

DO NOT stay in bed for the entire day after surgery if possible. Become gently active to avoid blood clots forming in your legs. Exercise your feet by bending your feet at the ankles 10 times / hour while awake in bed.

DO use **nasal saline spray** (*without* decongestant) every hour while you are awake beginning the day after surgery. This helps moisten your nose and prevents large crusts from forming.

DO place antibiotic ointment (such as Bacitracin®/ Neosporin®/ triple antibiotic ointment) on a Q-tip onto your nostril hairs at bedtime each day to minimize crusting at the front of your nose. The q-tip should be a glistening with a thin film of ointment and not "goopy" before the application. Please do not use your finger to apply the ointment.

DO use nasal **saline irrigation** four—six times daily beginning on post-operative day three unless otherwise instructed. A bulb syringe tends to be most comfortable. Use about 50 cc of saltwater (saline) in a bulb syringe per nostril while leaning forward over a sink. Two of the rinses daily should include your prescription rinse if one was used before surgery.

IMPORTANCE OF POST-OPERATIVE CARE VISITS

DO resume your antibiotics, oral steroids and other sinus medications (if they have been prescribed for you) the day after surgery. Diarrhea from antibiotic usage can lead to a serious health problem. This can often be prevented by taking probiotics like acidophilus daily, which is found in yogurt with active cultures or as tablets in a health food store. If you should experience diarrhea, *stop the antibiotic and notify us*. Further evaluation may be required.

DO notify us for any of the following: temperature elevations above 100.5 F, clear watery drainage from your nose, changes in vision, swelling of the eyes, worsening head ache or neck stiffness.

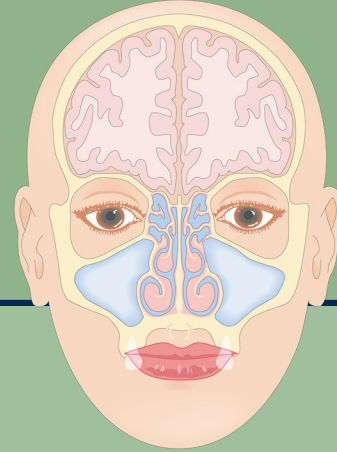
Post-operative visits are an indispensable part of the surgery, since they help promote healing and prevent persistent or recurrent disease. The first follow-up visit usually arranged at approximately one week after surgery to clean crusts from the nose. Although not required, you may wish to take medication to help you relax Ativan® (lorazepam), 90 minutes prior to your first post-operative visit. A prescription for this is given to you along with your pain medication prescription after surgery. The medication is sedating, so be sure to have someone else drive you to your appointment. Additional follow-up visits are arranged at 3 weeks and then at monthly intervals until the area is healed. Occasionally more frequent appointments may be required. **It can take up to one year from the time of your sinus surgery,**

WILL SINUS SURGERY CURE MY SINUSITIS?

along with continuous medical therapy, before the sinus cavities heal to their best condition.

During follow-up visits, any persistent inflammation or scar tissue will be removed under local anesthesia. Although chances of complications from these manipulations are rare, the potential risks are the same as with the surgery itself. By consenting to the surgery you are giving implied consent to your post-operative care, since without post-operative care the opportunity for surgical success is lower. As the sinuses begin to clear themselves, you can expect to have some thick brown drainage from your nose. This is mucus and old blood and does not indicate an infection.

SINUS & NASAL INSTITUTE OF FLORIDA, P.A.



Endoscopic Sinus Surgery for Rhinosinusitis



Excellence in Patient Care, Education & Research

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About The Sinuses & Rhinosinusitis*

The *nose, nasal passages* and the *paranasal sinuses* help us with comfort of breathing. They protect us from inhaled foreign substance, and they protect our sense of smell. The nose and nasal cavity are divided into two sides by a midline wall, called the *septum*. The side walls have soft tissue and bony elevations called "turbinates" that warm and humidify the air we breathe. Varying size air containing chambers, some of which resemble a honeycomb are situated behind the bones of the face are called the paranasal sinuses. These sinuses produce nearly 1 quart of mucous per day that assist with moisturizing the air that we breathe. This typically drains into our throat without our realizing it. The roof of the paranasal sinuses is adjacent to skull base and their side walls are next to *orbits* (the eye sockets). The four named pairs of sinuses are:

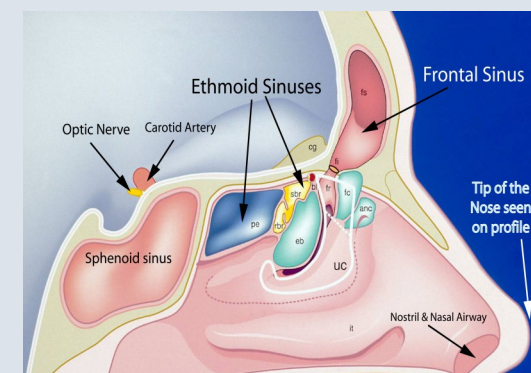
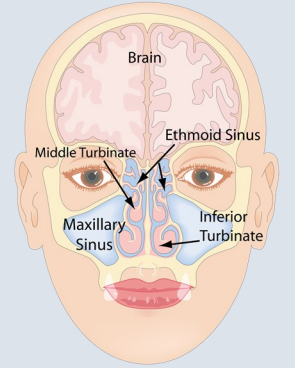
- *Maxillary sinuses* (in our cheeks below our eyes)
- *Ethmoid sinuses* (small chambers between our eyes and below the brain)
- *Frontal sinuses* in the forehead region
- *Sphenoid sinuses* (*See drawing below*)

The paranasal sinuses connect with the nasal cavity via narrow openings called *ostia*. Air and mucus enter and exit to and from the sinus through these openings. When the sinus opening are swollen closed the mucus in the sinuses backs-up and can lead to secondary infection caused by bacteria or fungi that normally live on the mucous blanket. When the blockage occurs, swelling of the sinus lining can also disable the tiny hairs called cilia that push the mucous out of the sinus.

Rhinosinusitis is an inflammatory condition that involves the paranasal sinuses and nasal passages. Sinus inflammation has many potential causes. Infection caused by viruses as well as bacteria are among the most common causes of rhinosinusitis. Allergies, "silent acid reflux" from the stomach, medications to treat other disorders, genetic conditions like cystic fibrosis or aspirin intolerance as well as problems of the immune system are also related to rhinosinusitis becoming chronic. Environmental pollutants in the air, such as cigarette smoke, can cause increased irritation of the nasal and sinus passages, particularly in people with hypersensitive nasal lining (mucosa). Pollution, both outdoor and indoor, such as mold or chemicals used in carpets and furniture can add to the problems in sensitive individuals.

After 3 months, rhinosinusitis is referred to as "chronic". **Chronic rhinosinusitis that involves several sinuses is an ongoing condition for which we do not typically have a cure.** We do have many treatments that can improve quality of life and that can minimize your need for oral antibiotics and oral steroids. **Getting this problem under control can take more than a year once the inflammation is well established. Therefore, continuous medical therapy is required to control chronic sinus inflammation** and to prevent the sudden disabling exacerbations of your condition. Stopping treatments without consulting with your physician is likely to lead to worsening of the condition. Especially when polyps or fungi are involved in chronic rhinosinusitis, patients can be unreliable in noticing the extent of their own problem. Thus it is not until there is a reappearance of nasal blockage, cough, asthma, colored nasal drainage, or loss of sense of smell when the problems are noticed.

Endoscopic sinus surgery is generally intended for people with chronic sinus problems that do not respond adequately to medical therapy. The diagnosis of chronic rhinosinusitis must be based on an assessment by your doctor, as other problems can cause symptoms similar to those found with sinus disease. The majority of people with sinusitis do not require surgery. Their sinus symptoms can usually be successfully treated medically with an antibiotic, and other medicines used to reduce inflammation. The type of medical therapy used is based on your doctor's assessment of the possible causes. Maximal medical therapy is typically initiated to see how you respond to treatment before deciding on a surgical procedure. If it is felt that you would benefit from endoscopic sinus surgery, your permission / con-



INDICATIONS FOR ENDOSCOPIC SINUS SURGERY

sent will be obtained and a date will be arranged for the procedure.

1. Prevention/treatment of complication to the lung, eye or brain caused by sinus disease
2. Continuous appropriate medical therapy for rhinosinusitis fails to adequately relieve symptoms such as :

* Information contained in this brochures is not intended encompass all possible scenarios. It is not intended to replace consultation with your physician and this information is subject to change without notification. Last updated 10-8-14. © Sinus & Nasal Institute of Florida Foundation

-Sinus pain/pressure caused by inflammation

- Nasal obstruction/congestion
- Discolored nasal drainage
- Diminished sense of smell
- Nasal / sinus bleeding
- Sinus mucous recirculation

3. Explore nasal cavity / sinus to aid in diagnosis.

4. Continuous or frequent uses of systemic steroids or antibiotics are likely to be reduced by intervening surgically by permitting:

- Topical medical therapy within the sinuses

- Removing sinus debris/ foreign body to reduce inflammation.

5. Patient is unable to tolerate elements of continuous maximal medical therapy.

6. To improve tolerance of disabling painful bouts of recurrent acute rhinosinusitis or barosinusitis.

The primary goals of sinus surgery for rhinosinusitis are to ventilate, drain the sinuses so as to resume normal functioning of the lining of the sinuses. Additionally, tissues removed during surgery are evaluated by the pathologist under the microscope. This can improve understanding of the causes of your sinus inflammation. Post-operatively surgical openings improve access of the sinuses to irrigation which can also help keep the sinuses clean and improve their functioning.

Endoscopic surgery techniques are used to treat many other disorders besides rhinosinusitis. These include: septal deviation,

HOW DO I PREPARE FOR SINUS SURGERY?

turbinate hypertrophy, Graves disease affecting the eyes, abnormal tearing, cerebrospinal fluid leakage, encephaloceles, mucocoeles, inverted papilloma, pituitary tumors, juvenile angiofibroma and other benign and malignant tumors of the nasal passages and sinuses.

Prior to surgery, you will need to have some blood work drawn and possibly some other studies performed. To be current, blood work should be done within one month of surgery. Other studies include an EKG and chest x-ray, which are ordered if your age or medical history indicates a need. This testing should be done at center acceptable to your insurance plan such as BayCare(Carillon Outpatient Center), Quest, or Labcorp. Results need to be forwarded to us at least one week prior to the scheduled surgery date so they can be reviewed.

Typically, you will have an SNI office visit within 1 month of your scheduled surgery. If you have a CT scan from outside this institution, bring it with you to this visit. *Surgery will not be performed without your CT scan films. Occasionally when computer guided surgery is planned your CT scan should be performed in a format compatible with our operating room equipment.*

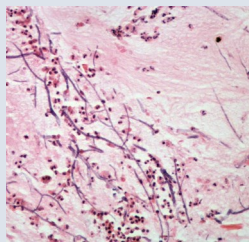
Often times oral steroids (or increasing the dose if you are already on them) and/or antibiotic therapy are started in the pre-



Endoscopy—nasal polyp blocking airway



CT scan-dental implant (white peg) causing maxillary sinusitis



Pathologist showing microscopic evidence of fungus with curved dark lines

surgical period to reduce swelling and operative bleeding. Take these medications as directed by us. If you have a significant increase in your sinus infection within the weeks prior to surgery, notify us. Your surgery may need to be postponed.

- **NOTIFY US** if you have a prosthesis or heart valve disorder that requires antibiotics at the time of surgery and if you have had prior difficulty with general anesthesia.
- **DO NOT** take aspirin or salicylate containing analgesics for at least ten days prior to surgery. Aspirin, even in small quantities, can significantly increase bleeding during surgery and post-operatively.
- **DO NOT** take non-steroidal anti-inflammatory drugs (Ibuprofen, Advil, Motrin, Aleve) for at least five days prior to surgery. These drugs will also increase bleeding, although the effects on the blood are shorter. Any other medications like Coumadin or Xarelto which thin the blood **MUST** be stopped with ample time prior to scheduled surgery.
- **DO NOT** smoke for at least two weeks prior to surgery. Not only does smoking worsen sinus symptoms, smoking in the weeks before or after surgery will result in excessive scarring, and may result in failure of the operation.

WHAT WILL HAPPEN DURING SURGERY?

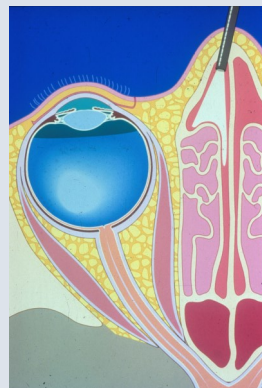
- **DO NOT** eat or drink anything beginning at midnight the night before surgery unless otherwise instructed by our colleagues in anesthesia. If you are taking medications, ask during your pre-surgical evaluation if these can be taken on the morning of surgery.
- **YOU SHOULD** obtain some Afrin nasal spray from your pharmacy, and spray both sides of your nose 1-2 hours prior to the operation.

The surgery is typically not uncomfortable and should not be an unpleasant experience. The operation is typically performed under general anesthesia. Although there are potentially serious risks from sinus surgery, the **incidence of these risks is very low**. An intravenous line will be started to administer fluid and medicines to help you relax. If the planned surgery is longer than 4 hours duration, a urinary catheter to drain urine may also be placed while you are asleep. It is usually removed before you leave the recovery room.

Endoscopic sinus surgery is a minimally invasive surgery. During surgery an endoscope is introduced into you nostrils along with small instruments that help remove tiny bits of sinus bone and swollen tissues or polyps. Debris

RHINOLOGY/SKULL BASE FELLOW & YOUR SURGERY

trapped within the sinuses is physically removed and sometimes sprayed with a washing device. The honeycomb of the ethmoid, maxillary, sphenoid and/or the frontal sinuses are made widely open to drain the infection and inflammatory debris. Typically there is no need for facial incisions or incision within your mouth as was done previously in



Nasal endoscope with bright light entering the nasal cavity adjacent to the eye



Endoscopic view - tissue removal below the frontal sinus opening

the

RISKS OF SINUS SURGERY

ly, a small facial incision is required for frontal sinus surgery or orbital surgery. If this is necessary then you will be notified and specifically asked for permission to perform this type of surgery.

Nearly all sinus/ skull base surgery performed by SNI physicians involves our Rhinology / Skull Base Fellow. The SNI Fellows name will be listed on your surgical consent. They participate in all facets of your care including performing portions of your surgery. They are supervised by our SNI physicians. It is the same care our surgeons have given to their own family for nasal and sinus problems.

Bleeding -Although the risk of serious bleeding appears is reduced with this type of sinus surgery, rarely significant bleeding may require termination of the procedure and the placement of nasal packing. Significant bleeding can cause temporary anemia with fatigue lasting several weeks. Rarely, bleeding following surgery could require placement of nasal packing and hospital admission. A blood transfusion is exceedingly rare. In the rare instance that a blood transfusion is necessary, there is a very small risk of adverse reaction or the transfer of infection.

Cerebral Spinal Fluid (CSF) Leak -All operations on the ethmoid and sphenoid sinuses carry a rare chance of creating a leak of CSF (the fluid that surrounds the brain). The incidence of this is generally cited between 0.1 % and 1% unless there are extenuating circumstances. Should this rare complication occur, it creates a potential pathway for infection, which could result in meningitis (inflammation of the brain). A CSF leak would extend your hospitalization and may require further surgery for repair which is typically performed while you are asleep under anesthesia.

Visual Problems-Although extremely rare, there are occasional reports of visual loss after sinus surgery. Usually, the loss of vision only involves one side and the chance for recovery is not good. Temporary or prolonged double vision has also been reported after sinus surgery as well.

Anesthesia Risks—General anesthesia is our preferred anesthetic method. It will leave you drowsy and you will not be able to operate machinery or drive a car for up to 48 hours afterwards. Therefore you should have a family member or friend be with you for the first 2 days after anesthesia. Under general anesthesia, a temporary tube is inserted through your mouth into your throat to maintain your breathing. After the surgery and the reversal of anesthesia, patients typically have a sore throat associated with the breathing tube. Nausea is common but special measures are taken to prevent this. The risk of death or stroke associated with general anesthesia is exceedingly rare but in order to obtain your legal permission for this anesthesia we are required to tell you about it. The risk of serious adverse reactions to general anesthesia may be further discussed with the anesthesiologist on the day of your procedure.

Nasal Septal surgery/Septoplasty Risks-If nasal septal reconstruction (Septoplasty) is done, you could experience numbness of the front teeth, bleeding and infection in the nasal septum, or the creation of a septal perforation. A septal perforation is a hole through the septum, which may cause difficulty breathing through the nose. Since the cartilage in the septum has a "memory", it may shift post-operatively and result in a renewed deviation. There is also a very small risk of a change in shape of the nose, loss of sense of smell, and CSF leak.

Decreased Sense of Smell-Permanent loss or decrease in the sense of smell can occur following surgery. However, in a number of patients, it is already decreased prior to surgery, and typically improves with surgical intervention.

WHAT TO EXPECT FOLLOWING SURGERY

Other risks—worsening sinus infection and failure to achieve desired results are also possible. Abnormal tearing of the eye can occasionally result from sinus surgery or sinus inflammation and may be persistent. You may experience numbness or discomfort in the upper front teeth for a period of time. Swelling, bruising, or temporary numbness of the lip may occur, as well as swelling or bruising around the eye. Subtle changes in the sound of your voice are common after you are healed from the surgery. This is because your nose is more open and the resonance is improved. Typically patients report they sound less "stuffy" or less "nasal".

Typically nasal packing is not used. A "mustache dressing" placed in the recovery room will work as a drip pad to collect initial drainage and to prevent unnecessary blotting of the nose. Some bloody nasal discharge may occur for approximately two weeks after this procedure. This is normal and slowly improves. On the day of your surgery you may go through more than 1 box of tissues by spotting them with blood during the first 24 hours. Your tissues however should not be soaked wet. If the blood reaches that amount you should call your doctor at 727-573-0074. When bleeding occurs down the front of your nose or into the back of your throat, you should tilt your head back while sitting up and breathe *gently* through your nose. Over-the-counter Afrin nose spray (oxymetazoline 0.05%) can be used to open your nose and reduce bleeding during the first two nights after surgery. Sleep with you head elevated on 2 pillows for the first

POST-OPERATIVE DO'S & DON'T'S

night after surgery. Again you will have a sore throat from the anesthesia breathing tube typically for 1-2 days. Resume a soft cool diet as tolerated after surgery and resume your regular diet as tolerated beginning the day after surgery. You may experience an irritated or burning sensation with your first urination.

You may experience some head or nasal discomfort post-operatively due to surgery and inflammation. Take your pain medication as directed. Often extra-strength Tylenol (acetaminophen) is preferred since it is less likely than narcotic to cause nausea or constipation.

DO NOT blow your nose until you have been given permission to do so (usually one week following surgery).

DO NOT bend, lift or strain for at least one week after surgery. These activities will promote bleeding from your nose. You should not plan on participating in rigorous activity until healing is *completed*.

DO NOT suppress the need to cough or sneeze, but DO allow a cough/sneeze to come through your open mouth.

DO NOT resume use of any aspirin-containing products or other blood thinners until after discussing this with us. Typically, you can re-start after 7-10 days.

continued

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