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Atlanta Medicine
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Letter from the Editor
By Shazad Wada, MD

On a recent trip to Yosemite National Park I snapped the photo featured on the cover of this issue, while trekking through the Mariposa Grove of Giant Sequoias. Staring at the root system of the “Fallen Monarch”, I contemplated the complexities of the human nervous system and how it paralleled the root system of this fallen beast. The fleshy center, the sulcus network of roots, and it’s vast beauty resounds the struggle we face treating pain. The intertwining shallow roots help to maintain the trees’ equilibrium just as our nervous system maintains our delicate balance.

The human “root” system is thrown off balance when we experience pain and this pain serves as an indicator of something gone wrong. Our body is desperately communicating “fix me!” But, what if it can’t be fixed or despite “fixing” the problem the pain does not subside? Is the pain a symptom or has it become a disease itself.

This is a quandary that physicians across multiple specialities face on a daily basis; the solution to some patients pain being clear cut, while others not. Pain can change from somatic to visceral to neuropathic and so on. And to complicate things further, the perception of pain can also change from peripheral to central to something in between. The pain receptors once thought to encompass only the MU receptor have blossomed into multiple MU receptor subtypes along with the discovery of other receptors and their subtypes. Manipulating these receptors and their pathways has lead to many medicinal breakthroughs and at the same time many new questions. As a result, the evaluation and treatment of pain is not clear cut. The algorithm in which you should most effectively and efficiently treat these patients is still changing.

Physician’s turn to an array of treatment options including vitamin supplementation, narcotic/non-narcotic analgesics, physical therapy, etc. And furthermore, recognizing that pain can be a disease in itself has led to an asymptotic advancement of the speciality of Pain Management in the last decade. This focus on pain has opened the door to solutions outside of the realm of medication management, namely interventional treatments such as nerve blocks, radiofrequency ablation, spinal cord stimulators, etc.

Somehow despite how far we have come, I feel that we are still scratching the surface. In today’s world of medicine, pain is the key that helps us connect with our patients, our colleagues, and ultimately ourselves.

The following articles are perspectives from different specialists on how they tackle chronic pain. And how despite our many efforts of making our patient’s problems black and white, it, singularly finds a way to make everything grey.

Have a patient in the grip of addiction?
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“Houston, we have a problem ...”

Let’s not use this space to go into the details of the problems and controversies surrounding prescribing narcotic/opioid medications. Instead, let’s get the facts straight. I hear stories from patients who have been referred to me all the time that causes me to shake my head.

Even some of the things I hear from fellow specialists are misleading. “The new laws don’t allow me to prescribe pain medications anymore.” —False. “My license won’t allow me to prescribe any narcotics.” —False. “Only pain specialists can prescribe this stuff now.” —False. Etc, etc, etc.

I will attempt to demystify a few of these items and show how these new laws and rules are actually making things safer for you as a doctor and your ability to treat your patients.

The Georgia Pain Management Clinic Act (HB 178) — aka the “Pill Mill Bill” — was signed into law in May 2013.

This bill was passed to keep out the bad guys. It was NOT passed to put fear into Georgia physicians who are simply trying to take care of their patients. After Florida had a statewide crackdown of “pill mills” in 2010 and 2011, the players and bad actors moved north. We all saw the signs on the highways and exit ramps advertising for pain care—“no insurance or referral required!!”

While most of this business involved “patients” from outside Georgia driving here just to get an easy prescription for high-dose oxycodone (up to 240mg per day!!), many unsuspecting Georgians thought these outfits were real doctors. Unfortunately, they were real doctors, with a Georgia license no less. But the owners of these practices were not, and the physicians working there had violated every oath ever taken. The only motive was profiting from selling prescriptions.
Because Georgia passed the "Pill Mill Bill," their view now is from behind bars. For the most part, the law has worked as intended. All medical practices where more than 50 percent of the patient population receives Schedule II or III controlled substances to treat chronic pain must now be licensed by the Georgia Composite Medical Board (GCMB). This law is simple, and it makes sense. The law allows the medical board to perform background checks on the physicians and to make sure each office is owned by a physician with a Georgia medical license. It's that simple. It keeps the Bad Guys out.

In truth, very few medical practices have more than 50 percent of their entire patient population on daily doses of opioids for the treatment of chronic pain (with the exception of oncologists who are specifically excluded), so this law probably does not apply to you. So you may continue to treat Mrs. Pratt who has horrible knees and just needs three or four hydrocodone doses per day to keep her going but her cardiologist won't clear her for surgery. You may still treat Mr. Johnson who has had three back surgeries and is well managed with low-dose OxyContin. However if you DO decide to continue to treat Ms. Pratt and Mr. Johnson, the following section does apply to you.


Our legislators and state medical societies worked closely with the Georgia Composite Medical Board (GCMB) to pass sensible rules and guidelines for the treatment of pain. The goal is to allow pain management to continue to take place in Georgia for our citizens in need of such care and to allow competent physicians to provide such care to their patients. That is what we went to medical school for last I checked!

Here is a summary of the GCMB Rule 360-3-06 — Pain Management. A quick check of the GCMB website will announce any future updates. (This actually is a VERY informative website for many things besides renewing your medial license — see Table 1).

The Pain Rule only applies to those patients needing essentially daily opioid medications for more than 90 days to treat chronic pain. These guidelines DO NOT apply to in-patients, terminal patients, hospice patients, those in nursing homes or a patient who just needs intermittent medications (as opposed to daily) for a non-terminal condition. Attention all Surgeons — these rules DO NOT apply to any pain problems being treated by you during any peri-operative period (such period may last 2-6 months depending on the actual condition being treated), which allows surgical care to be unhindered.

Need an H&P. This is what we do everyday. We need to make an attempt to get records from previous physicians and any imaging studies. We need to actually perform a physical exam, which the ‘pill mill’ doctors rarely did.

When prescribing Schedule II and III controlled substances for chronic pain, noting the above exceptions, these patients need to be seen at least once every 3 months. The patient must have also signed a treatment (opioid) agreement or "pain contract" (see Table 1).

When prescribing Schedule II and III controlled substances (see Table 2 below) for chronic pain, these patients need to be monitored using body fluids (typically urine drug testing or ‘UDT’) to make sure the medications you are prescribing are indeed in the patient’s system, and other non-prescribed medications or street drugs are not present. This just makes sense and will serve to protect YOU. (See Table 1)

Tramadol is a weak opioid binder but is a Schedule IV drug, and the above does NOT apply and is considered a "safe haven."

If you treat lots of chronic pain patients but are not a board-certified pain specialist, you may still treat your patients. The

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Table 1 - Useful Links

<table>
<thead>
<tr>
<th>GCMB</th>
<th>medicalboard.georgia.gov</th>
<th>Search-pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDMP registration</td>
<td>hidesigns.com/gapdmp</td>
<td>Practitioner link on left</td>
</tr>
<tr>
<td>GSIPP MAG</td>
<td>GSIPP.com</td>
<td>Links Tab-lots of useful info</td>
</tr>
<tr>
<td>GSA</td>
<td>gsahq.org</td>
<td>Local lab with pain expertise</td>
</tr>
<tr>
<td>Urine Drug Testing</td>
<td>Salvuslabs.com</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 - Controlled Substances

<table>
<thead>
<tr>
<th>Schedule II</th>
<th>Most opioids/narcotics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amphetamines/many ADHD meds</td>
</tr>
<tr>
<td>Schedule III</td>
<td>Weaker opioids-codeine, buprenorphine</td>
</tr>
<tr>
<td></td>
<td>Anabolic steroids</td>
</tr>
<tr>
<td>Schedule IV</td>
<td>Tramadol, Soma, Ambien</td>
</tr>
<tr>
<td></td>
<td>Most benzodiazepines</td>
</tr>
<tr>
<td>Schedule V</td>
<td>Lyrica</td>
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MEDICAL ASSOCIATION OF ATLANTA | 5
The Board recognizes there will be the occasional hardship. Thus, they made a provision to relax the rules a bit as long as the specific hardship is documented. (ie-pt has had a catastrophic CVA and is wheelchair-bound, making it very difficult for transportation. Or a patient is taking less than 30mg hydrocodone or 20mg oxycodone total dose per day). In these cases, the patient could be seen only once or twice per year and monitored once per year.

Lastly, if there is a problem with patient compliance with the above, the GCMB simply asks you to refer this patient to a pain management specialist who will have extra training, treatment options and expertise to help your patient.

“I am worried that some of my patients may be doctor shopping, and I don’t have the time to call every pharmacy in town.”

Relax; you now have a friend and ally. The Prescription Drug Monitoring Program, or PDMP, is administered by the Georgia Drugs and Narcotics Agency (GDNA) in consultation with the medical board (GCMB). The PDMP began in March 2013 after two years of lobbying by several medical societies including MAG, the Georgia Society of Interventional Pain Physicians (GSIPP) and the Georgia Society of Anesthesiologists (GSA) (See Table 1).

Specifically, this is a database that monitors the dispensing of Schedule II-V controlled substances. Once a patient fills a prescription for any controlled substance, the patient name and address as well as the pharmacy name and address are entered into the PDMP database. This way, any registered physician in Georgia can look up a patient in the PDMP to make sure there is no evidence of “doctor shopping.” It is simple to become registered (see Table 1) and simple to use. While I initially thought I would ‘bust’ many of my more difficult patients, the opposite occurred. The vast majority were actually being honest with me, and I am now able to treat them better now knowing nothing fishy is going on. The PDMP is there to help you, so please use it. I use the PDMP at least five to 10 times per day.

So if after reading this and you still don’t want to deal with periodic urine drug testing, opioid contracts and periodically checking a drug database, then by all means, please refer these patients to a pain management specialist near you. We actually want to see these patients earlier rather than later, as pain specialists have many more treatment options than simply to prescribe opioids.

All I ask is when communicating with your favorite pain specialist, please show us a little love—remember, we are treating all those patients you don’t want to see anymore! ■
Ketamine is a medication that was patented in 1969 and put to medical use in humans in the 1970s. It has had many roles over the years, including as a general anesthetic in adults and children for surgery, a drug used in veterinary medicine for pain and anesthesia, as well as alternative roles abroad as a drug used in regression therapy and “spiritual discovery.” It has also been used as recreational drug in RAVEs in Europe and Canada and sold as Ectasy or MDMA.

Research on Ketamine’s use for chronic pain was first performed by Ronald Harbut, M.D., of Little Rock, Ark., sometimes called the father of Ketamine therapy who worked with Graeme Correll, B.E., M.B.B.S., of Australia. Harbut and Correll first successfully treated patients with intractable pain states in the 1990s, but it was not until 2002 that Dr. Harbut worked with the FDA to create a treatment protocol.

Dr. Harbut and Dr. Correll found that Ketamine was most effective for patients with burning, shooting pain that is neuropathic in nature and characterized as having a “centralized component.” Centralization of pain is an abnormal response and is characterized by changes that occur in the brain and the spinal cord as the result of a chronic peripheral painful stimulus. This process is potentiated by the mechanisms of “plasticity” and “wind up,” which ultimately result in a larger-than-normal receptive field in the brain. The exaggerated receptive field produces a greater-than-expected pain perception.

Examples of painful conditions that involve central sensitization are CRPS or RSD, post-herpetic neuralgia, causalgia, phantom limb pain, peripheral nerve injury and trigeminal neuralgia. Although many of these conditions may respond to Ketamine infusion therapy, most of the studies thus far have been performed on patients with CRPS or Complex Regional Pain Syndrome.

Ketamine’s mechanism of action is thought to be from its profound ability to block the NMDA receptor, the channel or gateway where a painful stimulus enters the central nervous system by way of the dorsal horn. It has been discovered that the longer a patient with centralized pain is exposed to Ketamine by way of infusion at the highest dose possible, the better the clinical outcome.

There are several approaches for Ketamine infusion for the treatment of neuropathic pain. In the United States, the treatment is administered as an inpatient in some facilities as well as outpatient in others. The inpatient method involves the patient’s admission to the hospital, where they are treated with 25 to 50mg of ketamine per hour for five days. The outpatient protocol varies, but it basically involves a one- to four-hour infusion of Ketamine at 25 to 300 mg per hour. During the inpatient and outpatient infusions, a benzodiazepine is administered to avoid the negative side effects of Ketamine. The patient is continuously monitored and recovered before discharge. Outside the U.S., because it is not FDA-approved in the country, patients are placed into Ketamine comas for five to seven days. These patients are induced, intubated, ventilated and administered 500 to 700mg of Ketamine per hour.

The clinical research studies have shown success rates anywhere from 80 to 100 percent. The most effective method is the coma method followed by the inpatient and outpatient methods. One of the most concerning issues of the Ketamine infusion therapy is the failure of the pain resolution to last. Almost all patients treated with Ketamine infusion require the patient to return for a one- to two-day booster anywhere from two to six months following the initial treatment. The booster is an outpatient four-hour infusion of the patient’s greatest tolerated dose. Research is ongoing to resolve this issue and prolong the effects of the initial infusion.

In conclusion, Ketamine infusions are a welcome effective modality in the treatment of neuropathic pain syndromes. This treatment has shown amazing success in patients with the most intractable, unmanageable pain states where all other treatments have failed.
Chronic non-specific low back pain can be frustrating to patients, primary care physicians and pain specialists alike. The specter of non-diagnostic findings on imaging and the failure of medications and interventions to ameliorate pain leave patients without answers and real solutions.

However, it appears that in some cases, the answer may be right under our … bones. Low back pain is a common symptom of vitamin D deficiency and osteomalacia. Low serum 25-hydroxi-vitamin D (25-OHD) concentrations lead to reduced calcium abruption and decreased bone mass. An explanation for increased back pain may lie in the role vitamin D plays in modulating inflammatory cytokines.

Vitamin D deficiency is highly prevalent in the general population, and it has become especially widespread over the last 15 years. Acquired predominantly through sunlight exposure, vitamin D is essential for cartilage growth and proteoglycan synthesis in articular chondrocytes. Low vitamin D is associated with increased risk of vertebral compression fractures.

Beyond the detriment to the musculoskeletal system, low vitamin D levels are associated with immune system dysfunction and increased cardiovascular mortality. Supplementation of vitamin D provides a protective effect on fractures through bone mineralization but also leads to improved muscle function, thereby decreasing fall risk. While age, darker skin color, inadequate diet and smoking may be risk factors, vitamin D deficiency is highly influenced by diseases such as chronic kidney disease, diabetes and chronic liver disease.

A single-center cross-sectional study published in Pain Physician in 2013 showed that 74.3 percent of patients with lumbar spinal stenosis also had vitamin D deficiency (25-OHD level under 20 ng/ml). This was especially concerning because the neurological deficits present in spinal stenosis, when coupled with the decreases in muscle function with vitamin D deficiency, could significantly increase the risk of falls and fractures.

According to another cross-sectional study published in BMC Musculoskeletal Disorders in 2013, postmenopausal
women with vitamin D deficiency reported more back pain and a higher limitation in their daily activity when compared to women with normal levels. Strength reduction in core muscles and loss of flexibility were also noted.

A classic chicken-or-the-egg dilemma lies in whether or not the hypovitaminosis is due to the inactivity, poor nutritional status, and decreased sun exposure that come with back pain or if the pain itself is a result of the low levels of vitamin D associated with the aforementioned risk factors. Interestingly, it has been demonstrated that restoring vitamin D levels in patients with osteomalacia leads to an improvement in pain and weakness. A case series looking at four patients with chronic low back pain after failed back surgery showed a significant reduction (and near resolution) in pain with vitamin D supplementation to normal levels. In one particular case, pain returned after discontinuing vitamin D for several months only to disappear again when supplementation was restarted.

Normalizing vitamin D levels may make chronic pain easier to treat. In 2009, researchers at the Mayo Clinic reported that patients with vitamin D deficiency who required narcotic pain medication were taking nearly twice the dosage compared to those with normal vitamin D levels.

A Cochrane review published in May of this year concluded that the evidence it reviewed did not indicate that vitamin D supplementation for chronic painful conditions in adults is beneficial in terms of bringing about pain relief. It cited that the quality of evidence in support of vitamin D supplementation was poor. However, there are no randomized clinical trials looking specifically at the effect of vitamin D supplementation in those deficient patients with low back pain.

While we should not use chronic pain as the sole basis to treat hypovitaminosis D, the importance of adequate vitamin D levels to both musculoskeletal and overall health is well established. Vitamin D deficiency is a condition that warrants prompt attention and is certainly something that can be easily evaluated and treated in the primary care setting.

When appropriate dosing regimens are employed, vitamin D supplementation can be done safely. If there is a chance that supplementation can help patients with chronic nonspecific low back pain, it might just be worth a try.
About 85 percent of adults have neck or back pain at some time. Acute back pain is defined as lasting four to six weeks, and chronic low back pain as lasting greater than 12 weeks.

In the majority of patients, back pain is nonspecific and cannot be attributed to any specific spinal pathology, due to rapid recovery and return to normal function. Approximately 5 percent of patients with back pain will go on to develop chronic low back pain.

Spinal structures may be injured by relatively benign activities such as simultaneous twisting and bending. More severe injuries occur with falls or motor vehicle accidents, causing tearing or strain injuries to the discs, joints, ligaments and muscles, e.g., hyperextension-flexion of the neck after a rear-end motor vehicle accident. With higher mechanical forces, fractures and dislocations may occur of the vertebral bodies, transverse processes and facet joints, potentially leading to spinal cord injury as well as concussion.

Cervical facet involvement may trigger "cervicogenic headache." Cervical facet joints radiate pain in a pattern unique to each level, up into the head, or down into shoulder girdle and upper back. Cervicogenic headaches should also be suspected in patients with upper cervical myofascial pain or facet tenderness. Greater occipital neuralgia should also be considered in patients who have suffered extension-flexion injuries. The occipital nerves may become entrapped by muscle spasm as they emerge through the suboccipital musculature to innervate the occipital region. Injury to the upper cervical spine may also result in a condition called "cervicogenic dizziness." Altered proprioceptive inputs from the joints and musculature result in abnormal signals, which create an altered sense of orientation in space, as well as imbalance.

Discogenic pain may have several mechanisms and does not always relate to MRI findings. Patients may have an asymptomatic herniated disc or may have a minor disc bulge with complaints of burning pain in the back with radiation into the extremity. It has been found that degenerative discs contain more nociceptive pain receptor nerve endings in the endplates and in the nucleus pulposus. Herniated discs produce a number of pro-inflammatory chemicals, including prostaglandin E2. Disc pain may occur with tearing of the outer fibers, bulging of the disc or extrusion of the disc gel into the spinal canal. Extruded gel irritates nerve roots by two mechanisms: first, by releasing pro-inflammatory chemicals, and second by direct compression. This explains why patients with radiculopathy respond well to epidural corticosteroid injections.

A mild acute injury may resolve in a few days with anti-inflammatories and muscle relaxants, or in four to six weeks for mild to moderate injuries. The exception is intervertebral disc injury. Due to an absence of blood flow, discs lack the ability to heal like other tissues in the spine. Spinal movement nourishes the gel center by diffusion. Limited nutrition predisposes the disc to degeneration and ultimately mechanical failure. Once the spine is injured, there is susceptibility to re-injury, about 40 percent. This leads to intermittent recurrent back pain. Finally, a small group of individuals, ~ 5 percent, go on to have chronic low back pain. Changes occur in the dorsal sensory horn of the spinal cord, resulting in a perception of pain despite resolution of the initial tissue injury. This is called central sensitization.

ANATOMY AND FUNCTION

The spine is composed not only of the 24 vertebra in the cervical, thoracic and lumbar regions, but also includes the
atlanto-occipital joints between the base of the skull and C1, the sacrum, sacroiliac joints and coccyx. Through multiple small motions at each vertebral level, large complex motions of the head and trunk are possible. The spine also provides structural support to the head, chest and abdomen. The spinal column not only carries the spinal cord, its roots and ganglia, but also provides protection from trauma.

Spinal movement at each level is primarily restrained by three structures: the discs, facets and ligaments. First, the disc’s outer fibrous layers constrain vertebra body movement and also contain the nucleus pulposus. Secondly, the intervertebral ligaments limit the extent of vertebral motions allowed at each level. Thirdly, the directions of movement allowed at each level are determined by the orientation of the facet joints. The bilateral facet joints guide and constrain motion due to their geometry and also carry part of the load between vertebrae. The facet joints can only carry compressive loads when the spine is in extension.

It is important to understand how the facets are oriented when assessing restricted spinal motion for therapeutic interventions. In the cervical region, the facets are oriented 45 degrees to the transverse plane, allowing some movement in all directions. In the thoracic spine, the facets are oriented in an oblique plane, allowing lateral flexion and rotation but very limited flexion and extension. In the lumbar region, facets lie in the sagittal plane. This allows mostly flexion and extension and also prevents the vertebra from sliding forward on one another. The neck and trunk core muscles also provide extrinsic stability to the spine.

**ERGONOMICS**

Other than lying supine, the lowest loading of the lumbar spine discs occurs in upright relaxed standing position. The highest lumbar disc loads occur with bending, twisting and lifting, producing stresses that approach the limits of mechanical failure of the posterior annular fibers. Seated lumbar disc pressures are lowest when reclined approximately 30 degrees with lumbar support to maintain the lordotic curvature, which loads the facets, and also when using arm rests. Sitting in a chair with no lumbar support to load the facets and vertically with no recline results in the highest seated lumbar disc loads.

Mechanical disc injury is related not only to the distance of the weight from the spine but also loss of the lumbosacral curvature, resulting in loading of the discs only without the facets. To perform lifting activities, the weight should be as close to the body as possible, which reduces the level arm effect on the spine and decreases disc pressures. Lifting should occur through the knee extensors as opposed to the much weaker back extensors. Sustained co-contraction of abdominal muscles and spine extensors also helps to decrease intradiscal pressure through a corset effect.

**PHYSICAL THERAPY INTERVENTIONS**

The primary goal of physical therapy is to restore function. Initially, there is an emphasis on managing pain, especially in patients with an acute injury. Once pain is sufficiently controlled, then the next goal is to restore spine motion and regain proper control of core muscle groups, not to be confused with muscle strengthening. Finally, strengthening is beneficial in preventing recurrence of spine pain.

Many physical medicine modalities may be used to reduce pain, such as heat or cold therapies. Cold therapies are most effective when used within 24 to 48 hours after injury by reducing the release of
inflammatory chemicals in the area of injury, which reduces pain and swelling. Cold therapies may also be helpful in chronic conditions during a brief exacerbation of pain.

Heat therapy reduces spine pain by dilating blood vessels within muscles and other tissues to increase the flow of nutrients, helping to heal damaged tissue. Heat also decreases stiffness in muscles and ligaments, allowing increased mobility. Heat may be applied through hot packs, heating pads, electric current diathermy and deep heating ultrasound therapy.

A transcutaneous electrical nerve stimulation (TENS) unit can also be used to help control back pain. This is thought to block incoming pain signals at the spinal cord dorsal horn through a mechanism called gating. Although TENS units are available over the counter, a medical professional, such as a physical therapist, should explain in detail how to use the device’s different modes and demonstrate electrode placement options. Another modality is iontophoresis, which uses electric current to administer medications through the skin into painful tissues, such as anti-inflammatory drugs.

Physical therapists, chiropractors and osteopaths all use a variety of manual medicine techniques to increase mobility of the spine and decrease pain. Skills and specific techniques may be unique to specific professions, but there is considerable overlap between the methods and mechanisms of therapy. Manual therapy may involve traction, mobilization, joint manipulation, soft tissue mobilization and various myofascial techniques. Massage therapists, for instance, are trained in various myofascial massage techniques, but not joint mobilization nor therapeutic exercise protocols.

Joint mobilization of the facets involves identifying vertebral segments with motion restrictions due to abnormal facet motion. Facet joints are mobilized to restore normal mobility and control pain in the joint and associated muscles. Patients may also have significant overlying muscle spasm, which prevents normal spine movement. Many times this is relieved with manual therapy techniques.

Another type of spine pain involves myofascial trigger points, described by Travell and Simons. Muscles develop painful taut bands, which when injected refer pain in specific patterns. Trigger point dry needling is an alternative to injections and involves inserting a small monofilament needle into the muscle to break up the tight band. Another myofascial method used by therapists is the strain-counterstrain technique. A tight muscle is lengthened by a therapist to its endpoint. The patient then contracts the muscle in the opposite (tight) direction. The patient then relaxes and the therapist further lengthens the muscle to a new endpoint, thus increasing the resting muscle length and relieving pain.

Various exercise interventions can be used depending on the specific problem. The use of flexion and/or extension exercises is dependent on the individual assessment and the patient’s reaction to these exercises. Williams flexion exercises tend to unload the facet joints and open the neuroforamina, which is beneficial for both facet-generated pain and radicular pain.

In the McKenzie Mechanical Diagnosis Extension Method, it is noted that pain may cause a directional preference of movement. One direction may provoke pain, and another direction may lessen pain. The choice of exercises is based upon directions which minimize pain. Repeated movements in these directions leads to progressive reduction of the referred distal symptoms and eventually a reduction of more central pain in the spine. This method appears to be most useful in acute pain management.

In lumbar stabilization exercises, the emphasis is on the abdominal musculature as well as the posterior spine extensors. These exercises are indicated for persons with hypermobility at a particular lumbar segment. Core
Musculature includes the transverses abdominis, multifidus, diaphragm and pelvic floor muscles. By co-contraction, these muscles provide stability to the lumbar region. Lumbar stabilization exercises are directed toward weak musculature, as well as musculature with delayed contraction and limited endurance.

Persistent neck and back pain may be associated with delayed firing of core muscles. In the cervical spine, this includes the deep cervical flexors in front of the neck and the abdominal muscles in the lumbar spine. These problems need to be differentiated from muscle weakness and may not respond to traditional strengthening exercises. Timing and duration of muscle contractions are addressed with exercise.

Tightness of the musculature can also aggravate low back pain. These muscles include the hamstrings, hip flexors and gluteal muscles, as well as the hip abductors and adductors. Tightness in these muscle groups pulls on the pelvis, causing rotation of one side of the hemipelvis relative to the other. This rotation creates mechanical stress and inflammation at the sacroiliac joints. Stretching muscles, particularly the hamstrings, helps to alleviate this problem.

Eventually, once pain and muscle balances are corrected, general strengthening exercises are recommended. Strong muscles act as shock absorbers, protecting the spine by lessening forces transmitted into the spine and helping to prevent re-injury.

With many different treatments available, it may seem difficult to choose a practitioner. Developments in conservative treatment of neck and back pain involve classifying patients to determine which intervention is indicated at which time and changing the treatment as a person’s condition changes. There are many variations in exercise intervention and only focusing on range of motion or strengthening of core muscles may not be appropriate.

Finally, the therapist also educates patients to understand mechanisms producing pain. Understanding the mechanisms involved in a person’s particular pain generators helps them to better control chronic conditions. Patients are taught that they have not been "cured," but rather are in control of their pain through self-management.

In summary, the precise cause of spine pain is multifaceted, with many areas potentially contributing to pain. However, by careful interview and examination, physicians and therapists can work together to develop a hypothesis of injury. This hypothesis then guides the therapeutic treatment typically resulting in a good outcome with good pain control and return to an active lifestyle.
Shoulder pain is a common problem seen by both orthopedic and primary care physicians. Estimates are as high as 50 percent of the U.S. population experience at least one episode of shoulder pain annually.\(^1\)

Increasing age is the most significant risk factor. In a study of 588 patients presenting with unilateral shoulder pain and evaluated using standard ultrasound examination, there was a strong correlation between age and the presence of unilateral and bilateral rotator cuff tears. The average age for patients with no rotator cuff tear was 48.7 years and was 58.7 years for those with unilateral tears. The average age for those patients who were found to have a second asymptomatic tear in the opposite shoulder was 67.8 years, with an overall 50 percent likelihood of having a second tear after the age of sixty-six.\(^2\) In the fourth and fifth decades of life, asymptomatic adults were found to have a 5 percent and 11 percent incidence of rotator cuff tears, while that number climbs to 80 percent in the ninth and 10th decades.\(^2\)

Just as the prevalence of shoulder pain and rotator cuff injury increases with age, so does the presence of other medical problems. It is therefore incumbent upon the physician to be aware of other co-morbid conditions in the patient’s medical history that may impact the presentation as well as the treatment of the patient’s shoulder pain.

When studies are needed beyond X-rays, MRI has been considered the imaging modality of choice for evaluating the painful shoulder, increasing both the sensitivity and specificity of diagnosing rotator cuff disorders.\(^1\) However,
MRI of the shoulder is not without its limitations. In a study of 100 patients with glenohumeral osteoarthritis presenting for total shoulder arthroplasty, 33 were found to have full thickness tears of the rotator cuff on preoperative MRIs and 17 to have multiple tears. However at surgery, only two of the 33 patients with the MRI finding of full thickness rotator cuff tear were actually found to have a full thickness rotator cuff tear.\(^{(3)}\)

The use of ultrasound imaging in the evaluation of musculoskeletal disorders was first reported in 1972\(^{(4)}\) and has increased in prevalence in the last decade. The creation of standardized guidelines for the performance of ultrasound examination of the shoulder has improved the consistency of exams between operators.\(^{(5)}\)

In a 2013 study by Lenza, M. et al., no statistical difference was found between MRI and ultrasound in detecting full thickness tears of the rotator cuff (MRI: sensitivity = 94 percent, specificity = 93 percent; Ultrasound: sensitivity = 92 percent, specificity = 93 percent). Whereas neither MRI nor ultrasound had good sensitivity in accurately detecting partial thickness tears.\(^{(6)}\)

**WHERE IT HURTS**

The most common areas of shoulder pain due to rotator cuff injury are very amenable to imaging by ultrasound.

1. **Long Head Biceps Tendon.** A common source of shoulder pain, this tendon can be injured either by direct trauma and over use, or more commonly in older populations by recruitment to compensate for an injured rotator cuff. It is easily located over the superior anterior aspect of the humerus, where it may be thickened and tender to palpation. There may be generalized, often subtle swelling of the surrounding tissue without erythema. In cases of recruitment secondary to a primary rotator cuff problem, the history may not suggest biceps tendon injury. However, its distinct tenderness on palpation reproducing the patient’s pain confirms this diagnosis. The Tendon of the Long Head of the Biceps Muscle can clearly be located and assessed on B mode sono.\(^{(1)}\)

2. **Subscapularis Muscle and Tendon.** The Subscapularis muscle is found over the anteromedial aspect of the humeral head just inferior to the clavicle. Emerging from between the coracoid process and the medial aspect of the humeral head, it extends laterally to its attachment point on the lesser trochanter of the humerus. It should be assessed for thickness and contour. In older patients, the classic multipennate structure of the Subscapularis muscle is not as distinct as in the young, conditioned athlete. Furthermore, using ultrasound, it can be assessed dynamically by moving the humerus through internal and external rotation both passively and actively against resistance. Contour defects, intrasubstance lucencies and peri-coracoid fluid can all be indicators of injury to the Subscapularis or adjacent coracoid ligamentous structures.\(^{(2)}\)

3. **Supraspinatus Muscle and Tendon.** The Supraspinatus muscle, which originates on the superior aspect of the scapular spine, is the most commonly injured of the rotator cuff muscles. In an ultrasound, it has a distinct "comma" like
appearance, passing from under the acromion and AC joint, over the rounded humeral head as far as its attachment on the greater tuberosity of the humerus. Thickening of the normal contour is common with inflammation of the Supraspinatus, while flattening of its contour is an indicator of tearing. Complete loss of, or gross deformity of the contour with a large and obvious defect is a less frequent finding and indicates a complete tear with retraction of the muscle. More subtle thinning and lucencies within the muscle are suspicious for partial tears.

4 Infraspinatus Muscle and Tendon. The Infraspinatus muscle is found over the posterior aspect of the scapular surface inferior to the scapular spine. With the humerus internally rotated, ultrasound allows it to be easily examined along its entire length. Tears of the posterior rotator cuff are most common at its contiguous insertion with the Supraspinatus on the greater tuberosity of the humerus. Symptoms of Infraspinatus injury are often masked by those of the concurrently injured Supraspinatus muscle.

5 Acromioclavicular Joint. The Acromioclavicular joint is an important source of shoulder pain. In older patients, osteoarthritic changes may create protruding osteophytes, which cause trauma to the underlying Supraspinatus muscle. At the same time, downward displacement and angulation of the acromion relative to the clavicle gradually compresses the subacromial space leading to shoulder impingement and the "I can’t sleep on that shoulder anymore because it wakes me up" complaint of older patients.

6 Subdeltoid Bursa. The Subdeltoid/Subacromial Bursa can become inflamed with any injury to the true shoulder. It appears as a narrow band interposed between the deltoid and underlying rotator cuff muscles on ultrasound. When inflamed, it may appear thickened with or without a fluid band. Unlike X-ray or MRI, office-based ultrasound imaging is immediately available. The time between the decision to image the shoulder and the ultrasound being performed can be less than a few minutes and can provide answers to questions that might otherwise require days to weeks to obtain at a significantly greater cost. Under some insurance plans, B mode ultrasound evaluation of a joint and needle guidance of an injection may be covered under a single office co-pay, and when they are not, ultrasound is still significantly less expensive than MRI imaging. Furthermore, ultrasound allows for follow up over time in a way that would be time- and cost-prohibitive otherwise.

Musculoskeletal ultrasound is dynamic and is both a functional as well as an anatomical examination. Range of motion, passive and active function and structural integrity can all be assessed with ultrasound imaging.

MRI and X-ray imaging require the patient to be motionless for the highest-quality images. Sonography, however, offers the distinct advantage of being able to evaluate joint, muscle, tendon and bursa dynamically in both passive and active states, allowing the discovery of occult injuries or impediments to movement not always visible or obvious in the motionless extremity and joint.

Many patients may have already had X-rays or MRIs ordered by other practitioners and arrive with them in hand at the time of consultation. Ultrasound may be a valuable tool in adding new information to augment what's already available through previous imaging studies. When the history and clinical exam indicate that further imaging will be required, sonography can aid in determining what type of imaging is needed, speeding up time to final diagnosis and decreasing cost to the patient by avoiding expensive imaging studies that are not needed. In the presence of rotator cuff injury, sonography can help determine the most effective next step, whether that is conservative treatment, physical therapy, surgical referral, platelet-rich plasma injection or other non-corticosteroid medication.

An ultrasound allows the examining physician to change the direction of his exam "on the fly," redoing views until he is satisfied as to their accuracy. It can also add extra views not originally planned but suggested by findings during the exam itself. Ultrasound also allows for immediate comparison views with the contralateral structure.

There are a significant number of rotator cuff tears that are asymptomatic, and the presence of an asymptomatic tear in the opposite shoulder raises the question as to whether the patient’s symptoms are in fact due to the tear in the symptomatic shoulder. It also emphasizes the need to attend to the asymptomatic shoulder to preserve function in the presence of pain and dysfunction in the symptomatic shoulder.

Ultrasound allows for better patient education. With
the increased emphasis on team management of patients, ultrasound imaging allows for other physicians, healthcare practitioners and therapists to be present to observe the exam firsthand in real time and make important suggestions that may help to direct the exam and further studies. Furthermore, especially with younger and older patients, firsthand observation of the ultrasound by family members and patient caretakers may give them a better understanding as to the reasons and importance of further studies and therapeutic measures.

Ultrasound guidance of needle placement allows for a far more accurate delivery of injected medications than is possible relying solely upon external anatomical landmarks. Furthermore, it allows for the use of smaller gauge needles, which typically increases patient comfort and compliance.

Ultrasound does not involve any form of electromagnetic radiation or induction of an electromagnetic field. When using ultrasound, every effort should always be made to perform an exam with as little exposure to ultrasound as possible. However the safety of ultrasound compared to other forms of imaging make it appealing to most patients.

Outpatient office-based ultrasound is now a useful imaging tool in the examination of almost all musculoskeletal disorders. Even with standardized examination protocols, it is a highly operator-dependent imaging modality. It is limited by poor bone penetrance and decreasing resolution at the lower frequencies required to image deeper structures. However, as technology improves over time and training in the use of ultrasound is incorporated into residency training programs, these limitations will decrease.

References
1. MRI of the Shoulder: Rotator Cuff
J. Scott McMonagle, MD; Emily N. Vinson, MD

The demographic and morphological features of rotator cuff disease.
A comparison of asymptomatic and symptomatic shoulders.
Yamaguchi K(1), Ditsios K, Middleton WD, Hildebolt CF, Galatz LM, Teefey SA.

Low accuracy of interpretation of rotator cuff MRI in patients with osteoarthritis
Robert A Sershon, Richard C Mather, Seth L Sherman, Kevin C McGill, Anthony A Romeo, and Nikhil N Verma

4. Role of Diagnostic Ultrasound in the Assessment of Musculoskeletal Diseases
Bhaskar Dasgupta, MBBS, MD, FRCP, Pravin Patil, MBBS, MRCP


5. AIUM Practice Guideline for the Performance of a Musculoskeletal Ultrasound Examination
© 2012 American Institute of Ultrasound in Medicine, 14750 Sweitzer Lane,
Suite 100 Laurel, Maryland 20707-5906

6. Cochrane Database Systematic Reviews. 2013 Sep 24;9:CD009020. doi:
10.1002/14651858.CD009020.pub2.
Magnetic resonance imaging, magnetic resonance arthrography and ultrasonography for assessing rotator cuff tears in people with shoulder pain for whom surgery is being considered.
Lenza M1, Buchbinder R, Takwoingi Y, Johnston RV, Hanchard NC, Faloppa F.

According to the Leukemia Research Foundation, every four minutes, someone is diagnosed with blood cancer – more than 176,000 new cases are expected this year in the United States. In fact, more than 310,000 Americans are living with leukemia at any given time, and approximately 55,000 deaths will result from blood cancer this year. With statistics like these, it is critical that patients presenting symptoms, or who already have a diagnosis of a blood cancer, have access to immediate care.

With one-on-one personal care coordination, in-house testing for quick diagnostics, and 24-hour availability of services, Northside Hospital physicians offer leukemia patients unrivaled access to the acute care, intervention and transplant services needed to treat their disease.

While academic centers were often the first place patients with leukemia used to seek out treatment of their disease, patients and their families are now finding that community hospitals with specialized programs, such as the Leukemia Program at Northside Hospital Cancer Institute, offer them immediate access to an experienced team of physicians and support staff equipped to efficiently navigate them through the continuum of care.

Recognizing that there was a better way to care for patients, two Atlanta area physicians — Dr. Kent Holland and Dr. Gerard Connaghan — took on the challenge of starting a bone marrow transplant program at Northside Hospital in the late 1990s. Their vision was to create a program that provides a patient centric approach with not only exceptional care, but outstanding communication with the patient and their family. This philosophy has been substantiated with the recorded success of the Blood and Marrow Transplant Program over the last 6 years achieving survival rates for related and unrelated transplants that are among the highest in the nation. Drs. Holland and Connaghan invited a colleague, Dr. Lawrence Morris, to join them to develop a leukemia program, using this same vision that would provide services for adult patients battling acute and chronic leukemias, myelodysplastic syndromes, lymphomas, myeloma and other blood-related cancers.

“While leukemia is not a rare disease, it’s not common, either. Most oncologists see only one or two acute leukemia patients a year,” says Morris. “But when a patient presents with symptoms, he or she needs urgent or...
emergency treatment. The evaluation must be immediate and comprehensive, requiring direct admission to a hospital. Care is complicated and requires expert medical pathology and increasingly sophisticated genetic testing to decide best course of treatment. We saw a need for a program that would give patients this specialized care and treatment.”

The diagnosis of leukemia is a life-altering event for both patient and family, says Morris. “Our coordinators help them go through the entire treatment process, including answering questions such as how long their hospital stay will be, how to take leave from their work and how to obtain disability coverage,” Morris says. “The coordinators also help patients connect with needed resources, including counseling with our full-time psychologist.”

**Immediate access to life-saving procedures and blood products**

T (ABS)Some an urgent procedure called leukapheresis, performed by ABS, . Additionally, all leukemia patients require blood product support, including platelets.

ABS was created by Northside physicians to fill a specific need. “When the Blood & Marrow Transplant and Leukemia programs opened, the physicians who staffed them realized they could not get the inventory of platelets from local suppliers that they needed to treat patients,” states Carrie Cox, Executive Director. “They decided they had the expertise to create an in-house supply, and established Atlanta Blood Services with the mission of filling the needs of Northside Cancer Institute’s patient population as well as helping other area hospitals.”

Located on the Northside Hospital campus, the community-based blood center recruits donors largely through their relationships with Northside patients. Family members and friends can contribute to the transplant patient’s treatment process by donating platelets.

“Our patients have family, friends and other connections such as their churches or memberships in civic organizations. So many of these people want to help someone they know who is undergoing treatment and they often respond when told they can give the gift of platelet donation,” explains Cox. “In fact, one of our patients suggested that a donation

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<th>Northside Leukemia Program Facts</th>
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<tr>
<td><strong>The Leukemia Program at Northside Hospital:</strong></td>
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<tr>
<td>• Provides leukemia patients with cutting edge clinical research trials, state-of-the-art treatments and wide range of services including education, emotional and psychological support.</td>
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<td>• Is home to a dedicated and experienced Leukemia Team that is among the most experienced in the country.</td>
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<td>• Treats more than 100 newly diagnosed leukemia patients each year.</td>
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<td>• Is committed to providing comprehensive care in a compassionate setting.</td>
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<th>Services include:</th>
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<td>• Prompt M.D. evaluation and diagnosis, 24-hours a day, 7 days a week</td>
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<td>• Dedicated leukemia coordinators</td>
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<td>• Dedicated health psychologist</td>
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<td>• Access to state-of-the-art clinical research trials through Johns Hopkins Oncology Center, National Cancer Institute (NCI), CALGB, and biotechnology companies</td>
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<td>• Dedicated inpatient and outpatient staff specializing in care of patients with leukemia</td>
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<tr>
<td>• Specialized closed HEPA-filtered 36 bed inpatient unit designed for unique needs of leukemia patients</td>
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<td>• Outpatient care provided in a dedicated, HEPA-filtered clinic to provide maximum protection from infection</td>
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<td>• Blood Bank and a dedicated Blood Donor Center to fully support the specialized transfusion requirements</td>
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<td>• Access to a highly experienced and dedicated blood and marrow transplant Program/team</td>
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<td>• Onsite Flow Cytometry/Molecular Diagnostics and Hematopathology Laboratory</td>
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<td>• Access to onsite urgent apheresis support</td>
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| From left, Kent Holland, M.D., Asad Bashir, M.D., Ph.D., Melhem M. Solh, M.D., Scott Solomon, M.D., Lawrence Morris, M.D. |
Complexity of disease requires innovative research, complex decision-making

"Leukemia treatment has grown increasingly complex," says Morris. "Therefore, as physicians, the decisions regarding patient care are more complicated."

For example, early testing to determine molecular abnormalities can provide crucial information for determining a patient’s long-term course of treatment.

“We’re learning more about molecular abnormalities and how they can affect leukemia treatment. When a patient is diagnosed, it’s important that we obtain samples upfront in order to do a large array of molecular testing. Once treatment begins, if the patient goes into remission, you can’t go back and get those samples and do those tests again,” explains Morris. “And when a patient is in remission, they ‘look’ like they don’t have leukemia; leukemia cells are still present in the body, but are just below the level of detection. At this point, the results from the earlier molecular testing helps us determine the most effective course of continued treatment, such as more chemotherapy or a bone marrow transplant. We also have to weigh the risk as well as the length and predictability of different treatments.”

Northside’s Leukemia Program provides patients with access to groundbreaking clinical trials conducted in conjunction with Johns Hopkins Oncology Center, National Cancer Institute (NCI) cooperative group trials, such as, Cancer and Leukemia Group B (CALGB), and biotechnology companies. Through an innovative partnership, The Northside Hospital Cancer Institute is implementing the NCI Community Oncology Research Program (NCORP). NCORP gives access to over 110 oncology clinical providers in 41 locations throughout Georgia. This program aims to remove barriers to accessing care and cancer clinical trials.

“Currently, we have clinical trials available for patients who are newly diagnosed with acute myeloid leukemia,” notes Morris. “Also, there are promising new drugs on the horizon. We just opened a new trial with Vorinstat, a drug used to treat cutaneous T cell lymphoma. And we’re looking at studying Blinatumomab, a drug recently found to be effective in patients who have been previously treated and are now resistant to treatment. We want to know if Blinatumomab could be effective in these patients’ initial treatment as opposed to waiting to see if they relapse.”

Some patients with leukemia will require a bone marrow transplant. Since the Leukemia and Bone Marrow Transplant Programs are integrated, physicians are able to get patients to transplant quickly, before the disease relapses. According to Dr. Morris, “Because we are proactive about obtaining molecular genetic tests at the time of diagnosis, an important determinant of the need for transplant, we frequently begin looking for a donor before the patient has even completed their initial chemotherapy treatment.”

With their commitment to patient-centered care, immediate access and diagnostics, and advanced research capabilities, the physicians of Northside’s Leukemia Program have created one of the leading programs in the region.

“We are unusual in that our program is very research-oriented, but also very patient-centered in its approach,” says Morris. “Whereas most academic leukemia programs see between 50-100 acute leukemia patients in a year, we see about 165. I think that easily qualifies us as one of the largest leukemia programs in the Southeast.”
ATLANTA Medicine would like to thank all of the doctors who have contributed articles over the past few years (please see list below). These doctors are leaders in Atlanta’s healthcare community. The expertise they share with their contributed articles are the basis of ATLANTA Medicine’s high-quality editorial. It’s what grabs the attention of the journal’s 4,000 physician subscribers and turns them into regular readers.

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Cosmetic surgery has experienced growing popularity over the past 15 years. With less-invasive techniques, procedures that require little or no downtime for patients and greater affordability, cosmetic surgery has become a preferred alternative that addresses people’s desires for both improved appearance and health.

Affordability and fast recovery time drive increase in cosmetic rhinoplasty

Whether it’s for a better appearance or to correct a functional problem, the number of people seeking rhinoplasty is on the rise, according to William E. Silver, M.D., a triple board certified facial plastic surgeon with Atlanta Institute for Facial Aesthetic Surgery.

“The cosmetic aspect of rhinoplasty has increased for several reasons. For example, we now have outpatient surgery centers that offer this type of surgery, which means that hospitalization is no longer required; therefore, the cost has dramatically decreased,” Dr. Silver says. “Additionally, patients can undergo relatively complicated procedures as outpatients at these centers, with improved anesthesia management and faster recovery time. There has also been an increase in the number of people of various ethnic origins who desire surgery to create a different or softer appearance.”

With respect to functional nasal surgery, Dr. Silver says that more and more patients are realizing that they can achieve two goals at one time.

“They can undergo functional and cosmetic procedures in just one surgery,” he says. “I believe this option has contributed to the increase in people seeking cosmetic rhinoplasty.”

Dr. Silver adds that advances in technology and non-surgical treatments and techniques have improved rhinoplasty procedures.

“We now have instrumentation that makes it relatively easy to do suturing inside the nose. There is no longer a need for all the nasal packing that we used to do in order to hold nasal structures in place,” he says. “Another advance is the use of computer imaging, which has helped tremendously as a communications tool. We can use the technology to define and compare the patient’s desires with the surgeon’s goals so that they are ultimately matched.”

“Mommy makeover” grows in popularity

For women who want to get their bodies back after having babies, “mommy makeover” surgery is ideal, says Bernadette Wang Ashraf, M.D., a board certified plastic surgeon with Artisan Plastic Surgery. The surgery, which actually involves two procedures — one to enhance/restore the breasts and the second to repair the abdomen — has grown steadily in popularity over the past 15 years, according to Dr. Ashraf.

“In my practice, I have seen a definite increase in patients seeking the mommy makeover. I think the main reason for its popularity is that so many women are healthy, with good diets and exercise routines, but are still frustrated with some of the changes their bodies go through after pregnancies,” she explains. “No amount of diet or exercise can perk up breasts or remove excess abdominal skin or repair abdominal muscle separation — but the mommy makeover surgery can. And it is done safely with great results.”

The most common surgery for enhancing and restoring the breasts in the mommy makeover is breast implants, with or without a breast lift. Since breasts commonly deflate after pregnancy, the implants help to restore their volume. However, some patients have enough breast tissue that can be used to lift and reshape the breasts, thereby eliminating the need for implants.

The most common procedure to repair the abdomen after pregnancy is a “tummy tuck,” or abdominoplasty, in which excess skin and fat is removed and rectus muscles are repaired.

Dr. Ashraf says there are several benefits to having both breasts and abdomen addressed during the same operation.

“First, the patient undergoes just one surgery, so there is only one anesthesia and one recovery period. There is also a slight cost advantage when combining procedures,” she says. “By addressing both the breasts and abdomen at the same time, the result is that the patient feels like
Dr. Gross says that physicians, especially primary care physicians and pediatricians, can help reduce the incidence and impact of skin cancer by incorporating a skin exam into their patients’ regular physicals and giving warnings about tanning beds and using sunscreens with UVA and UVB protection.

“It doesn’t take much time to examine the skin while you’re doing other things, like listening to the patient’s heart and lungs or examining their eyes, ears, nose and throat,” he says. “Familiarize yourself with what different types of skin cancers look like, and don’t be afraid to refer your patient to a dermatologist if you even have a grain of suspicion that something doesn’t look right. Going forward, skin cancer will continue to be a huge issue, and primary care physicians can be at the forefront of diagnosing it.”

Dr. Gross attributes this increase to the use of tanning beds as well as lack of use of sunscreens.

“People have a perception that tanned skin is pretty skin, so many think tanning beds are a safe way to get it,” he explains. “What they don’t realize is that people who use tanning beds have a 70 percent chance of getting melanoma in their lifetime.”
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