What is image guided sinus surgery?

Image guided surgery (IGS) refers to the use of computer-augmented or computer-aided sterotactic sinus surgery. Radiographic images of the sinuses, usually computed tomography (CT) or magnetic resonance imaging (MRI), are compiled by the computer into a three-dimensional format that can be used interactively during surgery. During surgery, the surgeon views a computer monitor where the image guidance system shows the 3-D location of the surgical instrument’s tip on the radiographic scan (see Figure 1). The probe communicates with the computer containing the radiographic images either by infrared light sensors or electromagnetic cords. Commonly used systems include BrainLAB, Stealth (Medtronics), and InstaTrak (GE).

Why would I need image guided surgery?

Not all cases of sinus surgery require image guidance. Most would agree that limited sinus surgery in cases of minimal variation in sinus anatomy do not require image guidance. However, there are many cases that do benefit from image guidance. Image guidance allows the surgeon more confidence near critical structures such as the orbit (eye) or brain but should not act as a substitute for knowing the anatomy. Most quote the accuracy of image guidance to be within 2 mm although improvements in this area will likely be forthcoming in the near future.
The American Academy of Otolaryngology – Head and Neck Surgery recommends image guidance in the following cases:

- Revision sinus surgery
- Distorted sinus anatomy of developmental, postoperative, disease or traumatic origin
- Extensive sino-nasal polyposis (see Figure 2)
- Pathology involving the frontal, posterior ethmoid, or sphenoid sinuses (see Figure 3)
- Disease abutting the skull base, orbit, optic nerve or carotid artery
- Cerebral spinal fluid (CSF) leak or conditions where a skull base defect exists
- Benign and malignant sino-nasal neoplasms

Image guidance is also helpful in addressing disease around the sinuses – particularly for addressing skull base defects or CSF leaks, optic nerve decompression, orbital decompression (for proptosis in Graves disease), and skull base tumors/disease in conjunction with a neurosurgeon.

**What should I expect if I am scheduled for image guided surgery?**

Patients scheduled for IGS should expect to obtain a radiographic study (CT or MRI) with cuts fine enough to produce 3-D imaging for the computer. If the InstaTrak system is used, a headset will need to be worn during the imaging study that is brought to your surgery. The presence of image guidance during surgery does not affect how the surgery is performed, usually under general anesthesia with endoscopic instruments, or your post-operative care. All surgeons at Central Carolina ENT are trained in image guided surgery.
Nasal Polyps - A Common Problem

I am often asked “What are nasal polyps and are they serious?”.

First, nasal polyps are common but the reasons they occur are complex. In many cases, nasal polyps can lead to recurrent sinus infections and often severe difficulty breathing. Polyps look like “white grapes” but in a variety of different sizes. Polyps can be caused from altered nasal anatomy (injuries), viral or bacterial infections, allergies and even blood vessel proliferation.

The role of eosinophils is important to give a positive feedback mechanism necessary for polyp formation. Eosinophil granulocytes (commonly referred to as Eosinophils) are white blood cells of the immune system that are responsible for combating infection by parasites in vertebrates. They also control mechanisms associated with allergy and asthma. Eosinophils secrete cytokines and interleukins (blood elements) that recruit more eosinophils and secrete toxic substances that can damage nasal lining. These provide a substantial inflammation response that leads to formation and growth of polyps. Polyps can expand and enlarge in the presence of marked edema in the nose.

The increase in edema is the watery portion of the polyps that can respond early to steroid treatments. As the polyps mature they become more steroid-resistant and fibrin (scar) is deposited. Polyps eventually require surgical removal.

As you can see, allergies are a common denominator in patients that have polyps and this often needs to be evaluated as part of the treatment.

Often surgery is required for removal of obstructive nasal polyps. These growths can be present in the nasal sinus cavities including the maxillary sinus, ethmoid sinuses, frontal sinus and sphenoid sinus. Polyps are seen in the nasal cavity and typically arise from the underlying sinus cavities and expand into this passage. Some polyps are aggressive and can destroy bone structures in the area. A diagnosis is necessary usually involving a biopsy by your physician. Typically, nasal polyps are not cancerous.

Proper removal and control of recurrence is important. In this newsletter, Dr Lin addresses the role of the new “Image Guided Surgery” for nasal and sinus surgery. These newer techniques have expanded our abilities to safely perform revision cases.

William C. LeLiever MD, FACS, FRCS ©
Intense Pulsed Light
New unit treats a variety of skin problems
By: Samuel P. Davis, III, M.D.

Our practice is pleased to announce the addition of advanced light based therapy for a variety of skin problems. Intense Pulsed Light (IPL) is often confused with laser treatments. Both are based on light wavelengths. The wavelength determines which condition can be treated. Laser based treatments are limited to only one wavelength. Lasers and are very effective but are limited to treating problems amenable to a specific wavelength of light. Our practice continues to use a Carbon Dioxide laser and it has proved effective for skin resurfacing and certain surgical procedures, but it cannot treat other skin care concerns. IPL has the advantage of a wide range of wavelengths to treat a wide range of skin conditions.

With 4 different filters, our IPL can treat many common skin conditions. The most common indications include:

- Hyperpigmentation from hormonal changes or age spots
- Hair reduction of the facial, underarm, leg, and bikini area
- Red areas on the face including Rosacea and spider veins
- Photofacial rejuvenation to improve overall facial tone and texture including reduction of pore size
- Acne clearance
- Scar improvement.

To be considered for an IPL treatment, a consultation with Dr. Davis is required to determine your skin type and to discuss your expectations. An initial test spot is sometimes necessary before treatment can be started. It is important to make sure your skin will tolerate the treatment without any complications. The sensation you will have with each light pulse is similar to a snap from a rubber band. Treatment duration depends on the area to be treated and can range from 15 minutes to 2 hours. Depending upon the problem being treated, 3-6 sessions are usually required.

One of the true advantages of IPL therapy is that the recovery in usually measured in hours. A mild sensation similar to sunburn is the most common response. Sometimes there is flaking of pigmented lesions several days after a treatment. Makeup can often be reapplied before leaving our office. Routine skin care can usually be continued the night of the treatment. Special precautions are recommended for our patients on prescription strength skin care like the Nu Derm System.

The most common concern about IPL is the cost. You can be assured that we strive to offer our patients the most advanced technology at reasonable prices. Please call our office to learn the details of single treatment and multiple treatment options.

Read more about the IPL unit on our website at the following link:

Resound Corporation recently introduced its newest digital hearing instrument, the Azure. For years hearing healthcare professionals have been waiting for a breakthrough that solves problems in the real world not just in the lab. Resound Azure is that breakthrough. This article will review some of the features that make this digital instrument stand out in the crowd.

ReSound Azure is the only hearing instrument that supports the way your brain naturally processes sound. Based on research conducted at the Walter Reed Army Medical Center, Azure provides unrestricted inputs to the brain to support the way you naturally hear. Other instruments artificially manipulate sound inputs. This approach works well in a sterile lab environment but fails in the complexity of the real world. ReSound Azure takes hearing instrument technology out of the lab and into your real world.

ReSound Azure hearing instruments have many new features and benefits to help you communicate in your everyday life. Some of these benefits include:

- **Natural Directionality**
  In the real world, important speech and noise come from all directions. ReSound Azure returns you to a more natural way of prioritizing sounds from all directions without the loss of peripheral awareness. Traditional digital units are faced with a tradeoff: Let you hear a speaker directly in front of you but give up the possibility of hearing someone beside or behind you. This is called tunnel hearing. ReSound Azure works with your auditory system, not against it. Just as your eyes can perform two separate functions (one eye focuses on specific objects and the other monitors the environment), the auditory system works in a similar manner. Natural directionality provides maximum benefits not just in a lab but in the real world. The Resound Azure allows the dominant ear (typically the right ear or the ear with the best speech discrimination) to be the focus ear, while the other ear monitors the peripheral awareness.

- **Natural Sound**
  ReSound Azure automatically increases speech audibility and comfort in multiple listening environments without requiring you to switch between programs. If your unit is equipped with a volume control, the Resound Azure has a learning function that can take personal volume settings into account in seven different listen-
The instrument gradually learns and applies the wearer’s preferred volume settings in their actual listening environments. For those instruments without a volume control, the hearing professional can manually adjust the situational preferences of the user in the Environmental Optimizer section of the fitting software. The goal is for your hearing instrument to maintain maximum speech understanding and comfort seamlessly in the real world.

- **Warp Open Compressor**
  The heart of the Resound Azure digital hearing instrument is the Warp Compressor. WarpOpen is a faster, cleaner method of digital signal processing that has been used in professional audio equipment. Resound has applied this technology to hearing instruments. In a recent independent study, 7 out of 10 patients preferred the sound quality of Warp powered instruments over non-Warp instruments. Also the 17 smoothly overlapping frequency bands of the Warp Compressor closely mimics the function of the inner ear where sound is processed and then sent on to the brain.

- **NoiseTracker II**
  NoiseTracker II accurately identifies and characterizes speech and noise in each of the 17 frequency bands. Then it utilizes a spectral subtraction approach to reduce noise in frequency areas where the signal-to-noise ratio is low, but enhance soft speech sounds critical for understanding.

- **Open Comfort**
  ReSound pioneered and perfected the Open fit technology that alleviates any plugged up sensation providing the patient with the most comfortable hearing instrument available. The sixth generation of digital feedback suppression allows for the most useable gain possible by cancelling out annoying feedback.

The Resound Azure hearing instrument has many impressive new features that empower natural hearing. The goal is to provide digital hearing instruments that are tuned to the user’s listening preferences in up to seven different listening environments. Another main goal is to allow the digital instruments to work with the natural sound processing capabilities of the central auditory system. Resound Azure is truly a hearing instrument for the real world.