BREATHE FREELY DAY AND NIGHT
A patient’s guide to the diagnosis and treatment of sinus, allergy, snoring, and sleep-related issues.
Welcome to the Pasha Snoring & Sinus Center, Houston’s premier facility for treating ear, nose, and throat disorders.
Our program treats those who have trouble breathing during the day due to allergies, nasal obstruction, or sinusitis, as well as those who have trouble breathing at night due to snoring, gasping, or sleep apnea.

I’m Dr. Pasha, and I’ve created this introductory booklet to supplement your initial evaluation and provide you with a handy summary of your potential treatment options. Fully understanding your condition is empowering, allowing you to make the most informed decisions about your health and future. This guide should serve as a reference for both you and your friends and family.

For more detailed information, graphics, testimonials, and videos, you can always visit our website at BreatheFreely.com.

Sincerely,

R. Pasha, MD

Double Board Certified:
American Board of Otolaryngology
Specialty Certification in Sleep Medicine

Medical Director
Pasha Snoring & Sinus Center

Assistant Clinical Professor
UTMB School of Medicine
# Table of Contents

8 About Dr. Pasha and the Pasha Snoring & Sinus Center

## Snoring and Sleep Apnea

9 Understanding Snoring vs. Sleep Apnea

11 Our Evaluation Process

15 Sleep Studies/Home Studies

17 Managing Snoring and Sleep Apnea

19 Understanding CPAPs and BiPAPs

21 Dental Appliances

23 In-Office Procedures

23 Pillar Procedure

25 Uvuloplasty

26 Turbinate Reduction (Radiofrequency Ablative Therapy)

27 Surgical Solutions

27 Palatal Reconstruction

28 Transoral Robotic Surgery (TORS, da Vinci Robotic Surgery)

29 Nasal Surgery

30 Lingual Tonsillectomy

31 Midline Glossectomy

32 Hypoglossal Nerve Stimulation

33 Hyoid and Tongue Advancement/Stabilization Procedure

35 Genioglossal Advancement

36 Maxillary Mandibular Advancement Operation (MMA)

37 Tracheotomy

38 Weight Loss Program
<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Introduction to Sinus and Allergies</td>
</tr>
<tr>
<td>41</td>
<td>Nasal/Sinus Anatomy and Terms</td>
</tr>
<tr>
<td>45</td>
<td>Nasal Endoscopy</td>
</tr>
<tr>
<td>47</td>
<td>The Sinus CT Scan</td>
</tr>
<tr>
<td>49</td>
<td>Allergy Testing</td>
</tr>
<tr>
<td>51</td>
<td>Home Immunotherapy</td>
</tr>
<tr>
<td>55</td>
<td>In-Office Procedures</td>
</tr>
<tr>
<td>55</td>
<td>In-Office Balloon Sinuplasty</td>
</tr>
<tr>
<td>57</td>
<td>Turbinate Reduction (Radiofrequency Ablative Therapy)</td>
</tr>
<tr>
<td>59</td>
<td>Cryotherapy/Cryosurgery of the Nasal Passage (ClariFix®)</td>
</tr>
<tr>
<td>61</td>
<td>Polypectomy</td>
</tr>
<tr>
<td>61</td>
<td>Corticosteroid Sinus Implants</td>
</tr>
<tr>
<td>63</td>
<td>Surgical Solutions</td>
</tr>
<tr>
<td>63</td>
<td>Septoplasty and Turbinate Reduction</td>
</tr>
<tr>
<td>66</td>
<td>Endoscopic Sinus Surgery</td>
</tr>
<tr>
<td>68</td>
<td>Nasal Valve Reconstruction</td>
</tr>
<tr>
<td>69</td>
<td>Eustachian Tube Dysfunction</td>
</tr>
<tr>
<td>71</td>
<td>Eustachian Tube Dilation</td>
</tr>
</tbody>
</table>
Dr. Raza Pasha, MD, is double board certified in otolaryngology (head and neck surgery) and sleep medicine. These unique credentials have helped elevate the Pasha Snoring & Sinus Center to the forefront of the field for the management of breathing disorders both day and night.

Our boutique center focuses first on an accurate diagnosis of the cause of your problem, not just the symptoms, for long-term solutions. We take a holistic approach and are qualified in all major therapeutic options from in-house weight loss counseling to advanced computer-guided sinus surgery. Our state-of-the-art clinic is not a “one-trick pony,” allowing you to choose solutions specific to your needs.

Dr. Pasha is a nationally recognized pioneer in his field, making sure that the latest options are available to all his patients. He was the first to perform in-office balloon sinuplasty in Houston as well as the first to implant corticosteroid implants in the sinus in the office. He has his own unique technique to reconstruct the palate in snorers and has made advances in robotic techniques for sleep apnea patients.

We appreciate your trust and confidence.

Sunny Gill, PA-C
The first step in our process is helping you determine if you are a primary snorer (which causes social issues, bed partner complaints, micro-arousals, and mouth breathing) or if you suffer from sleep apnea (which can have more serious medical consequences). Think of it like this: most people who have sleep apnea snore, but most people who snore do not have sleep apnea.
Sleep apnea causes you to stop breathing due to the collapse of your upper airway while you're asleep. As your oxygen levels get low, you will gasp for air or snore to restart your breathing. This disrupts your sleep, resulting in tiredness, haziness, and even depression upon waking.

It also puts a strain on your heart, which can lead to heart disease, arrhythmias, hypertension, lung disease, or stroke. It also affects the regulation of your body’s hormones (potentially causing diabetes), including the hormones that regulate metabolism, causing weight gain. Other symptoms of sleep apnea include night-time urination, grinding teeth, mouth breathing, temporomandibular joint disorder, and anxiety.
First, we will determine if your snoring is a symptom of sleep apnea or if you’re a primary snorer.

We take the time to understand how your snoring is affecting your life and your health. Snoring, while not a significant health risk, may be a social issue that causes harmful problems in your relationships.

Taking the steps to treat your snoring may help prevent serious health conditions later on down the road.

We’ve been treating patients with sleep apnea since 2001, so we know exactly what to look for and can often make an initial assessment simply by talking with you.
Step II
COMPREHENSIVE UPPER AIRWAY EVALUATION

By the end of your first visit, you should have a better idea of why you snore. We will identify the regions of your upper airway collapse by using a small endoscope to take pictures, video, and measurements. The **upper airway** is the “pipe” that begins at your nose and extends to the back of your throat, ending at the entrance to the lungs at the trachea. Unlike the trachea, which is supported by stiff cartilage, the upper airway is floppy and is susceptible to collapse.
Here are some pictures of a normal upper airway.

Normal Nasal Cavity (Left Side)

Normal Nasopharynx

Normal Velopharynx
In some cases, additional testing may be required in your upper airway evaluation. If you are a mouth breather, for instance, we may request a CT scan to see if your sinuses are involved. For some patients, we may need a sleep test to confirm our diagnosis.
Sleep Studies/ Home Studies
We do not routinely conduct sleep studies on every patient. However, there are several reasons why we may suggest one. The most common reason is to prove to your insurance company that you require a CPAP machine as sleep studies can objectively measure the severity of your sleep apnea.

We work with sleep labs that we know well, so we know the results will be of the highest quality.

We may also consider a home study to avoid sleeping overnight in a lab. The most important thing to review after your sleep study is the Respiratory Distress Index or Apnea/Hypopnea Index, which rates the severity of your sleep apnea. A score of 5–10 is considered mildly abnormal. Scores greater than 20 are considered moderate. If your score is greater than 40, you may be at risk for medical issues such as high blood pressure, heart or lung disease, diabetes, or stroke.
Managing Snoring and Sleep Apnea

There are many ways we can treat snoring and sleep apnea. Each option has its risks, effectiveness, costs, and recovery. You may not be qualified for every treatment option and no one treatment is best for everyone.

The main groups of therapeutic options include the following:

**Observation**

Observation may be an option if the snoring does not bother you or anyone else. By addressing your snoring early, you can help prevent the laxity or sagginess of the back of your throat that can advance with age and later lead to sleep apnea.

**Behavior Modification**

Small adjustments to your sleeping habits may be enough to reduce the intensity of your snoring. These modifications include avoiding sedatives and alcohol at night, sleeping on your side, and developing better sleep habits overall.
Breathing Machines

This is the most common solution for sleep apnea. Continuous or constant positive air pressure (CPAP) machines and BiPAP machines are devices that prevent airway collapse by forcing air through your nose and mouth.

Dental Appliances

Dental appliances may be considered for select cases of sleep apnea and snoring as they are less cumbersome than CPAP machines.

In-Office Procedures

We offer a number of minimally invasive, in-office procedures to manage your snoring.

Surgical Options

Our center has over 12 distinct surgical solutions specifically designed to treat snorers. Dr. Pasha has performed over 3,600 procedures to treat sleep apnea patients and snorers.

Weight Loss Programs

Sleep apneic patients often have problems maintaining an ideal weight because their condition slows their metabolism. Our center has a specialized weight program for sleep apneic patients, which can help them maintain an ideal weight and improve their snoring issues.
Understanding CPAPs and BiPAPs
CPAP and BiPAP (continuous and bi-level positive airway pressure) breathing machines are the standard therapy for sleep apnea. These devices work by forcing air through the nose or mouth via a mask. CPAP machines do not cure sleep apnea but rather provide an effective method of treating it.

Many patients cannot tolerate CPAP machines. Some studies suggest that fewer than 40% of patients actually use their machine every night.

We have developed ways of helping all of our patients use their machines consistently. Our CPAP machines are connected to the internet, so we can make adjustments to your machine’s settings remotely. In-office training programs will help you learn to breathe through your nose, helping you tolerate the mask more easily.
Dental Appliances
For patients with mild sleep apnea or positional snoring, a dental or oral appliance similar to an orthodontic retainer can be worn in the mouth while sleeping to help expand the back of the throat. Oral appliances are less invasive and easier to travel with than CPAP machines.

Over-the-counter appliances are typically much less effective and may cause serious teeth shifting.

We make our own custom-fitted appliances for your unique bite. Two adjustable pieces prevent the lower jaw from falling backwards and blocking the back of your throat. The device also helps you breathe through your mouth to optimize comfort.
In-Office Procedures

Pillar Procedure

This procedure addresses directly the most common source of snoring—the soft palate (the soft part of the top of the mouth). Three to five small, polyester “pillar” implants (2 mm in diameter) are placed inside the soft palate, causing scarring that stiffens the palate, and reducing tissue vibration that causes palatal tissue collapse and snoring. The Pillar Procedure can also be used in conjunction with other techniques such as a turbinate reduction or uvuloplasty.
Advantages

- Performed quickly in the office
- Minimal recovery period (no need to take off from work)
- Minimal risk
- May be combined with other in-office procedures (e.g., turbinate reduction)

Limitations

- Requires favorable anatomical conditions
- Long-term efficacy is less reliable
- Not covered by insurance
- Not an option for moderate to severe sleep apnea cases
Uvuloplasty

The uvula is the bell-shaped tissue that hangs at the bottom of your soft palate. If your uvula is too long or is misshaped, performing a uvuloplasty shortens the uvula or reshapes it. We do not recommend removing the uvula as we believe it has several critical functions (lubricating the throat and providing a funnel for secretions to go from the nose to the back of your throat).

This procedure is limited to those who snore or who have mild sleep apnea.

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<thead>
<tr>
<th>ADVANTAGES</th>
<th>LIMITATIONS</th>
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<tr>
<td>• Can be performed in the office</td>
<td>• Causes discomfort for 7–10 days</td>
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<td>• Addresses the oropharynx</td>
<td>• More complex reconstructions must be done in an operating room</td>
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<tr>
<td>• Minimal risks (bleeding is the most common)</td>
<td>• Does not lift or reconstruct the entire soft palate</td>
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<tr>
<td>• May be combined with other in-office procedures (e.g., the Pillar Procedure)</td>
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</tr>
</tbody>
</table>
Turbinate Reduction (Radiofrequency Ablative Therapy)

The turbinates are shelves in the nose that congest and decongest when irritated, contributing to nasal obstruction, mouth breathing, and snoring. Reducing the size of the turbinates may reduce snoring or cure mild sleep apnea in select patients. Additionally, a blocked nose may also make CPAP use difficult. Reducing the size of the turbinates allows for more space and less congestion, making CPAP much easier to use. Shrinking the turbinates may be done almost painlessly by first preparing the nose with a topical anesthetic agent, then shrinking the turbinates directly using a radiofrequency ablative device. See pages 58–59 for additional information.

<table>
<thead>
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<th>ADVANTAGES</th>
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<td>• Performed quickly in the office</td>
<td>• Does not address the septum</td>
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<tr>
<td>• Minimal recovery period (no need to take time off from work)</td>
<td>• Limited reduction possible with in-office procedures</td>
</tr>
<tr>
<td>• Minimal risks (bleeding is the most common)</td>
<td></td>
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<td>• May be combined with other in-office procedures (e.g., the Pillar Procedure)</td>
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Surgical Solutions

Dr. Pasha has developed a unique approach for treating sleep apnea. Think of it as a “facelift” for the back of your throat. It’s a modification of a technique called a uvulopalatopharyngoplasty, or UP3, which removes the uvula and much of the soft palate.

This improved version of the procedure involves a reconstructive technique that preserves the uvula and midline structures.
For patients who experience a collapse of the airway in the base of the tongue at night, the da Vinci Robot, a new technology, may be used to access the base of the tongue. The robot allows for better visualization of and better access to the deeper portion of the throat.

- Addresses obstruction from the oropharynx (back of the throat) and enlarged tonsils
- Excellent long-term results
- Higher potential for curing moderate and severe sleep apnea

**ADVANTAGES**

**LIMITATIONS**

- 7–10 day recovery period
- Only partially covered by insurance

### SNORING AND SLEEP APNEA

Our modification of palatal reconstruction is performed in an operating room and involves several steps.

1. Removal of the tonsils and often the pocket that houses the tonsils
2. Reconstruction of the sides of the throat
3. Reduction of the redundant portion of the soft palate
4. Reconstruction of the soft palate
5. Reconstruction of the uvula (uvuloplasty)

### SURGICAL SOLUTIONS

**Transoral Robotic Surgery (TORS, da Vinci Robotic Surgery)**

For patients who experience a collapse of the airway in the base of the tongue at night, the da Vinci Robot, a new technology, may be used to access the base of the tongue. The robot allows for better visualization of and better access to the deeper portion of the throat.
The robot is used in an operating room while you are asleep. Using a 3-D image, small “arms” allow for better access to reduce the size of the tongue base.

**ADVANTAGES**

- Addresses obstruction from the hypopharynx (behind the tongue)
- Good long-term results
- Higher potential for cure or improvement of sleep apnea, including moderate and severe sleep apnea

**LIMITATIONS**

- 7–10 day recovery period
- May need to be a staged procedure
- Technically difficult
- Risk of taste disturbances

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**Nasal Surgery**

Nasal obstruction often worsens sleep apnea and snoring, and in some cases may be the primary cause. Additionally, nasal obstruction can significantly increase CPAP pressures, resulting in poor compliance. Dr. Pasha offers a variety of surgical options that dramatically improve nasal clearance. These procedures are reviewed under the “sinus and allergies” section of this brochure. The most common procedures include septoplasty with turbinate reduction (see page 64) and nasal valve reconstruction (see page 68).
Lingual Tonsillectomy

Tonsil tissue on the base/back of your tongue is called lingual ("tongue") tonsils. If your lingual tonsils become enlarged, they may cause a collapse of the airway at night, leading to snoring or sleep apnea.

Lingual tonsillectomy is performed in the operating room while you are asleep. A lingual tonsillectomy is often performed in conjunction with palatal (oropharyngeal) reconstruction.

In order to reach the back of the tongue, a scope is used to visualize the tongue base through the mouth. Using a new technique that vibrates the tissue, the lingual tonsils are reduced. No incisions are required.

**ADVANTAGES**

- Addresses obstruction from the hypopharynx (behind the tongue)
- Good long-term results
- Higher potential for cure or improvement of sleep apnea, including moderate and severe sleep apnea
- Low risk of taste disturbances

**LIMITATIONS**

- 7–10 day recovery period
- May need to be a staged procedure
Midline Glossectomy

For some patients, the tongue may fall back during sleep, causing obstruction and snoring. If this obstruction is significant, a reduction of the base of the tongue may help.

A midline glossectomy is performed in the operating room while you are asleep, without any incisions. The middle (“midline”) and back portions of the tongue are reduced. Care is taken so as not to affect your speech or swallowing functions. A midline glossectomy can be performed at the same time as a palatal (oropharyngeal) reconstruction.

**ADVANTAGES**

- Addresses obstruction from the midline tongue and hypopharynx (behind the tongue)
- Good long-term results
- Higher potential for cure or improvement of sleep apnea, including moderate and severe sleep apnea

**LIMITATIONS**

- 7–10 day recovery period
- May need to be a staged procedure
- Risk of taste disturbances
Hypoglossal Nerve Stimulation

Hypoglossal nerve stimulation (HNS) therapy is a new, FDA-approved treatment option for patients with sleep apnea.

The therapy consists of a fully implanted neuronal (nerve) stimulator system, controlled by you with a small handheld sleep remote. The implanted system consists of three components: a small generator, a breathing sensor lead, and a stimulation lead. When activated, the sensor continuously monitors your breathing patterns during sleep and delivers mild stimulation to key airway muscles, which keeps the airway open. HNS therapy does not require a mask or oral appliance.

HNS may be done as an outpatient procedure (same-day surgery). The biggest advantage of HNS is that it does not change your anatomy and is therefore much less invasive than some other procedures. The recovery is minimal, with most returning to work within a few days.
Hyoid and Tongue Advancement/Stabilization Procedure

If the cause of your sleep apnea is due to a collapse in the deep part of your throat or from your tongue falling back, a hyoid myotomy procedure and a genioglossal advancement procedure may be performed. These procedures are usually performed at the same time as a palatal reconstruction.

The procedure happens in two parts: hyoid suspension and tongue suspension. Dr. Pasha may choose to perform a hyoid suspension without addressing the tongue or vice versa.

The operation begins with a small incision under the neck (usually in an area that is not visible). The hyoid bone, located above your Adam’s apple, is the only bone that does not connect to any other bone. It supports muscles that are connected to the back of the throat and tongue. Sutures are placed around the hyoid and brought forward toward your chin to support the muscles.
of the back of the throat. This movement widens the airway in the deep throat. The suture is then tied to the inside of the jawbone with a small screw that you won’t ever feel. The tongue may then be suspended by placing another stitch around the back of the tongue like a hammock to prevent the base of it from slipping back at night.

Diagram of suspending the tongue and hyoid
Genioglossal Advancement

The purpose of this procedure is to suspend the tongue by pulling or “slinging” the muscles that support the tongue forward, preventing collapse from the back of your tongue when you sleep. Often this procedure is performed at the same time as a palatal reconstruction procedure.

The operation begins with a small incision in the lower lip (not visible). The front of the jawbone is then exposed. Next, a small segment of the jawbone is advanced forward less than an inch, pulling the back of the tongue forward and opening the airway in the back of the throat. This procedure does not change the appearance of the face.

**ADVANTAGES**

- Addresses obstruction in the hypopharynx (behind the tongue)
- May be combined with other procedures (e.g., palatal reconstruction)

**LIMITATIONS**

- Stabilizing sutures may break
- Risk of infection from the sutures
- Limited forward movement

**ADVANTAGES**

- Requires bone cuts
- 7–10 day recovery period
- Risk of implant rejection and extrusion

**LIMITATIONS**

- Addresses obstruction in the hypopharynx (behind the tongue)
- May be combined with other procedures (e.g., palatal reconstruction)
Maxillomandibular advancement (MMA) surgery is reserved for cases of severe sleep apnea. Dr. Pasha does not perform this advanced surgery but can refer you to an oral maxillofacial surgeon if he feels you may benefit from it. During this procedure, the upper jaw (maxilla) and lower jaw (mandible) are moved forward to open the airway in the back of your nose and throat using plates and screws. MMA surgery may be suggested if you continue to have severe sleep apnea even after having other procedures. It is also performed in patients who have a significant jaw deformity that is contributing to their sleep apnea.

This procedure is performed in a hospital under general anesthesia and lasts three to four hours. The patient stays in the hospital for two to three days following the procedure and can return to work in four weeks. Chewing must be avoided for four weeks afterwards. Speech and swallowing aren’t affected, but this procedure is associated with pain and temporary numbness of the lower lip and chin. Some changes in facial appearance may occur.
Dr. Pasha may consider a tracheotomy for severe, life-threatening sleep apnea. In this procedure, a small hole is made in the windpipe and a tube is inserted into it. This tube stays closed during waking hours, so the person breathes and speaks normally. It is opened for sleep so that air flows directly into the lungs, bypassing any upper airway obstruction. Although this procedure is highly effective, it is reserved for life-threatening conditions.

**ADVANTAGES**
- High success rate
- Addresses obstruction in the oropharynx and the hypopharynx (behind the tongue)
- Helps when other procedures have failed

**LIMITATIONS**
- Long hospital recovery
- Aggressive operation requiring bone cuts and plates
- Performed by oral maxillofacial surgery team
- May change facial appearance

**Tracheotomy**
In order to comprehensively manage sleep apnea, snoring, and other sleep-related disorders, we have developed our own medically supervised weight loss program. Guided by Dr. Ellis Morrow, an advanced-practice registered nutritionist, and covered by almost all insurance plans, our comprehensive weight loss program addresses the specific challenges of patients with sleeping disorders.

Our weight loss program focuses on lifestyle choices, not fad diets. Dr. Morrow will spend an hour during your first visit assessing your body composition, baseline metabolic rate, eating and coping habits, and other factors that contribute to weight gain. We will cater your weight loss program to your specific dietary needs and behavior.
Introduction to Sinus and Allergies
Dr. Pasha has spent his career developing novel ways to address the underlying causes of recurrent nasal and sinus issues. He does not believe in treating recurrent issues with non-efficacious antibiotics and poisonous medications. It is more important to find out why there is a problem in the first place.

Many people confuse the terms “sinusitis,” “allergy,” and “congestion,” often using them interchangeably when they are very different. In order for you to better understand your condition, it is important that you understand some basic anatomy and terms.
Nasal/Sinus Anatomy and Terms

The septum is the wall that divides the left and right sides of the nose, made mainly of cartilage and very thin bone. A crooked septum is known as a deviated septum, which may cause nasal obstruction or block your sinuses.

The turbinates are the fleshy shelves inside your nose that become enlarged from irritation such as pollution, a cold or other upper respiratory infections, or allergies. Turbinates also naturally congest and decongest from many normal triggers like eating, exercise, postural changes, hormonal changes, and even stress.
When abnormally swollen, the turbinates contribute to the sensation of nasal congestion or “stuffiness.”

The **sinuses** are four air-filled cavities in the skull and facial bones.

1. **Maxillary sinuses**: cheeks
2. **Ethmoid sinuses**: roof of the nose
3. **Frontal sinuses**: forehead
4. **Sphenoid sinuses**: back of the nose

The **ostiomeatal complex (OMC)** is the opening of the sinuses that drain into the nose. If blocked, it can cause recurrent sinus issues. This term is important when looking at X-rays (CT scans) of the sinuses.
**Sinusitis** is an inflammation of the lining of the sinuses. **Acute sinusitis** lasts for less than two weeks and responds well to antibiotics and decongestants. It's often caused by a bacterial or viral infection and may be treated by your primary care provider. **Chronic or recurrent sinusitis** is a long-term condition caused by allergies, nasal blockage, or nasal polyps, and may require medical and surgical management. Chronic sinus issues are often mistreated with antibiotics.

Sinusitis symptoms include the following:

- Facial pain or pressure
- Headaches
- Nasal congestion
- Post-nasal drip
- Loss of smell (anosmia)
- Bad breath/odor

Inflammation of the Left Maxillary Sinus
Allergies or allergic rhinitis occur when your body detects allergens in the air. Your body’s defense system mistakes harmless allergens (such as pollen, dust, or grass) for harmful antigens (such as bacteria) and releases a substance called histamine into the blood. Histamine is what triggers allergy symptoms (nasal drainage, sneezing, and congestion).

Vasomotor rhinitis is similar to allergies, except that the trigger is not identifiable with traditional allergy testing. The trigger is often something that causes everyone’s noses to react, but the vasomotor rhinitis nose overreacts. Possible triggers are endless but the most common include postural changes; pollution; hormonal changes; weather changes; stress; heat and sweating; cold, damp, or dry environments; perfumes; and other commercial irritants. Dr. Pasha refers to vasomotor rhinitis as “asthma of the nose” and it must be treated with medications. Other than avoidance of the trigger, there is no known cure for vasomotor rhinitis.
You will undergo a detailed examination of your nose that is more extensive than looking with a flashlight. Nasal endoscopy can be performed painlessly in the office by placing a tiny microscopic endoscope through the nostrils. The nose is complicated and has many structures that need to be examined.
Here are some views of the inside of a normal nose.

NASAL ENDOSCOPY

SINUS AND ALLERGIES

Inferior turbinate

Nasal septum

Floor of nasal cavity

Inferior turbinate

Nasal septum

Nasopharynx

Inferior turbinate

Ostiomeatal complex (OMC)

Middle turbinate

Nasal septum

Inferior turbinate
The Sinus CT Scan

Nasal endoscopy provides a lot of information about the nose except for one critical part—the sinuses. Your sinuses are embedded in your facial bones and cannot be seen through your nose. A detailed X-ray called a CT scan gives us that information. Our clinic has a state-of-the-art CT scanner available in-office.
Here are what a few normal CT scans look like.
Allergy Testing
Allergies can be a component of a recurrent sinus issue. It is critical to evaluate if you have a reactive nose to determine if you need allergy management. This may be determined through two types of allergy testing.

1. **Prick testing**: This test is a screener in adults and a definitive test in children. Prick testing gives an idea of what you are allergic to, including foods.

2. **Skin endpoint titration (SET)**: This test, considered the gold standard, is the most accurate allergy test available. SET testing may be recommended if your prick testing was reactive or if your prick testing was negative but you have a history or examination that suggests allergies.

**NOTE**: Dr. Pasha has little faith in testing that is drawn in blood. There are many times that allergens are missed because the sensitivity is too low.
Home Immunotherapy
Immunotherapy is the only scientifically proven method to control allergies long term or potentially “cure” allergic rhinitis. Immunotherapy is the gold standard recommendation for those who cannot avoid their allergy triggers, have problems managing their allergies, or do not like taking medications.

The mechanism of immunotherapy is to expose you to allergy triggers (e.g., pollen, dust, mold) without triggering symptoms by “building up” your immunity. Each dose contains a small amount of allergens that have been formulated specifically for you. Eventually the allergens are increased, allowing your body to get “used to” the exposure over time.

Our office is unique in that we offer three methods of immunotherapy: shots, drops, and transdermal skin patches. All modalities allow you to administer your own immunotherapy at home. We’ve been administering home immunotherapy safely since 2001. Our program is designed to educate you at your own pace so you have the confidence to perform your own immunotherapy correctly. We will instruct you on safety and on handling any side effects or potential emergencies. Once trained, you would only have to return to the office every 2–3 months for a higher concentration of serum rather than visit our office once or even twice a week like other clinics.
Subcutaneous immunotherapy (SCIT), or allergy shots, is the oldest of our methods. SCIT is the most studied and is typically covered by insurance. SCIT requires more education and has more potential side effects but is the fastest and most reliable method for “curing” lifelong allergies.

Sublingual immunotherapy (SLIT), or allergy drops, is less studied and is not covered by insurance. SLIT, however, is easy to administer and rarely has side effects. We often recommend SLIT for kids or needle-phobic patients.

Transdermal immunotherapy is new and is currently under an investigation study. We are one of the few centers in the United States that offer transdermal immunotherapy. This method is easy to apply but is covered only by some private insurance companies.
HOME IMMUNOTHERAPY

SINUS AND ALLERGIES

**SCIT**
- Injection
- Standard therapy
- Covered by most insurance
- Shorter course
- Weekly or bi-weekly dosing
- Potential side effects and anaphylaxis

**SLIT**
- Drops
- Newer therapy
- Not covered by insurance
- Longer course
- Daily dosing
- Side effects are rare

**TRANSDERMAL**
- Patch
- Investigational
- May be covered by private insurance
- Longer course
- Daily dosing
- Side effects are rare
In-Office Procedures

In-Office Balloon Sinuplasty

Dr. Pasha is well known as the pioneer of in-office balloon sinuplasty (IOBS) for the management of recurrent sinus problems. He was the first to perform IOBS in Houston. He has also lectured around the country to his peers and has written several peer-reviewed publications, including an evaluation of the long-term results (after one year) of the procedure.

IOBS is an FDA-approved technique that uses endoscopes placed through the nose to locate the openings (ostia) of the sinuses. A wire-and-catheter-based system accesses the openings. Once identified, a small balloon is gradually inflated and then removed to open the blocked sinus (similar to how angioplasty is used to open vessels in the heart). This opening allows for normal function and drainage of the sinuses.

In-office balloon sinuplasty is best for those with recurrent sinus infections or barosinusitis (facial sinus pressure or pain caused by changes in atmospheric pressure in the ear and sinus cavities).
pain caused by pressure such as on a flight). Dr. Pasha may also consider balloon sinuplasty for those who have rhinogenic headaches as some headache or migraine sufferers are triggered by congestion in the nose or sinuses.

Dr. Pasha begins by numbing your nose with a nasal spray in the office. The procedure causes minimal pain and almost no recovery time is required. You may return to work or school the same day. As you recover, you will need to keep your nose moist with nasal saltwater spray and use corticosteroid nasal spray to keep the inflammation down.

**ADVANTAGES**
- Performed in the office
- Minimal recovery (no need to take off from work or school)
- Excellent long-term results
- Minimal risks (bleeding is the most common)
- May be combined with other in-office procedures (e.g., turbinate reduction)

**LIMITATIONS**
- Unable to address the septum
- Limited access to the “deeper” sections of the sinuses
- Not indicated for severe situations
Turbinate Reduction (Radiofrequency Ablative Therapy)

The turbinates are the shelves in the nose that congest and decongest when irritated by allergies, infections, or changes in weather. If the turbinates are consistently enlarged, they can cause nasal blockage, stuffiness, or congestion. The turbinates can also weep, resulting in post-nasal drip or a runny nose. Reducing the size of the turbinates still maintains their moisturizing, filtering, and warming inspired air functions.

Radiofrequency (RF) ablation works by shaking up the microscopic cells, causing the fleshy portion of the turbinate to dry and scar. After a few weeks, the outside layer of the turbinate will begin to crust, shed, and reduce in size. This creates more space, allowing you to breathe through your nose better.
The procedure begins with numbing your nose with a nasal spray in the office. This takes care of 90% of the numbing required. The turbinate is then anesthetized further with lidocaine. An RF probe is then placed in the flesh of the turbinate, causing it to dry up and shrink. Immediately afterward, you should be able to breathe much more easily. Over the next few weeks, however, you will feel stuffed up again as the turbinates temporarily swell. After two to three weeks, your turbinate will shed, revealing a smaller turbinate. The procedure causes little pain and you can return to work or school the same day. You will need to keep your nose moist with nasal saltwater spray for three weeks.

**ADVANTAGES**

- Performed in the office
- Quick and painless
- Minimal recovery (no need to take off from work or school)
- Minimal risks (bleeding is the most common)
- May be combined with other in-office procedures (e.g., balloon sinuplasty)
- May be repeated

**LIMITATIONS**

- Unable to address the septum
- Limited reduction of the turbinates
If you suffer from constant post-nasal drip, runny nose, and congestion, Dr. Pasha offers a new, minimally invasive, in-office technique called cryotherapy or cryosurgery of the nasal passage. Dr. Pasha was one of the first to utilize this FDA-approved procedure in Houston.

**Chronic rhinitis** causes your nose to be persistently inflamed, resulting in congestion and a constantly runny nose. After a comprehensive evaluation, Dr. Pasha may find that just treating the symptoms using nasal sprays, antihistamines, and steroids won’t work for you. Instead, cryotherapy addresses one of the root causes of nasal inflammation—stimulation from the posterior nasal nerve (PNN). The PNN is a nerve that stimulates the nose to secrete mucus. This nerve is especially active if you have allergies or vasomotor rhinitis (high sensitivity to non-allergy-related sources such as eating various foods, stress, weather changes, exercise, and changes in posture).

Cryotherapy is a safe technique in which a probe freezes the PNN, providing lasting relief for up to a year.

The procedure begins by placing cotton soaked in a numbing medication in your nose for 20–30 minutes. A small probe with a small balloon (CryoProbe) is then inserted into the nose near the PNN. A cold gas (nitrous oxide) is then used
to inflate the small balloon for 30 seconds. The same technique is then repeated in the opposite nostril. The cold causes the nerve to be less active, reducing nasal mucus production. Many people begin to see improvement after just a week.

There have been very few side effects reported from cryotherapy. Possible side effects or complications include headaches, discomfort, increased sensitivity, bleeding, dry nose, and ear blockage. These symptoms have been reported as mild and often resolve themselves completely over time.

<table>
<thead>
<tr>
<th>ADVANTAGES</th>
<th>LIMITATIONS</th>
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<tbody>
<tr>
<td>• Performed in the office</td>
<td>• Does not cure allergies (like immunotherapy)</td>
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<tr>
<td>• Quick</td>
<td>• Variable success rates</td>
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<tr>
<td>• Minimal recovery (no need to take off from work or school)</td>
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<tr>
<td>• Minimal risk</td>
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<td>• May be combined with other in-office procedures (e.g., balloon sinuplasty)</td>
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<td>• May be repeated</td>
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Polypectomy

If your nose has a small number of polyps and they are accessible, you may be a candidate for in-office polypectomy.

In this simple procedure, your nose is sprayed, then cotton soaked in a topical anesthetic agent is placed in your nose for 20–30 minutes. The polyps can be removed and taken to be examined by a pathologist. There is little to no recovery time.

### ADVANTAGES

- Performed in the office
- Quick
- Minimal recovery (no need to take off from work or school)
- Minimal risks (recurrence is the most common)
- May be combined with other in-office procedures (e.g., balloon sinuplasty)
- May be repeated

### LIMITATIONS

- Limited to polyps within the nasal cavity

Corticosteroid Sinus Implants

Dr. Pasha was one of the first in the United States to utilize a corticosteroid-embedded implant in the office (PROPEL®). This particular implant is designed for those patients who have had previous sinus surgery or have advanced sinus disease such as nasal polyps or severe chronic sinusitis.
The implant contains a corticosteroid (mometasone furoate) that eludes over time, reducing inflammation, scarring, and polyps in the sinuses. The implant is bioabsorbable, dissolving over the course of a few weeks.

The implant can be placed nearly painlessly within a few minutes in the office. No time off work or school is required nor is there any recovery period.

The PROPEL® implant, pictured above, expands in the sinuses.

**ADVANTAGES**
- Excellent for revisions and recurrence after a surgical procedure
- Performed in the office
- Quick
- Minimal risks (recurrence is the most common)
- May be combined with other in-office procedures (e.g., balloon sinuplasty)
- May be repeated

**LIMITATIONS**
- Requires prior endoscopic sinus surgery
- May not be covered by insurance
The nasal septum is made of bone and cartilage, dividing the right and left sides of the nasal cavity. Normally, the nasal septum lies in the center of the nose and rests on the maxillary crest (bony part of the floor of the nose). When the nasal septum does not align with the middle of the nose, it is called a deviated nasal septum. Almost everyone naturally has some curvature or crookedness to their septum, but if the septum is too deviated, it may block one side of the nose or obstruct the openings of the sinuses, causing recurrent sinus problems requiring a septoplasty.

The turbinates are the shelves in the nose that congest and decongest when irritated by allergies, infections, or changes in weather. If the turbinates become persistently enlarged, they can cause nasal blockage, stuffiness, or congestion. The turbinates can also weep, resulting in...
post-nasal drip or a runny nose. **Turbinate reduction** reduces the size of the turbinates while maintaining their important functions of moisturizing, filtering, and warming inspired air.

Dr. Pasha has performed thousands of septoplasties and turbinate reductions. These operations are performed through the nose without resulting in any scars on the outside of the nose or face as the incisions are made on the inside of the nose. In a septoplasty, the septum is then straightened by removing or reshaping the cartilage and bone, and a plastic splint is temporarily placed to support the septum. For partial turbinate reductions, a small incision is made on the front of the turbinate and a small bone is removed, causing the turbinate to collapse and reduce in size. Dr. Pasha does not remove the entire turbinate as it is critical for proper nasal breathing. He is careful to preserve the mucosa (lining of the turbinate) to maintain the turbinate's function.

Under Dr. Pasha’s hands, the total time for this operation is 20–30 minutes and it is performed under general anesthesia. You should anticipate going home the same day unless other medical conditions complicate recovery. Since Dr. Pasha rarely uses nasal packing, pain and discomfort usually resolve within the first 2–3 days. The plastic splints prevent you from breathing normally until they are removed one week later. After removal, you should immediately feel a dramatic difference in your nasal breathing.

Dr. Pasha routinely combines septoplasties with partial turbinate reductions to widen the nasal cavity. If you have recurrent sinus disease, he may also recommend endoscopic sinus surgery or balloon sinuplasty to allow access to the sinuses.
SURGICAL SOLUTIONS

• High success rate
• Simple and quick procedure
• Can address the turbinate bone for excellent long-term results
• Minimal risks (bleeding is the most common)
• May be combined with surgical procedures (e.g., endoscopic sinus surgery)

Takes a few days of recovery (depending on how you handle splints)
• No heavy lifting for 10 days

**ADVANTAGES**

**LIMITATIONS**

Cross section of the nose. The septum is the wall that divides the left and right sides of the nose. (1) Bony septum (2) Cartilaginous septum

Front view of the inside of the nose. (1) Deviated septum (2) Inferior (lower) turbinate
Dr. Pasha has performed thousands of various procedures to address the sinuses in and out of the operating room. The most common procedure he performs for recurrent/chronic sinus disease is endoscopic sinus surgery (ESS).

If you suffer from recurrent sinus problems or are tired of repeatedly having to take sinus medications like antibiotics, nasal sprays, and decongestants, you may be a candidate for ESS. Other common criteria for ESS include the presence of nasal polyps, obstructed sinus openings, fungal sinusitis, mucoceles (expanding cysts within the sinuses), and tumors.

ESS uses video micro-endoscopic guidance through the nose to access the sinuses. This technique enlarges the natural opening to the sinuses without creating unnatural holes. ESS also removes polyps, scar tissue, and the infected lining of the sinuses, which may harbor bacteria or fungus. Infected debris is also washed out of the sinuses.

The total time for this procedure may take 45 minutes to a couple of hours, depending on the complexity. ESS is performed using general anesthesia, and you should anticipate going home the same day unless other medical conditions complicate recovery.
For complicated cases or revision cases, Dr. Pasha may also add the following supplemental techniques to ESS:

1. **Stereotactic guidance:** Stereotactic guidance uses a special CT image to confirm positioning in the sinuses while operating. This technique allows access to challenging sinuses that may be missed with endoscopic visualization alone.

2. **Corticosteroid implants:** Dr. Pasha may choose to use a PROPEL® implant, which contains corticosteroid (mometasone furoate) that eludes over time, reducing the inflammation, scarring, and polyps in the sinuses. The implant is bioabsorbable, meaning that the implant dissolves over the course of a few weeks.

### ADVANTAGES

- High success rate
- Standard procedure for sinusitis that has failed medical management
- Excellent long-term results
- May be combined with surgical procedures (e.g., septoplasty/turbinate reduction)

### LIMITATIONS

- Risks are higher than in-office procedures
- Recovery takes a few days (depending on how you handle splints)

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**Nasal Valve Reconstruction**

The nasal valve is the entrance of the nose just past the nostrils. The valve is made up of several components, including cartilage that supports
the inside of the nose.

The cartilage of the nose can sometimes become weak, causing collapse. If the nasal valve collapses enough, it can contribute to nasal blockage, mouth breathing, snoring, and sleep apnea.

Nasal valve reconstruction procedures are performed through the nose without any scars on the outside of the nose or face. A small incision is made inside the nose to expose the cartilage that supports your nostrils. A series of small sutures are then placed to stop the cartilage from collapsing.

Another technique addresses the columella, the strip of skin that separates the nostrils and runs from the tip of the nose to the upper lip. If the columella is contributing to nasal valve collapse, Dr. Pasha may recommend reshaping the columellar cartilage and skin to a more normal position and shape. This procedure is also done by making small incisions inside the nose without any outside scars.

The total time for each of these operations is 20–30 minutes and they are performed using general anesthesia. You should anticipate going home the same day unless other medical conditions complicate recovery.

ADVANTAGES

• Standard procedure for collapse of the nasal valve (near the nostrils)
• May be combined with surgical procedures (e.g., septoplasty/turbinate reduction)

LIMITATIONS

• Difficult area to address technically, risk of failure
Eustachian Tube Dysfunction
The eustachian tube (ET) is the narrow tube that connects the middle ear to the back of the nose. This tube is what “pops” when you yawn, swallow, or descend on an airplane. The ET drains the ear and relieves ear pressure that can build up. If this tube does not open up properly, it can lead to eustachian tube dysfunction (ETD). ETD can cause the following:

1. Fullness in the ear
2. Ear popping
3. Hearing loss (muffled ear)
4. Fluid behind the eardrum
5. Tinnitus (ringing in the ear)
6. Ear infections
7. Unsteadiness or dizziness

Long-term ETD can lead to more severe damage to the middle ear or hearing loss that may require surgery.

The lining of the ET is the same lining found in the nose; therefore, whenever your nose swells (from allergies, sinus issues, a cold, etc.), the ET can swell as well, which may lead to ETD.
Traditionally, ETD is treated with nasal sprays, antibiotics (if infected), decongestants, and possibly a pressure equalization tube. There is a new technique, called eustachian tube dilation or eustachian tube balloon dilation, that treats the ET directly. Dr. Pasha is a pioneer in using balloon technology in the sinuses. He has published several leading journal articles, lectured across the country, and performed the first in-office balloon sinuplasty in Houston. Dr. Pasha now uses similar technology to address ETD.

Eustachian tube dilation uses a catheter to insert a small balloon through the nose and into the ET. Once inflated, the balloon opens up a pathway for mucus and air to flow through the ET, which may help restore proper function. After the eustachian tube is dilated, the balloon is deflated and removed.
This may be done in the operating room or in the office. It is not currently FDA approved for local anesthesia.
Dr. Pasha and his team’s goal is to provide the ultimate center for addressing sinuses, allergies, nasal congestion, snoring, and sleep apnea. We realize that all healthcare begins and ends with competency and service. We are obsessed with patient satisfaction, so we welcome any and all patient feedback. Please call us at 713-523-8800 or email us directly at JenniferT@PashaMD.com if you have anything, positive or negative, you’d like to share. Our number one referral is not from other doctors but from patients just like you.
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