

The Honrubia Technique™ of Balloon Sinuplasty for the Improvement of Symptoms in Chronic Sinusitis

Patients

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ABSTRACT

Introduction

This study examines the benefits of balloon dilation of the sinuses coupled with turbinate reduction and septoplasty when necessary. These supplementary procedures are allowed for by the general anesthesia used under the Honrubia Technique™. The Honrubia Technique™ includes the use of general anesthesia in the clinic during Balloon Sinuplasty procedures (BSP) which allows for turbinate reduction, septoplasty, and more aggressive irrigation of the sinuses without additional discomfort to the patient.

Methods

To survey the degree of recurrent symptoms due to rhinosinusitis and rhinitis, 34 patients undergoing the Balloon Sinuplasty procedure were pre-and several weeks post-operatively administered the Sino-Nasal Outcome Test (SNOT-20). The SNOT-20 includes a set of 20 symptoms related to sinus infections which can be rated on a scale from 0-5.

Results

Results from the SNOT-20 administered in clinic show a decrease in score by an average of 35.499 points, with an individual patient's score decreasing up to as much as 71 points.

Conclusions

These results decline on average and, therefore, depict an overall decline of patients' symptoms. The results obtained from the SNOT-20 displays that BSP coupled with the Honrubia Technique™ provides for positive results towards the improvement in patients with chronic sinusitis and validates that the Honrubia Technique™ provides for better immediate results.

INTRODUCTION

The intricacies of the nasal, middle, and inner ear cavities are apparent in their sharing of similar anatomy and mucus membrane linings. For this reason, not only do both areas develop similar infections, but an isolated contamination in one region could readily affect the other. A deviated septum, for example, can cause the flow of inhaled air to become turbulent, irritating mucous membranes that then

become swollen.¹ Consequently, when patients present with common symptoms of recurrent rhinosinusitis or rhinitis the nasal cavities need to be examined.

Rhinosinusitis is the inflammation of the sinuses in the nasal cavities. Symptoms include fatigue, postnasal drip, and congestion.² Rhinitis is the inflammation of the mucosal membrane in the nasal cavities, which can lead to sneezing, a runny nose, and stuffiness.³

Inflammatory pathology affecting the nasal cavities and ear canals are targeted by using Balloon Sinuplasty under the Honrubia Technique™. The Honrubia Technique™ is a hybrid of a traditional balloon sinuplasty, which incorporates additional procedures as indicated, such as septoplasty and turbinate reduction, while performed under general IV anesthesia within the clinic. The use of the anesthesia allows for a more complete surgery, including the septoplasty and turbinate reduction procedures, and more aggressive irrigation of the sinuses. Each sinus is irrigated with two 20cc syringes of 0.9% sodium chloride solution. The decision of which type of procedure to undertake under the Honrubia Technique™ is determined by a combination of physical examinations, symptom history based on the SNOT-20 results, and radiographic findings.

A deviated septum can lead to nasal congestion or the obstruction of airflow into the nasal passage.⁴ To correct this, a septoplasty is performed in which a surgeon will attempt to increase airflow by straightening and repositioning the deviated septum to its proper location.⁵ A deviated septum in combination with enlarged turbinates could come in contact with one another, causing the minimization of the nasal airway passage and epistaxis. Swollen turbinates are cauterized to encourage shrinking of the tissue.

Sinuplasty is the “molding, formation, or surgical repair”⁶ of a sinus. A balloon sinuplasty incorporates the use of a catheter with a balloon at its tip, which can dilate up to 6 mm in diameter. Balloon sinuplasty is a minimally invasive procedure that is performed in-office to dilate the ostium of a frontal, maxillary, or sphenoid sinuses to allow proper ventilation and drainage. A lighted guiding wire is inserted into the nasal cavity and directed into the desired sinus. Once wire placement is confirmed through the illumination of the appropriate sinus, the attached balloon catheter dilates the walls of the

sinus ostium without causing damage to the surrounding mucosal lining.⁷ The guiding wire is removed to then be converted into a sinus lavage. The sinus is irrigated with a 0.9% sodium chloride solution and then drained. The lavage is removed, leaving a clean, open sinus passage.

Patients who require the procedure report symptoms such as runny nose, ear pain, facial pain or pressure, and dizziness. Other symptoms of rhinosinusitis that affect the quality of a patient's life include embarrassment, frustration, and fatigue. These quality of life measurements are recorded using the Sino-Nasal Outcome Test, or the SNOT-20, which assesses the severity of patient symptoms pre- and postoperatively.

METHODS/PROCEDURES

Patients suffering from chronic sinusitis score the severity of their symptoms using the Sino-Nasal Outcome Test, or the SNOT-20. This self-reporting questionnaire lists 20 items that are divided into four different aspects of health: rhinologic symptoms, ear and facial symptoms, sleep function, and psychological issues.⁸ Symptoms are scored on a scale of 0 through 5, in which a score of 5 would signify that the problem is "as bad as it can be." Overall SNOT scores would thus range from 0 to 100, where a higher score would denote more problematic rhinosinusitis. Patients then choose the top 5 symptoms perceived to be the most important items affecting their health.

Image 1. SNOT-20 Survey. This is an example of the form patients were asked to fill out pre- and postoperatively. This is a list of 20 symptoms related to sinus infections which can be rated on a scale from 0-5.

Sino-Nasal Outcome Test (SNOT-20)						
RHINOLOGICAL						
1. Need to blow nose	0	1	2	3	4	5
2. Sneezing	0	1	2	3	4	5
3. Runny nose	0	1	2	3	4	5
4. Post-nasal discharge	0	1	2	3	4	5
5. Thick nasal discharge	0	1	2	3	4	5
EAR AND FACIAL						
6. Ear fullness	0	1	2	3	4	5
7. Dizziness	0	1	2	3	4	5
8. Ear pain	0	1	2	3	4	5
9. Facial pain/pressure	0	1	2	3	4	5
SLEEP FUNCTION						
10. Difficulty falling asleep	0	1	2	3	4	5
11. Wake up at night	0	1	2	3	4	5
12. Lack of sleep	0	1	2	3	4	5
PSYCHOLOGICAL						
13. Fatigue	0	1	2	3	4	5
14. Reduced productivity	0	1	2	3	4	5
15. Reduced concentration	0	1	2	3	4	5
16. Frustrated/restless/irritable	0	1	2	3	4	5
17. Sad	0	1	2	3	4	5
18. Embarrassed	0	1	2	3	4	5
UNCLASSIFIED						
19. Wake up tired	0	1	2	3	4	5
20. Cough	0	1	2	3	4	5

With the approval of the South Texas Sinus Institute, 34 patients (mean age 43.559, σ 18.912) affected by chronic rhinosinusitis, anatomical abnormalities, and who did not experience symptom relief with medical therapy were used in the prospective trial from April 2015 to June 2015. The SNOT-20 was administered to patients preoperatively and 4-7 weeks (post-operatively) after their procedures.

RESULTS

The scores from both the pre- and post-SNOT were evaluated to determine the effectiveness of the Honrubia Technique™ in relieving patient symptoms. The results of 34 patients were obtained and can be viewed in Table 1.

Table 1. Pre- and post-operative SNOT-20 scores. The following displays the resulting pre- and post-operative scores of 34 patients.

Patient	Sex	Age	Preoperative Snot-20	Postoperative Snot-20	Difference
1	F	42	78	23	55
2	M	34	53	25	28
3	M	33	62	54	8
4	F	28	57	10	47
5	M	66	44	11	33
6	F	64	50	0	50
7	M	54	26	21	5
8	F	38	58	7	51
9	F	62	39	4	35
10	M	47	80	4	76
11	M	15	12	17	-5
12	M	24	63	15	48
13	F	33	52	55	-3
14	F	57	86	18	68
15	F	45	84	13	71
16	F	68	51	53	-2
17	M	69	31	20	11
18	F	67	47	55	-8
19	F	35	67	12	55
20	M	57	65	10	55
21	F	61	55	17	38
22	F	50	83	39	44
23	M	13	35	20	15
24	F	74	74	28	46
25	M	16	14	12	2
26	F	28	49	4	45
27	M	35	67	0	67
28	F	50	56	7	49
29	M	15	78	15	63
30	F	28	63	8	55
31	F	43	40	6	34
32	M	18	69	21	48
33	F	79	32	27	5
34	F	33	68	40	28
mean:		43.559	55.529±19.225	20.030±16.087	

Image 2. Pre- vs Post-operative SNOT-20 scores. Post-operative scores decreased from the preoperative scores in a majority of the patients.

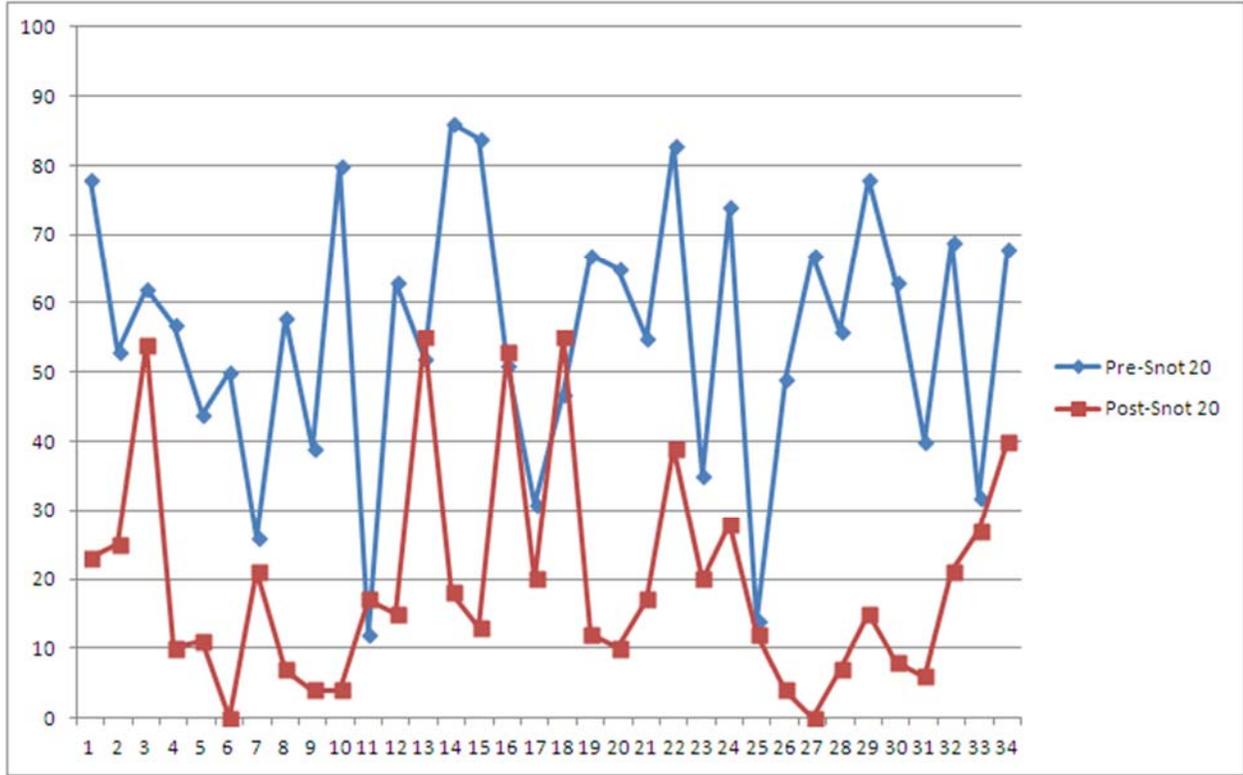
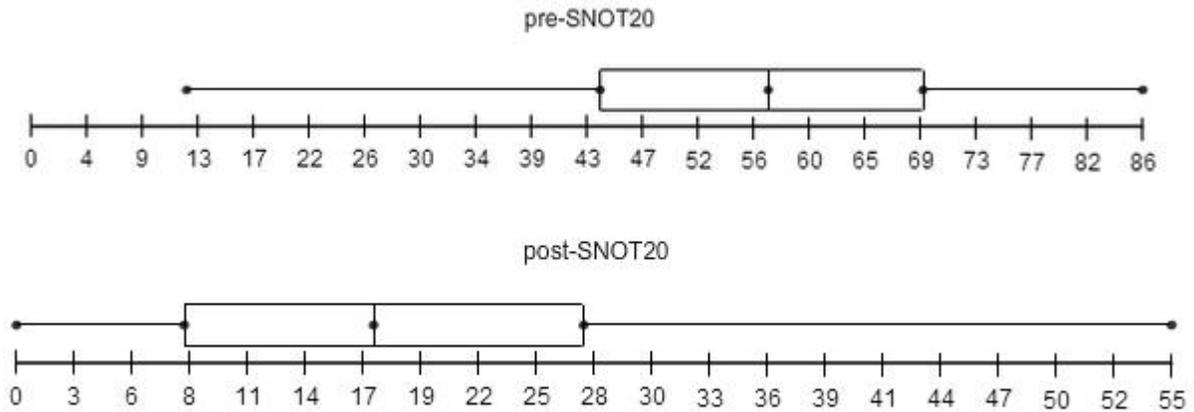


Image 3. Pre- and post-SNOT-20 score ranges. Some scores were distinctly separate from the rest of the scores and were, therefore, considered outliers.



The average preoperative SNOT score was 55.529, with a median of 56.5 and a range of 74. The average postoperative score was 20.030, with a median of 16 and a range of 55. On average, the SNOT-20 scores decreased by 35.499 points. Patients number 3, 13, 16, and 18 were identified as outliers.

DISCUSSION

During traditional sinus surgery, a new opening is made to the sinus. These new sinus openings are not as functional because they do not follow the natural ostia of the sinuses. Balloon Sinuplasty opens the natural ostia which allows for the mucus to flow towards the natural ostia. This helps to prevent the recurrence of the symptoms that patients generally experience with chronic sinusitis. This procedure using the Honrubia Technique™ preserves the cilia and corrects the natural sinus ostia to provide better long term results.

On average, patients' scores decreased by an average of 35.499 points, showing immediate relief to symptoms relating to their sinuses. The scores for Patients 11, 13, 16, and 18 increased by an average of 4.5 points, and were found to be over 2 standard deviations of the mean. Although these patients reported an increase in their scores, the majority of the patients displayed a significant decrease in theirs. Patients 6 and 27 showed great improvement with a final score of 0 and were completely relieved of their symptoms post-operatively.

CONCLUSION

Infection and inflammation of the sinuses can cause extreme discomfort in various forms. Balloon Sinuplasty utilizes a balloon dilator to widen the natural sinus ostium to enhance airflow through the cavities. The Honrubia Technique™ allows for a more complete Balloon Sinuplasty procedure, which may or may not include septoplasty and turbinate reduction, in the clinic with both the ENT surgeon and anaesthesiologist present. This complete procedure is allowed by the use of the general anesthesia by eliminating the discomfort felt by the patient, and this ultimately present more improved results. The results presented by the SNOT-20 display positive results towards the improvement in patients with

chronic sinusitis and validates that the Honrubia Technique™ provides for better immediate results.

REFERENCES

1. Bahls C. A look at your ears, nose, and throat. Everyday health. <http://www.everydayhealth.com/ears-nose-throat-pictures/common-ears-nose-throat-complaints.aspx>. Updated October 7, 2010. Accessed September 23, 2015.
2. Sinusitis. U.S. national library of medicine. <https://www.nlm.nih.gov/medlineplus/sinusitis.html>. Updated September 21, 2015. Accessed September 23, 2015.
3. Fried MP. Rhinitis. Merck manual. <http://www.merckmanuals.com/home/ear-nose-and-throat-disorders/nose-and-sinus-disorders/rhinitis>. Updated 2015. Accessed September 23, 2015.
4. Cunha JP. Deviated septum. Medicinenet. http://www.medicinenet.com/deviated_septum/page2.html. Accessed September 23, 2015.
5. Mayo clinic staff. Test and procedures: septoplasty. Mayo clinic. <http://www.mayoclinic.org/tests-procedures/septoplasty/basics/definition/prc-20013557>. Published August 13, 2013. Accessed September 23, 2015.
6. -plasty. Mosby's medical dictionary, 8th edition. <http://medical-dictionary.thefreedictionary.com/-plasty>. Accessed July 28, 2015.
7. Nachlas NE. (2014). How can balloon sinuplasty help you? Nathan E. Nachlas, M.D. <http://www.drnachlas.com/blog/balloon-sinuplasty>. Published April 21, 2014. Accessed September 23, 2015.
8. Brown JP, Hopkins C., Slack R., Cano SJ. The Sino-Nasal Outcome Test (SNOT): can we make it more clinically meaningful? Otolaryngology - Head & Neck Surgery. 2007;136(5):736-741.