Vertebral compression fractures (VCFs) — associated with osteoporosis, metastatic cancer, and multiple myeloma — can at times be extremely painful, with relief found only in the recumbent position. Multiple thoracic fractures are associated with height loss and kyphosis, and may result in restrictive lung disease. Lumbar fractures may alter abdominal anatomy, leading to constipation, abdominal pain, distention, reduced appetite, and premature satiety. This can lead to low quality of life, disability, anxiety and depression. Additionally, mortality and risk of future fractures are increased. Approximately 700,000 VCFs occur annually due to osteoporosis.

Diagnosis
Diagnosis is made by clinical history and exam with radiographic correlation. Elicitation of pain to spinous process palpation should correspond to the level or levels identified by plain radiographs of the thoracic or lumbar spine. Findings from magnetic resonance imaging can reveal bone edema on T2 weighted images for acute fractures and are also important for identifying spinal cord impingement for consideration of appropriate treatment options.

Treatment
When painful VCFs occur, conservative management includes analgesics, bed rest, and sometimes bracing. Opioid-based medications are often necessary and are associated with many side effects. Constipation, sedation, urinary retention, and respiratory depression are not uncommon. Percutaneous vertebral body augmentation (VBA) is quickly becoming the standard of care for cases in which conservative measures have failed.
Vertebral Body Augmentation, continued from page 1

Procedure
After identification of appropriate candidates by history, physical, review of imaging and consent, VBA can be performed in an inpatient or outpatient setting with sedation or general anesthesia. It is based on standard orthopedic principles of anatomy restoration, rigid fixation, minimal tissue disruption, and safe and early mobilization. Under real-time fluoroscopic guidance, trochars are placed percutaneously into the diseased vertebral body (VB). VBA can be accomplished with either vertebroplasty or kyphoplasty. Both result in delivering polymethylmethacrylate (PMMA), a common orthopedic cement, through the trochars into the vertebral body with restoration of some VB height and fixation. Unique to kyphoplasty is the application of a high pressure balloon that creates a cavity for the PMMA to fill. There is some evidence of better restoration of VB height with kyphoplasty. 

Outcomes
Multiple cohort studies have shown a unifying theme of substantial improvement in pain and function after VBA. Early reports of rare but serious complications related to cement leakage prompted a call for larger, more robust evidence by randomized controlled trials (RCTs). Two of the largest multicenter RCTs to date have been the FREE and Vertos II trials. The FREE trial showed rapid reduction in pain and disability and improved quality of life with sustained pain improvement out to two years. Similarly, the Vertos II trial showed sustained improvements in pain and disability at all time points out to one year. Both trials had very low complication rates.

In summary, VBA is an effective and safe treatment modality for VCFs. As the population of our nation ages, this intervention is likely to become more common.

The Vanderbilt Pain Management Center began consultation for this service in the outpatient setting in 2014.

REFERENCES
Meet Tracy Jackson, M.D.

Dr. Tracy Jackson, M.D., program director of the pain fellowship and co-director of a pilot functional rehabilitation program for chronic pain patients at Vanderbilt, has widened her scope of interest into the global arena.

About 1 in 10 people develop chronic pain every year worldwide, and the 2010 Global Burden of Disease Study reported that low back pain – the vast majority of which has no clear cause – is the leading cause of disability worldwide. In the West as well as other regions, low back pain and other types of disabling chronic pain are highly associated with trauma, violence, abuse, anxiety and multiple somatic complaints.

Dr. Jackson’s interests are in pain management education and the development of rational, cost-effective systems for tackling complex pain with evidence-based treatment plans including movement and behavior modification. She recently submitted an article on this topic for the June newsletter of the American Society of Anesthesiologists (asahq.org), and she co-authored an article in the World Journal of Surgery in May demonstrating the efficacy of a novel web-based pain management education course to be used for training local providers in low- to middle-income countries. Additionally, Dr. Jackson is training in acupuncture, which will provide another tool for clinical and research endeavors for patients at Vanderbilt and beyond.

SELECT RECENT PUBLICATIONS


Are Your Patients Candidates for our National Clinical Trials?

Vanderbilt’s Division of Pain Medicine participates in several national clinical trials. If you have patients who may be candidates for these trials, call Kristin Bell at (615) 322-6033.

A Prospective, Randomized, Multi-Center, Controlled Clinical Trial to Assess the Safety and Efficacy of the Spinal Modulation AXIUM Neurostimulator System in the Treatment of Chronic Pain (ACCURATE Trial)

Sponsor: Spinal Modulation Inc.

Examines the use of a new type of spinal stimulation device that targets the dorsal root ganglion, a major site of pathology and integration of pain signals. Vanderbilt is one of a handful of sites for this study in the Southeast and the only site in Tennessee. We are recruiting patients with chronic pain below the waist who have not previously had a spinal cord stimulation trial or implant.

A Post-Market, Randomized, Controlled, Prospective Study Evaluating a Treatment Conversion to Low-Dose Intrathecal Morphine from Conventional Medical Management for Maintenance of Pain Control and Improvement of Side Effects (CONVERT Target Drug Delivery Trial)

Sponsor: Medtronic Neuromodulation

Examines the use of a micro-dosing spinal morphine strategy to potentially improve analgesia and decreased toxicity.

A Controlled, Two-Arm, Parallel Group, Randomized Withdrawal Study to Assess the Safety and Efficacy of Hydromorphone Hydrochloride Delivered by Intrathecal Administration Using a Programmable Implantable Pump

Sponsor: CNS Therapeutics Inc.

Examines the use of hydromorphone as an alternative to other commonly used drugs delivered by the spinal route of administration as a treatment for patients with chronic pain.

WHAT OUR PATIENTS ARE SAYING

I came in expecting medications I didn’t want — and needles. I don’t have to get them. They are going to let me get better through different types of therapy. I feel better already. Thank you.

— Darlene C.
Vanderbilt Pain Management Center: Connecting with You

The Vanderbilt Pain Management Center publishes this newsletter as a way of communicating with you, the primary care provider. With each edition, we will share the latest news in pain management — including innovative research, technologies, procedures and pharmacology — and introduce you to the services we offer.

Our faculty and staff are highly skilled pain management professionals with national and international reputations for excellence, and we are ready to partner with you to provide the best possible care for your patients with chronic pain. Because pain is complex and often involves physiological, psychological, emotional and environmental factors, the Vanderbilt Pain Management Center takes a multidisciplinary approach to pain care, offering thorough evaluations and access to the most innovative and effective therapies.

New patients are seen based on physician referral. For complex referrals, the Vanderbilt Pain Management Center will complete a comprehensive initial evaluation. We function as a consultative clinic, primarily providing recommendations and/or appropriate interventions.

Contact Us
We hope you find this newsletter informative. Please feel free to contact us with comments or suggestions. If you would like to receive future editions of this newsletter by email, send your email address to Yvonne Poindexter at: yvonne.poindexter@vanderbilt.edu.

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