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healthpoints

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Message from the Chairman

Greetings,

First, I'd like to extend my congratulations to the Division of General Surgery. The general surgery division earned a 95% patient satisfaction rate in the most recent survey by Press Ganey, the authoritative evaluator of hospitals across the United States. This overwhelmingly positive response comes not as a complete surprise, as the satisfaction rate for this division was 94% in both fiscal year 2014 and 2013. Congratulations to **Spencer Amory, MD** and all the surgeons and staff, who clearly go above and beyond to see that every aspect of patient care is top-notch.

If you missed the recent premiere of Ken Burns' three-part documentary **Cancer, the Emperor of All Maladies**, consider finding a copy of Siddhartha Mukherjee's Pulitzer Prize-winning book, *The Emperor of All Maladies: A Biography of Cancer*. Dr. Mukherjee is a professor of medicine and cancer researcher at Columbia University Medical Center. We congratulate Dr. Mukherjee on his success, and we are proud to be among the many cancer-fighting teams that are contributing new insights in the 'war on cancer' with each passing year.

In good health,

Craig R. Smith, MD, FACS, Chairman, Department of Surgery

Chest Wall Anomalies

Correction of chest wall anomalies, once avoided because of the scope of surgery, is now standard care

In the not-so-distant past, children born with deformities of the chest wall frequently were resigned to live with their conditions. The most common of these include pectus excavatum and pectus cavernatum; people born with pectus excavatum (PE) bear a telltale sunken chest caused by abnormal curvature of the ribs toward the spine, while those with pectus cavernatum (PC) have the opposite problem, a bulging of the chest caused by malformed ribs protruding outward.

Pectus cavernatum can often be corrected non-surgically through a bracing procedure that applies pressure to the chest, gradually molding it into the correct position. But surgery to correct PE is a serious undertaking, and until recently, PE was not viewed as medically troubling enough to warrant a major operation. Pediatricians rarely advocated

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More from the Department of Surgery experts at:

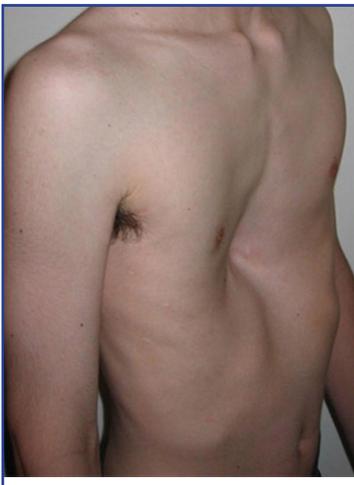
surgical correction, even in cases of severe deformity. As a result, patients suffered greatly, both with their feelings of shame and embarrassment, as well as physical effects that often went unrecognized, and which sometimes worsened over time. PE can compromise lung capacity and cause symptoms such as fatigue, shortness of breath, chest pain, and a fast heartbeat or chest murmur. While patients may not notice symptoms at rest, many experience symptoms upon exertion, leading them to withdraw from physical activities.

For years, the standard surgical correction of PE was the Ravitch procedure, in which an incision is made in front of the chest, the deformed cartilages are removed, and the sternum divided and elevated into the correct location. Typically a bar or strut is placed behind the sternum to maintain its position while the ribs and sternum heal. A change in thinking began about 20 years ago when **Dr. Donald Nuss**, a pediatric surgeon in Virginia, developed a minimally invasive procedure to correct PE. His approach accessed the chest wall through much smaller, less visible incisions in the patient's side. From there, surgeons would insert one (or possibly two) surgical bars and stabilize them to reshape the sternum. After two to four years, when the chest wall had been fully reshaped and healed, they would remove the bars in another procedure.

While the Nuss procedure involves a painful post-operative period, it is a far less extensive procedure overall than the traditional open surgery, according to **Lyall A. Gorenstein, MD**, Director of Minimally Invasive Thoracic Surgery at NewYork-Presbyterian/Columbia University Medical Center. As increasing numbers of surgeons offered this procedure, more patients began undergoing corrective surgery that would transform their lives.

Among those early adopters was **Charles J. H. Stolar, MD**, Surgeon Emeritus and former Chief of Pediatric Surgery at Morgan Stanley Children's Hospital of NewYork-Presbyterian (MSCHONY), who trained Dr. Gorenstein and other surgeons at NYP/Columbia in the Nuss procedure.

Surgery for PE is best performed when children are between age 12 and 18. Many adults who were not offered treatment as teenagers are now seeking correction, often because of its impact on exercise tolerance. Outcomes are excellent. In addition to the clear cosmetic benefit, many patients demonstrate improved heart and lung function after recovery. Patients can return to normal activity four to six months after surgery.



Pectus excavatum, the most common chest wall abnormality, may be caused by excessive growth of the cartilage that connects the ribs to the breastbone.

Not just for kids

Today NYP/Columbia's pectus program, one of the largest and most experienced in the country, treats both adults and children with chest wall anomalies. **Lawrence Bodenstein, MD, PhD**, a pediatric surgeon at MSCHONY, and his colleagues treat children and adolescents, while Dr. Gorenstein treats older teenagers and adults. Fueling the program's growth is widespread recognition by both doctors and patients that a) physical and psychological effects associated with chest wall anomalies are significant, and b) the benefits of treatment outweigh the costs and trauma associated with surgery.

For patients who require an open procedure, Dr. Gorenstein has modified the Ravitch procedure so it too is less invasive. Previously, the supports used to keep the sternum in place needed to be removed after several years. The bars currently used are secured to the chest wall in such a fashion that they can remain permanently in place, thereby avoiding the need for a second operation.

"In older patients and some young patients with complex chest wall deformities, the modified Ravitch we perform may be a better alternative to the Nuss repair," says Dr. Gorenstein. "Because we have experience with both procedures, we can select the appropriate technique, based on the patient's chest wall abnormality."

"Chest wall anomalies can have profound physical and psychological effects," explains Dr. Bodenstein. "It is hard to overstate the devastating psychosocial impact that PE and PC have. Chest wall anomalies tend to become more pronounced during adolescence, just as teens are becoming most concerned about their appearance. They try to hide their condition with bulky clothing, but gym class or going to the beach or pool can be a miserable experience."

No longer viewed as simply a cosmetic procedure, surgery to correct PE is considered reconstruction of the chest to its normal form. "Along with the physiological gain," Dr. Bodenstein explains, "correction of pectus abnormalities is incredibly rewarding. After teenagers have surgery, it is as if a light goes on — they are different people, their whole world brightens." ■

Learn more about the Pectus program at columbiasurgery.org or by calling 212.342.8586 (pediatric) or 212.305.3408 (adult).

Carotid Stenosis:

Your doctor has just informed you that you have carotid artery stenosis. Now what?

According to **Nicholas J. Morrissey, MD, FACS**, Associate Professor of Surgery in the Division of Vascular Surgery since 2003, the most important thing to do is to not panic. Instead, he advises, patients should find an experienced cardiac or vascular physician who can monitor your condition now and in the years to come.

First, the basics. Carotid stenosis (also called carotid occlusive disease) is narrowing of the carotid artery caused by atherosclerotic plaque of plaque in the carotid arteries, the same process that causes atherosclerosis in the heart when plaque accumulates in the coronary arteries. In many cases, heart disease is diagnosed first, and patients later learn that atherosclerotic plaques are located in their carotid arteries as well as their heart. The risk factors for carotid disease are the same as for heart disease: age, high cholesterol, high blood pressure, smoking, sedentary lifestyle, obesity, diabetes, and male gender. Many patients exhibit no symptoms.

A cause for concern

It is important to take carotid stenosis seriously. Stroke (blockage or bursting of a blood vessel in the brain) is the third leading cause of death in the United States, and is the main cause of long-term disability. Although most strokes result from plaques in the coronary arteries, about 15-20% occur



Nicholas J. Morrissey, Assistant Professor of Surgery and Director of Clinical Trials, Division of Vascular Surgery

when pieces of plaque dislodge from the carotid artery and travel to the brain. One of the most important warning signs of stroke is a transient ischemic attack or mini-stroke (TIA), which may cause symptoms such as blurred vision or loss of vision; weakness on one side of the face or body; slurring of speech, dizziness, and swallowing difficulties. Most patients who suffer a stroke have had no prior symptoms. Therefore, a diagnosis of carotid stenosis should be considered an important wake-up call.

A cause for calm

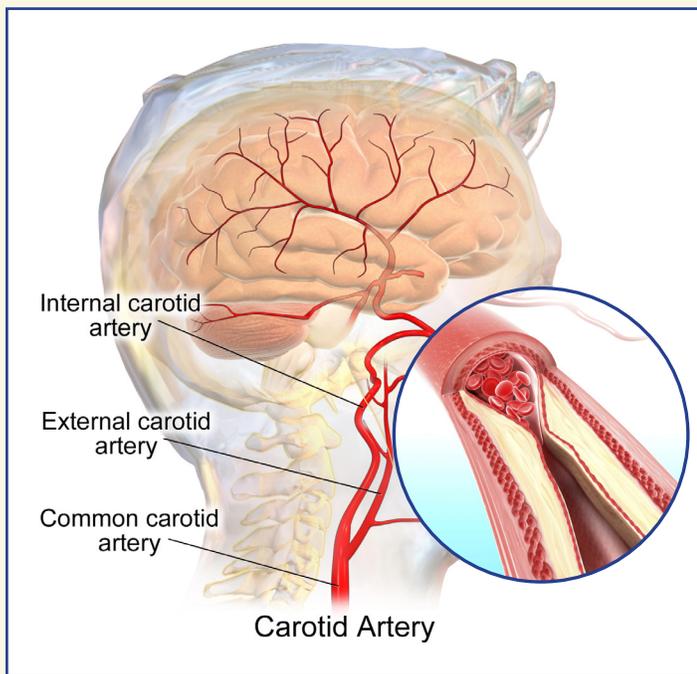
While patients should take a diagnosis of carotid stenosis seriously, they should nevertheless not panic, says Dr. Morrissey. Instead, he advises his patients to view it as an opportunity to change their health before it is too late. The fact is, over 90% of his patients never have surgery. Instead, most patients are successfully managed with medications to prevent the progression of plaque and to prevent stroke, lifestyle changes to reduce risk factors, and regular, careful monitoring with ultrasound.

UNDERSTANDING YOUR OPTIONS

Monitoring

Regular follow-up care and monitoring is a cornerstone of properly managing carotid stenosis. According to Dr. Morrissey, centers such as NewYork-Presbyterian/Columbia are “worth their weight in gold” because of the quality of their ultrasound laboratories. He explains, “Many of my patients have been told at other hospitals they need surgery, based on tests that show a certain level of blockage. Seventy percent of these patients do not need surgery.”

The discrepancy is sometimes caused by the use of magnetic resonance or magnetic resonance angiogram (MR or MRA), which is used in many hospitals, but which frequently overestimates the percentage of blockages. Although MR/MRA is considered a ‘higher-end’ test than ultrasound, it is more error-prone than high quality ultrasound, explains Dr. Morrissey. As a result, the Division of Vascular Surgery relies most frequently on ultrasound instead. Carotid angiography, in which a catheter is threaded through a blood vessel in the arm or leg to the neck, is effective but is used less often than in the past because it is invasive. “Each method of imaging may have a role in management of carotid disease, but the initial test -- and often the only needed study -- should be a high quality carotid ultrasound,” says Dr. Morrissey.



Fatty substances and cholesterol can build up in the carotid arteries over time, restricting blood flow to the brain and posing a risk for stroke.

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Medications

All patients with carotid disease will need medications to prevent progression of plaque and to prevent plaque from embolizing (breaking off and traveling through the blood vessel). Some of the most commonly prescribed medications include aspirin and clopidogrel (Plavix). Some patients will need anticoagulants such as warfarin (Coumadin) to thin the blood and prevent clots; others may need medications to control diabetes, blood pressure, and other risk factors.

Lifestyle changes

The following lifestyle changes can help to prevent progression of carotid artery disease:

- Quit smoking
- Maintain healthy levels of cholesterol and blood pressure
- Control diabetes properly
- Maintain a healthy weight
- Eat a healthy diet
- Exercise regularly

Although these measures may not necessarily cure carotid artery disease, they are critical in stabilizing it.

Procedures

Until fairly recently, surgeons have often performed procedures to remove carotid plaques if a blockage reached 60% or higher. Dr. Morrissey and many other surgeons now consider surgery only when a blockage reaches 80% or more if there are no symptoms. In patients with symptoms, intervention can be considered in patients with as little as 50% blockage. Carotid endarterectomy, in which surgeons make an incision in the neck and surgically remove the plaque from the inner lining of the carotid artery, is the most commonly performed procedure. Stenting, or the placement of a thin tube to keep the artery open, is appropriate for patients who are unable to undergo surgery due to very high surgical risk.

While surgical procedures are effective in treating carotid stenosis, medical management combined with lifestyle modifications is the optimal approach in the vast majority of patients, says Dr. Morrissey. His primary advice: “Don’t panic. Take the opportunity to establish care with a practitioner who can work with you for life.” ■

The Division of Vascular Surgery is available to provide second opinions to patients who have received a diagnosis of carotid artery disease or other vascular disease. Call 212.342.2929 or visit columbiasurgery.org for more information.

In the News:

NYP/Columbia Study Confirms Thyroid —Breast Cancer Link

March 5, 2015, San Diego: Young breast cancer survivors face a significantly higher risk of thyroid cancer than the general population, according to a new study presented by **Jennifer H. Kuo, MD**, Assistant Professor of Surgery and Director of the Thyroid Biopsy Program at NewYork-Presbyterian/Columbia. Her study, which she presented to the Endocrine Society’s annual meeting in March, 2015, contributes important clues about a long-suspected, but ill-defined link between these two cancers.

Compared to the general population’s risk of developing thyroid cancer, breast cancer survivors’ risk was found to be:

- **16% versus 0.33% at age 40**
- **12% versus 0.35% at age 50**

Thyroid cancer appeared most commonly about five years after breast cancer treatment.

Dr. Kuo says that clinicians should be aware of this increased risk for thyroid cancer when taking care of breast cancer patients. “Doctors may want to add a thyroid exam to patients’ physical exams in the years following treatment for breast cancer. If a patient has a nodule they wouldn’t otherwise biopsy, a previous history of breast cancer might be a good reason to take a biopsy as a precautionary measure,” she says.

Further research will be done to better understand the breast cancer—thyroid cancer link.

About the Thyroid Center

Research at the Thyroid Center plays an essential role in ensuring the highest quality of care for patients with thyroid diseases. The center has made major contributions to the advancement of diagnosis and treatment of thyroid disease, including the T3 suppression test, classification of thyroid tumors, classification of Graves’ ophthalmopathy, development of fine needle and coarse needle biopsies in the United States, and the development of the thyroglobulin assay. As part of its commitment to providing patients with the best possible care, the Thyroid Biopsy Clinic was established to provide single-day on-site performance and evaluation of fine needle aspiration biopsies of thyroid nodules. ■

Visit columbiasurgery.org/thyroid or call 212.342.0442 for appointments or information.

You may watch a video of Dr. Kuo’s presentation to the Endocrine Society at: <http://endowebcasting.com/endo/archives/endo-2015-5.php>

To Scan or Not to Scan?

The risks and benefits of CT scans -- and what you can do to protect your children

Anyone who has brought a child with severe abdominal pain or a head injury to the emergency room is likely familiar with the use of CT scans, which can be used to quickly diagnose a problem even in the youngest, squirmiest of children. Computed tomography (CT), formerly known as 'CAT' and now simply 'CT', has revolutionized diagnostic medicine, and its use has increased exponentially in children since its debut in the 1970's. But as use of CT has increased, so has concern for cancer risk associated with the corresponding radiation exposure.

How safe are CT scans in children, and what should we do to best protect our children's health?

William Middlesworth, MD, *Pediatric Surgeon at Morgan Stanley Children's Hospital at NewYork-Presbyterian*, helps us to understand the risks posed by radiation exposure from medical imaging. Children are especially vulnerable, in part because cancer risk is related to the cumulative dose of radiation over one's lifetime.

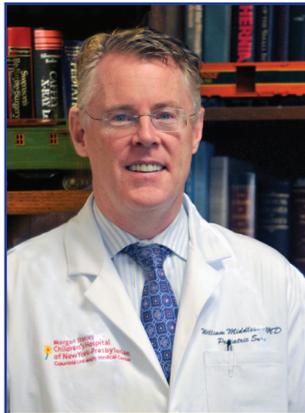
What is ionizing radiation?

There are various sources of ionizing radiation, both naturally-occurring and man-made. Natural sources, which account for 85% of our exposure, include the sun, lightning, cosmic radiation from outer space, and radon gas, among others. The remaining 15% comes from man-made sources, the major source being medical testing such as nuclear medicine and CT scans. While CT scans provide invaluable, sometimes lifesaving imaging of the abdomen and other parts of the body, they involve significantly higher doses of radiation than X-rays.

How does radiation damage our health?

The dangers associated with radiation vary depending on the amount of the radiation (or radiation dose), the length of exposure, and the part of the body exposed, because some parts of the body are more sensitive than others.

If exposure is very high in a particular incident (think Chernobyl), the radiation directly harms and kills cells rapidly, causing radiation sickness that may be fatal. If the exposure dose is low, such as in exposure to natural sources or medical testing, it can cause damage to our DNA and can cause formation of free radicals, molecules that are highly reactive and are thought to cause many health conditions including cancer. While the body naturally repairs most damage of this type, some of these effects are less easily



*William Middlesworth, MD,
Associate Professor of Surgery,
Columbia University Medical Center*

repaired. If the body cannot repair DNA damage, it can continue to progress over many years, ultimately leading to cancer.¹

Children are more sensitive than adults to the effects of radiation, and studies show that childhood CT scans increase the lifetime risk of brain tumors, leukemia, thyroid cancer, colon cancer, and others.² The younger the age of the child, the greater the sensitivity to the effects of ionizing radiation.

A study published by researchers at NYP/Columbia in 2000 found that for every 600,000 abdominal and head CT examinations performed in children under 15 years of age, approximately 500 of these patients

might ultimately die from cancer attributable to CT radiation they received as a child.³ A 2013 study found that nationally, approximately 4 million CT scans in children are projected to cause 4870 future cancers.⁴ Many other studies corroborate the association between childhood CT scans and increased risk of cancer later in life.^{5,6}

What is a parent to do?

In short, the best approach to testing involves a careful evaluation of benefit versus risk, and when choosing to proceed with CT scanning, using the lowest dose possible. Parents can ask several questions to help ensure their children's doctors are doing everything they can to achieve this.

Does the benefit outweigh the risk? Parents should confirm that the benefits of undergoing the test are important enough to warrant testing despite potential risks in the future. Doctors should be able to explain why the risk of missing an important diagnosis may be greater than risk of a late cancer, and why alternative treatment options would not be as good.



Ask if the radiologists are following ALARA recommendations. The Society for Pediatric Radiology issued guidelines for dose-reducing strategies called “As Low As Reasonably Achievable,” commonly called ALARA, in 2001. These guidelines aim to minimize radiation risk by adjusting the radiation emitted in a test according to the child’s weight. While this may reduce the resolution of an imaging study, the lower resolution image may still provide sufficient information for doctors to make their diagnoses and treatment decisions. As Dr. Middlesworth explains, “We want to avoid over-dosage that does not provide helpful information.”

With increased public awareness of radiation risk, more hospitals have adopted the ALARA guidelines, and the use of CT scanning in children has been declining in the past few years.⁷

Ask if a diagnostic test that does not involve radiation exposure may be substituted for one that does. In some cases, alternate methods of testing such as ultrasound (US) or magnetic resonance imaging (MRI) may be used instead of CT scanning. In cases of suspected acute appendicitis, for example, it may be feasible to use US (which is radiation-free) as an initial test, followed by selective use of MRI where needed. This approach has been shown to be as effective as CT, according to a study published by Dr.

Middlesworth, Dr. Gudrun Aspelund, and colleagues at NYP/Columbia in 2014.⁸ Dr. Middlesworth notes that the accuracy of ultrasound can vary, depending on the examiner and how he or she conducts the test. In some cases ultrasound may be prone to error, or the organs may not be viewable; for example, viewing the appendix in a child who is obese may not be possible. However, parents should feel free to ask whether it would be possible to use ultrasound instead of CT, and avoid CT for their children.

Finally, a last but important way to reduce CT scanning is simply to make sure that tests are not repeated due to failure of medical personnel to communicate with one another. Unfortunately, it is a common occurrence that test results may not be communicated from one practitioner or institution to another, leading to unnecessary duplication of testing in more than 20 million adults and one million children per year. ■

Learn more about topics in pediatric surgery at columbiasurgery.org/pediatrics

¹ <http://www.nejm.org/doi/full/10.1056/NEJMra072149>

² <http://cumc.columbia.edu/dept/radoncology/crr/faculty/brenner/papers/ajr1.pdf>

³ <http://cumc.columbia.edu/dept/radoncology/crr/faculty/brenner/papers/ajr1.pdf>

⁴ <http://www.imageently.org/Portals/6/Procedures/jamapediatrics.2013.311.pdf>

⁵ <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2812%2960815-0/abstract>

⁶ <http://www.bmj.com/content/346/bmj.f2360>

⁷ <http://www.imageently.org/Portals/6/Procedures/jamapediatrics.2013.311.pdf>

⁸ <http://pediatrics.aappublications.org/content/early/2014/02/25/peds.2013-2128>

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