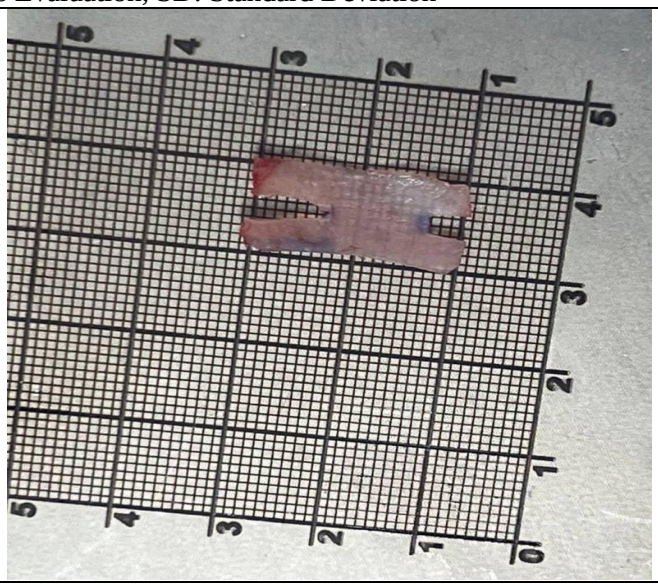
ROE: Rhinoplasty Outcomes Evaluation

Table (6): Effect of nasal valve reconstruction operation on Rhinoplasty Outcomes Evaluation (ROE) score.

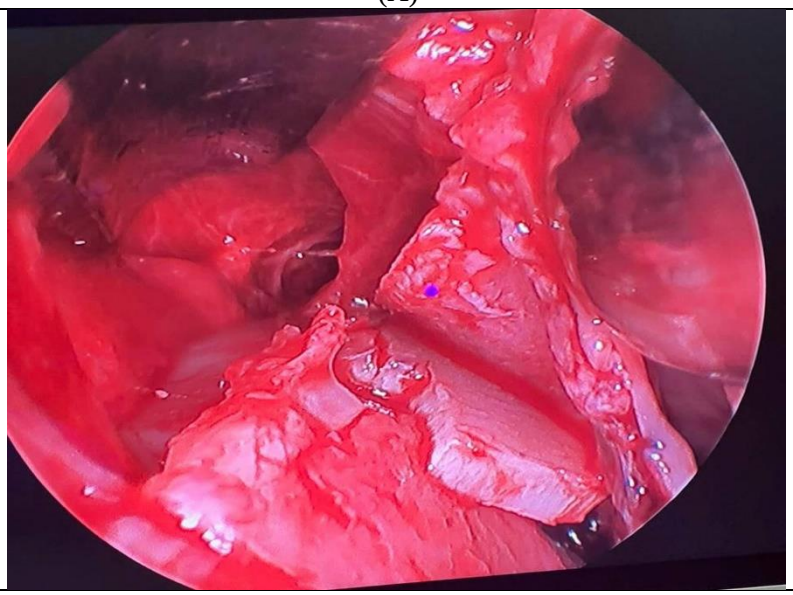
Variables	Time		P
	pre	Post	
ROE Function nose score Mean ± SD. (range)	59.4±6.3 (50-62.5)	100±0 (100-100)	**0.001***
ROE Cosmetic score Mean ± SD. (range)	100±0 (100-100)	100±0 (100-100)	-
Total ROE score Mean ± SD. (range)	86.4±2.08 (83.3-87.5)	100±0 (100-100)	**0.001***

Paired t significant test *p<0.05= significant.

ROE: Rhinoplasty Outcomes Evaluation, SD: Standard Deviation



(A)



(B)

Figure 1: (A)H-shaped cartilage with caudal arms (3mm), cranial arms (7mm) and connection (10mm) of the body, (B): H-shaped cartilage after placed between ULC and Septum.

DISCUSSION

Various surgical methods have been outlined in the past for fixing dysfunctional nasal valves, such as spreader grafts, alar batten grafts, flare sutures, splay grafts, and butterfly grafts. The spreader graft is an actual technique for repairing the nasal valve. The spreader graft, made famous by Sheen, is placed between the nasal septum and the upper lateral cartilages [9].

For cases where the anterior portion of the ULC has been moved medially, the spreader graft can be used to lateralize it. Subjective and objective evaluations of this method's efficacy in resolving nasal valve dysfunction have been positive. On the other hand, the thickness of the cartilage utilized as a spreader graft determines how far the ULC can be lateralized from the septum. In clinical practice, there are circumstances that call for different procedures that can lateralize the ULC even more than a conventional spreader graft. Such a technique should allow for intraoperative fine-tuning of the degree of lateralization and produce cosmetically pleasing outcomes [10].

The current findings regarding clearly revealed that pre-operative all patients 12(100%) complained from severe nasal congestion and stuffiness, whereas post-operative complete relieved of symptom in 9 out 12patients (75%) and one patient had mild nasal congestion and stuffiness, the difference statistically significant. Pre-operative 6 patients out 12 (50%) complained from very bad and other 6 patients (50%) complained from severe nasal blockage and obstruction, whereas post-operative complete relieved of symptom in 6 patients (50%) and 6 patients had mild nasal blockage and obstruction, the difference was no significant. Pre-operative all patients complained from trouble in breathing through nose, whereas post-operative complete relieved of symptom in 6 patients (50%) and 6 patients (50%) had mild trouble in breathing through nose, with statistically significant difference ($p<0.05$).

In the current study we found that pre-operative all patients complained from trouble in sleep, whereas post-operative good sleep in 6 patients (50%) and 6 patients (50%) had mild trouble in sleep, with statistically significant difference ($p<0.05$).

Similar findings were obtained by Aladag et al. [11] who demonstrated that there was significant improvement in sleeping after the operation, according to calculations done using the Nasal Obstruction Symptom Evaluation (NOSE) scale ratings before and after the procedure.

Our results are in line with those of Tastan et al. [8], who, using NOSE scores for both pre- and post-operative computations, found that nasal congestion, obstruction, and sleep problems significantly improved.

In the present study we found that There was a statistically significant difference between the pre- and post-operative assessments of patients' ability to breathe through their noses during exercise and exertion. Before the operation, all patients reported difficulty breathing through their noses during these activities. After the operation, 50% of patients reported complete symptom relief, while 50% reported mild difficulty breathing through their noses during these same activities.

Corroborating our findings, Aladag et al. [11] reported a statistically significant reduction in exercise-related nasal obstruction or congestion and airflow through the nose between pre- and post-operative assessments using NOSE scale scores.

This was in accordance with Tastan et al. [8] who reported that There was a notable improvement in nasal obstruction or congestion and airflow through the nose during exercise, according to pre- and post-operative calculations performed using NOSE scores.

Our current findings clearly revealed that there were no changes in cosmetic parameters pre and postoperative as all patients liked the appearance of their nose after operation. It has come to light that they believe their loved ones and friends complement their nose, that their present nasal appearance does not restrict their social or professional activities, and that they strive for the finest possible nasal appearance. Both before and after the procedure, ROE cosmetic showed no changes.

Tastan et al. [8] corroborated our findings by reporting that patients did not experience any changes in their aesthetic ROE scores before or after surgery. The post-op look of each patient's nose was satisfactory. It has come to light that they believe their loved ones and friends complement their nose, that their present nasal appearance does not restrict their social or professional activities, and that they strive for the finest possible nasal appearance. During the 12-month to 3-year follow-up period, the patient and surgeon both expressed satisfaction with the aesthetic and functional

outcomes. At the postoperative follow-ups, there were no signs of septal perforation, hematoma, synechiae, or infection that necessitated additional intervention.

In the current study we found that ability to breathe through nose pre-operative was one patient (25%) unable to breathe through his nose and other 3 patients (75%) had some degree of inability to breath from nose, whereas post-operative all patients completely breathing from nose, the difference was not significant.

Our results are in line with those of Aladag et al. [11], who demonstrated a statistically significant improvement in nasal congestion, difficulty breathing, and obstruction based on pre- and postoperative calculations using values from the Nasal Obstruction Symptom Evaluation (NOSE) scale.

These results were compatible with Tastan et al. [8] who reported that Results showed a marked improvement in nasal congestion, difficulty breathing, and blocked noses when comparing pre- and post-operative NOSE scores.

In the present study we found that the mean ± SD of ROE Function improved from (59.4±6.3) preoperatively to (100±0) postoperatively, the difference was statistically significant. The mean ± SD of total ROE test improved from (86.4±2.08) preoperatively to (100±0) postoperatively, with statistically significant difference ($p<0.05$).

The results were in agreement with those of Aladag et al. [11], who documented the use of pre- and post-operative VAS scores to evaluate the extent of nasal valve collapse in accordance with the examination results. The improvement in nasal valve collapse following surgery was a remarkable finding.

Consistent with these findings, Tastan et al. [8] cleared statistical analysis in functional factors in NOSE and ROE scores, which demonstrated a considerable improvement in outcome following surgery.

A new method was developed by Aladag et al. [11] to circumvent issues such as excessive dorsal widening, dorsal irregularities, visible dorsal aesthetic lines in thin skin, the requirement for a large quantity of straight septal cartilage for spreader grafts, and the harvesting of conchal graft for splay grafting. The splay graft leads to excessive broadening and aesthetic issues down the road, but the internal nasal valve expanding graft doesn't. This method is commonly utilized in initial rhinoplasties and improves the aesthetic and functional outcomes of managing dorsal middle vault issues. Their method involves reinforcing and repairing the internal valve using cartilage from the nasal septum. By positioning this cartilage fragment under the upper lateral cartilage, less mid-vault space is taken up by the graft compared to spreader grafts. A wider airway and somewhat elevated upper lateral cartilages characterize this condition. This kind of graft has a reduced risk of extrusion and makes final adjustments and corrections easier. An attractive brow line will not be magnified in any type of nose, and a smooth dorsal surface for restoration of the middle vault can be achieved with an expanding graft from the inside of the nasal valve.

The technique of saddle nose restoration with simultaneous internal nasal valve repair was described by Alsarraf and Murakami [12]. The only spreader graft used was a septal or conchal cartilage graft that was sutured to the ULCs. The resected dorsum was also used by Hall et al. [13] in their modified Skoog method. To enable lateral rotation of the ULCs, Gassner et al. [14] fixed them to the underside of the only graft instead of removing them from the septum using a dorsal only graft.

According to the current septorhinoplasty idea, as shown by Tastan et al. [8], the shape and function of the nose are inseparable. So, improving the function shouldn't come at the expense of the nasal form, and vice versa. When correcting nasal valve issues surgically, it is important to follow these guidelines: maintain a continuous dorsal nasal line, smooth the transition at the keystone area, and avoid excessive fullness at the valve region. To maintain the anatomical integrity of the dorsal nasal lines, cephalic extensions of the H graft were utilized. Preventing abnormalities in the nose's contour and minimizing disturbance to its middle third is the goal of covering these cephalic extensions with undamaged ULCs at the keystone area. To obtain the desired effect without excessive caudal widening, the graft's lateralization of the ULCs may be easily altered at the caudal part. Previous scroll resection, which is the curve between the cephalic lateral crura and the caudal upper lateral cartilage, slightly compensates for the potential expanding impact of the graft at the supra tip region. The restoration of dorsal aesthetic lines, curving the graft after fixation, and scroll resection all contribute to cosmetically satisfying outcomes.

The limited number of our sample size is one of the limitations of our investigation. Furthermore, not all historical information and events that could affect

the conclusion have been thoroughly recorded. It is important to exercise caution when interpreting connections because of these limits. For a more accurate assessment of the function of the internal nasal valve expanding graft in middle vault repair, future research should be more extensive and involve a larger number of patients.

Conclusion

The endoscopic-assisted internal nasal valve reconstruction using H-shaped cartilage graft technique presents a promising solution for patients suffering from nasal valve insufficiency. By combining the spreader and splay effects, the H-shaped graft increases graft stability on the dorsal septum. The results of this prospective study point to the possibility of using this method to surgically repair malfunctions of the internal nasal valve. The utilization of the H-shaped cartilage graft allows for precise customization to the patient's anatomy, resulting in optimal restoration of nasal valve function and aesthetics. Furthermore, the endoscopic-assisted approach offers enhanced visualization and minimal tissue disruption, leading to faster recovery times and improved patient satisfaction.

Conflict of interest: No potential conflict of interest was reported by the authors.

REFERENCES:

1. Balaji N, Balaji N. Nasal valve surgery. Textbook of Nasal Tip Rhinoplasty: Open Surgical Techniques,2020, 303-17.
2. Gilifanov EA, Lepeyko BA, Ardeeva LB, Ivanets IV, Tilik TV, Klemeshova TP,et al. Naruzhnyĭ i vnutrenniĭ nosovoĭ klapan. Metody diagnostiki i lecheniia pri disfunktsii [External and internal nasal valve. Diagnostic and treatment methods for dysfunction]. Vestn Otorinolaringol. 2020;85(1):102-8.
3. Howard BE, Madison Clark J. Evolution of the butterfly graft technique: 15-year review of 500 cases with expanding indications. Laryngoscope. 2019;129(S1):1-10.
4. Sheen JH. Spreader graft: a method of reconstructing the roof of the middle nasal vault following rhinoplasty. Plast Reconstr Surg. 1984;73(2):230-9.
5. Hussein WK, Elwany S, Montaser M. Modified autospreader flap for nasal valve support: utilizing the spring effect of the upper lateral cartilage. Eur Arch Otorhinolaryngol. 2015;272(2):497-504.
6. Huang C, Manarey CR, Anand VK. Endoscopic placement of spreader grafts in the nasal valve. Otolaryngol Head Neck Surg. 2006;134(6):1001-5.
7. Hurbis CG. An adjustable, butterfly-design, titanium-expanded polytetrafluoroethylene implant for nasal valve dysfunction: a pilot study. Arch Facial Plast Surg. 2006;8(2):98-104.
8. Tastan E, Demirci M, Aydin E, Aydogan F, Kazikdas KC, Kurkcuoglu M, et al. A novel method for internal nasal valve reconstruction: H-graft technique. Laryngoscope. 2011;121(3):480-6.
9. Sinkler MA, Wehrle CJ, Elphingstone JW, Magidson E, Ritter EF, Brown JJ. Surgical Management of the Internal Nasal Valve: A Review of Surgical Approaches. Aesthetic Plast Surg. 2021;45(3):1127-36.
10. Garg LN, Singh NK, Kappagantu KM, Yadav A. Spreader Graft Placement: An Effective Procedure for Alleviation of Internal Nasal Valve Collapse. J Oral Maxillofac Surg. 2021;79(10):2134-42.
11. Aladag I, Songu M, Aslan H, Imre A, Pinar E. Internal Nasal Valve Expanding Graft for Middle Vault Reconstruction. J Craniofac Surg. 2019;30(3):860-2.
12. Alsarraf R,Murakami C. S. The saddle nose deformity. Facial Plast Surg Clin North Am, 7(3),1999, 303-10.
13. Hall JA, Peters MD, Hilger PA. Modification of the Skoog dorsal reduction for preservation of the middle nasal vault. Arch Facial Plast Surg. 2004;6(2):105-10.
14. Gassner HG, Friedman O, Sherris DA, Kern EB. An alternative method of middle vault reconstruction. Arch Facial Plast Surg. 2006;8(6):432-5.

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