Syllabus

Gabor B. Racz, MD, DABPM, ABIPP, FIPP

BIOGRAPHICAL SKETCH

Dr. Gabor B. Racz graduated from The University of Liverpool Medical School in UK. He completed residency and served on staff at State University of New York in Syracuse, New York. At Texas Tech University Health Sciences Center in Lubbock, Texas he is Grover Murray Professor, Professor and Chair Emeritus in Department of Anesthesiology, and Co-Director of the Pain Services. Dr. Racz is Founder and Director of the Budapest Conference since its beginning in 1996. He is Founder and Past President of World Institute of Pain, currently serving on the WIP Executive Board as well as Executive Board of American Society of Interventional Pain Physicians. He is a Founder and first president of Texas Pain Society.

LECTURE

SPECIFIC VS. NON SPECIFIC SPINAL PAIN

Objectives

Upon completion of this presentation attendees will be able to discuss

- Recognizing specific back pain, provoke the recognizable back pain and treat it by re-establishing the free space between the dura and posterior longitudinal ligament.

Key Points

- Back pain is one of the largest cause of instability and physicians involve variations of patients comparing axial back pain with/without radiculopathy
- Fail to differentiate different components of back pain
- Many of these patients thus labeled as non-specific back pain and with/without diagnostic workup are often placed on all of medication specifically narcotics. Many of these patients recover; however, terminating the use of narcotics is not easy.
- The intended specific points will focus on identifying a specific reason for back pain by multiple pathologic processes, these include: spinal stenosis, failed back surgery, degenerative disc disease and secondary leaking into the epidural space, or similarly post traumatic annular tear. The diagnosis for the dura sticking to the posterior longitudinal ligament can be done by an examination which includes "dural tug." The "dural tug "pulls on the dura and thus in the presence of adhesion of the posterior longitudinal ligament, pulls on that most richly innervated structure in the spinal canal. The confirmation of the diagnosis is done by evaluating the radiological studies indicating possibly the site for specific adhesions. Following placing a transforaminal catheter as well as the opening the epidural space below the site of adhesions to allow escape of fluids ending increase safety. The transforaminal mid-canal catheter in itself is not painful. Injection of 5mL of preservative free saline opens up and stretches the adherent structures and the patient confirms the recognition of the usual back pain. Following this 5mL of contrast is injected, subsequently 5mL 750-1500 units of hyaluronidase or if available 150 units of human recombinant hyaluronidase (Hylenex). This facilitates dispersal of the contrast and demonstrates on AP and lateral views. The opening up and lateral run-off of the injectant substances. Next, usually inject 5mL .2% Ropivacaine and 4mg Dexamethasone (Decadron) or 40mg of Depo Medrol through the catheter. Thirty minutes later, 5mL of 10% sodium chloride injected in order to prolong the pain relief. The catheter subsequently reinjected by 5mL of local anesthetic followed by 5mL of 10% sodium chloride, 6-8 hours apart times 2. Injection between local anesthetic and sodium chloride is 20-30 min later.

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Richard L. Rauck, MD, FIPP

BIOGRAPHICAL SKETCH

Dr. Richard Rauck, a well-known and respected Pain Management Physician, began his career at Wake Forest University Baptist Medical Center, where he began the Pain Management Center in 1986. He graduated from Bowman Gray School of Medicine (now called Wake Forest University School of Medicine) in 1982 and traveled to Columbus, Georgia and Cincinnati, Ohio to do his internship, residency and fellowship training. He began his research career in the 1980's and continues today. After leaving Wake Forest in 2000, he went into private practice with Piedmont Anesthesia and Pain Consultants, and started his own research center called The Center for Clinical Research. In 2004 he began his own pain management clinic and continued with The Center for Clinical Research, which is now housed together in one building. He treats a variety of pain management problems as well as speaking locally, nationally and internationally. Dr. Rauck is the current President of the World Institute of Pain.

LECTURE

DRUGS AND PUMPS FOR INTRATHECAL DRUG DELIVERY

James E. Heavner, DVM, PhD, FIPP(Hon)

BIOGRAPHICAL SKETCH

Dr. James E. Heavner is a Professor Emeritus of Anesthesiology, Cell Physiology and Molecular Biophysics and Clinical Professor of Anesthesiology at Texas Tech University Health Sciences Center. He also is an honorary Fellow of Interventional Pain Practice. His scientific career spans more than 40 years. His areas of research include pain mechanism and treatment and the pharmacology and toxicology of local anesthetics. He pioneered the development of epiduroscopy. He is active in numerous national and international professional organizations and is the Registrar for the Fellow of Interventional Pain Practice examination.

LECTURE

LUMBOSACRAL SPINAL CANAL ENDOSCOPY – LESSONS LEARNED

Objectives

Upon completion of this presentation attendees will be able to discuss

- How epiduroscopy has furthered our understanding of pathophysiological processes associated with the development and maintenance of low back pain (LBP) and radiating pain (RP)
- How epiduroscopy has contributed to improved diagnosis of sources of low back pain (LBP) and radiating pain (RP), especially common low back pain, and the treatment as well as prediction of treatment outcomes
- How epiduroscopy has contributed to improved safety of interventional procedures on the spine
- How epiduroscopy has helped expand knowledge of spinal canal anatomy
- New treatment options emerging as a result of epiduroscopy
- Future direction of epiduroscopy

Key Points

- Epiduroscopy provides information that aids in establishing a diagnosis and prognosis, locating areas of pathology, and providing therapy via a minimally invasive approach in patients with low back pain and/or radiating pain.
- Epiduroscopy reveals pathological changes not reported from imaging studies such as CT scans and MRI.
- Future direction of epiduroscopy includes advances in equipment technology, greater use as a tool for diagnosis and prognosis, and new or improved therapies administered with the aid of epiduroscopy.
- Anatomic detail more fully disclosed by epiduroscopy, eg about the peridural membrane, is a basis for exploring new approaches for treating common low back pain
- Knowledge gained by performing epiduroscopy, such as degrees of epidural fibrosis and vascular variations, has contributed to improved safety and utilization of interventional procedures
- Treatment outcomes are highly predictable when spinal canal endoscopy findings are used to predict outcome

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Hemmo Bosscher, MD, FIPP

BIOGRAPHICAL SKETCH

Dr. Hemmo Bosscher did his pain management fellowship with Dr. Racz at Texas Tech University Health Sciences in Lubbock, Texas in 2000. Dr. Bosscher has been in private practice in Lubbock since then. He has been actively involved with the FIPP. His research interest is epiduroscopy and its clinical utility. Several research papers, written with Dr. Heavner, have been published on this topic.

LECTURE

NEW THERAPY FOR COMMON LOW BACK PAIN

Objectives:

- To present certain observations made using epiduroscopy in the evaluation and treatment of patients with low back pain.
- To propose an alternative pathophysiological mechanism of low back pain consistent with these observations.
- To introduce a new approach to the treatment of low back pain based on this theory.

Key Points:

- In many patients with low back pain, pain can be reproduced at a very specific site in the spinal canal.
- Pain reproduced at this site is referred to as common low back pain in this presentation.
- Among other sensitive tissues in the epidural space, a peridural membrane, possibly with perostium or synovium like properties, may play a critical role in the pathophysiology of common low back pain.
- Removal, desensitization or denervation of this membrane may give profound relief of back and leg pain.
- Epiduroscopy can perform this task in patients without a narrow lateral recess.
- Even very mild lateral recess stenosis may give obstruction to advancement of the endoscope and prevent proper treatment.
- A new procedure is introduced which may treat common low back pain in patients with a narrow lateral recess as well.

Jan Peter Warnke, MD

BIOGRAPHICAL SKETCH

Prof. Dr. Jan-Peter Warnke is currently Chief of Neurosurgery for The Paracelsus Clinic Group in Germany. He is appointed Professor for "Medicine-Ethics-Finances" at the University Zwickau, Germany. He held a post as Professor for Neurosurgery at the Gutenberg-University in Mainz, Germany.

Professor Warnke was appointed Chief of Neurosurgery for the Paracelsus Clinic Group for Germany in 1993, at age 33. He has developed the Paracelsus Clinic after the Wall fell from a community hospital to a centre of excellence, not only from a medical standpoint but also financially. Under his leadership, relations to universities throughout Europe have increased offering students an incite to practical medicine with state of the art equipment As a result, Paracelsus has been vaulted to an internationally recognized standard for neurosurgery in Europe, and for rare diseases as Leptomengeopathy and its variations, as Perineural Spinal Cysts (Tarlov Cysts) in the World.

Prior to joining Paracelsus Private Hospital Group, Jan-P. Warnke was a practicing Neurosurgeon and Assistant Professor in Neurosurgery at RWTH Aachen Germany, Rheinisch-Westfälische Technische Hochschule. His education is truly international including residencies in Germany, Hungary and Great Britain.

His interest in Neurosurgery focuses on Endoscopic Methods in Neuro-Oncology and the Neuro-Endoscopy of the spinal Subarachnoidal space.

LECTURE

TARLOV CYSTS PLUS ALTERNATIVE TO KYPHOPLASTY AND VERTEBROPLASTY

Objectives

Upon completion of this presentation attendees will be able to discuss:

- Lumbar-sacral subarachnoidal space is approached by an endoscopic technique: Thecaloscopy
- Current techniques, practical use of the method for diagnostic and therapeutic reasons
- Most common pathologies of the leptomeningeals sheets (Arachnoid&Pia mater)
- Interventional options for treatment of Arachnoiditis
- Pathophysiology of Perineural Cysts, Cyst-related Pain-Syndroms and their relation to Arachnoiditis.
- Interventional options for Perineural Cysts.
- Basic knowledge about the technique and clinical results of the MIN treatment of osteoporotic fractures of the lumbar spine using the KIVA – System.

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Ricardo Ruiz-López, MD, FIPP

BIOGRAPHICAL SKETCH
Ricardo Ruiz-Lopez, MD, Neurosurg., FIPP, is Director of Barcelona Spine and Pain Institute (Institut de Columna Vertebral/Clínica del Dolor de Barcelona), Executive Member of the Board of Directors of Hospital Delfos (Barcelona) and CEO Project for Barcelona Spine & Surgery Clinic. After receiving his MD degree from the University of Madrid in 1975 and the Board of Neurosurgery in 1980, he founded in 1986 Clínica del Dolor de Barcelona. His major areas of scientific interest are the Neurosurgery of Pain, the Interventional Techniques and Surgery for Spinal Chronic Pain Conditions, and the development of new organizational models for patient care. Editor of a number of medical journals, he has published extensively on Pain Management and Interventional Pain Therapies. He is a Founding Member of various national and international societies on the pain field, and Visiting Professor and Lecturer at European and American Universities. Immediate Past President of the World Institute of Pain 2011-2013, President of the Catalan Pain Society 2006-2010, and Permanent Trustee of the World Institute of Pain Foundation.

LECTURE
RF – NEW IDEAS UPDATE

Jose de Andres, MD, FIPP

BIOGRAPHICAL SKETCH
Current Positions and responsabilities:
- Professor of Anaesthesiology of the Valencia University School of Medicine.
- Chairman of Anaesthesia , Critical Care and of the Multidisciplinary Pain Management Departments in the Valencia University General Hospital (Valencia, Spain).
- European Society of Regional Anesthesia and Pain Therapy (ESRA): General Secretary, Chairman of the scientific committee
- President of "Foundation for study and treatment of pain of the Valencian community". Valencia.Spain.

He contributed in the area of pain management and neuromodulation with chapters and collaborations in books of the speciality, and articles published in international and national journals. Reviewer on editorial boards of national and international journals in the field of Regional Anaesthesia and Pain Medicine.:Associate editor in the Journal "Regional Anesthesia and Pain Medicine". Editor of "Pain Practice". Associate Editor of "The Clinical Journal of Pain". Associate Editor of "European Journal of Pain-Supplements". Guest Reviewer in several international journals.

LECTURE
BASIC ANATOMY FOR NEUROMODULATION TECHNIQUES

Objective
Spinal neuromodulation procedures have been used for over 30 years to treat different pain conditions, and has been proved effective in somatic,neuropathic, mixed or sympathetically mediated pain states.
The final effect of these therapies is influenced by the morphology of the different structures that lay between them and the axons, their thickness and electric conductivity.
After completing this lecture, participants should be able to:
- Recognize all the anatomic structures that are important in the clinical effect, such as the fatty

tissue inside the epidural space, membranes of dural sac, cerebrospinal fluid (CSF), spinal cord, nerve roots and rootlets.

- The distribution of epidural fat is variable along the extent of the spinal canal. At cervical level, there is little amount of adipose tissue and sometimes we can find a small posterior deposit at lower cervical levels (C7 to T1). Usually we do not find fat deposits at anterior or lateral regions.

At thoracic epidural level, it has been described a broad posterior band with "indentations" 16 that is continuous in the middle-upper thoracic region (T1-7), and discontinuous in the lower thoracic region (T8-12).

At lumbar level, the epidural fat is located in the anterior and posterior epidural space, although not inter-connected. The posterior epidural fat is more abundant around the discs of L3-4 and L4-5

- The membranes surrounding the spinal cord form the dural sac with cylindrical shape and variable thickness.
- The dura mater is the most external layer of the dural sac and is responsible for 90% of its total thickness. This fibrous structure, although permeable, confers mechanical resistance. The remaining internal 10% of the dural sac is formed by the arachnoid lamina, which is a cellular lamina that adds very little extra mechanical resistance (1). The arachnoid lamina is semi permeable, and influences the passage of substances through the dural wall. The arachnoid limits the diffusion of injected drugs to the epidural space. Dura mater has a thickness of about 0.35 mm (0.25 to 0.40) (2) that it is fairly constant along the spinal cord, with some small variations. It is comprised of concentric dural laminas containing fibers distributed at random in all spatial directions (3-6). The arachnoid lamina has a thickness of 50-60 microns (μm). Its barrier effect is due to arachnoid cells strongly bonded by specific membrane junctions. This cell layer represents a small thickness of about 10-15 μm.
- The volume of the CSF determines the effectiveness of stimulation at different levels, and has obvious relevance as a determinant of dilution of drugs in the subarachnoid space . There are oscillations of the CSF pressure which are synchronized with intracranial arterial pulsations. These changes of pressure could help the dilution of drugs injected in the CSF to reach a homogenous concentration around nerve roots and spinal cord.
- The relationship between CSF volume and nerve root at each vertebral level is an unknown subject that may be of interest when we consider the concentration of drugs in CSF and the amount of nerve tissue that has to cross. In the cadaver it is possible to measure the volume of each nerve root, but more difficult de amount of CSF related to each nerve root.
- Lumbar subarachnoid ligaments. These ligaments anchor the lateral, anterior and posterior sides of the spinal cord to the dural sac. A number of 21 dentate ligaments hold from each side of the spinal cord to the dural sac. These subarachnoid ligaments do not limit free flow of CSF in most of patients, due to the discontinuous characteristics along the dural sac.
- Conductivity of spinal structures. Cerebrospinal fluid (CSF) is the most conductive intraspinal element followed by nerve fibers of white matter. Therefore, an electrical field that reaches the CSF has the greatest potential to be conducted to nearby structures. Of the structures within the cord, the longitudinal white matter demonstrates the greatest conductivity. Transverse white matter, on the other hand, is much less conductive. Gray matter falls somewhere between. Epidural fat on the contrary, demonstrates very low conductivity.Dura mater also demonstrates low conductivity, but because it is so thin, it usually does not present significant resistance. Vertebral bone is the least conductive, insulating structures outside it from the electrical field.
- Stimulation of the dorsal root ganglion (DRG) can be obtained if the electrode is placed laterally in the spinal canal. It can be difficult to differentiate from stimulation of dorsal root entry-zone and/or dorsal horn. An early recruitment of the segmentary motor fibers (from spread of the current through the CSF to the anterior roots) associated with sensory paresthesias can also be indicative of stimulation of the root filaments. Stimulation of the

longitudinal fibers of the dorsal columns is characterized by paresthesias occurring in areas of the body caudal to the level of the electrode; the paresthesias are always ipsilateral to the electrode.

- The stimulation intensity increases substantially when the patient changes from a standing or sitting to a supine position. This can be explained by changes in the spinal cord and the thickness of the dorsal CSF space. The changes in threshold can be in the magnitude of 1V to 2V and can be responsible for either severe jolting or complete loss of stimulation.

Ira B. Fox, MD, FIPP

BIOGRAPHICAL SKETCH

IRA FOX, M.D., DABPM, FIPP, ABIPP is the Founder of Anesthesia Pain Care Consultants, located in Tamarac, Fla. He is Honorary Treasurer of the World Institute of Pain. Dr. Fox is an Interventional Pain Anesthesiologist who serves as a Governing Board Member and Medical Director of the Surgery Center of Fort Lauderdale.

Fluent in both English and Spanish, Dr. Fox is a lifetime member of the American Society of Interventional Pain Physicians. He is also a member of the American Academy of Pain Medicine and the American Academy of Disability Evaluating Physicians.

Dr. Fox earned his undergraduate degree from Tulane University with a B.S. in Chemistry, and his M.D. from U.A. of Guadalajara, Mexico. He also attended the State University of NY at Stony Brook, Queens Hospital Center, an affiliate of Long Island Jewish Hillside Medical Center. His internship at Monmouth Medical Center focused on internal medicine. He completed his residency in anesthesiology at Monmouth Medical Center and pursued additional training in Pediatric Anesthesia and Critical Care Medicine at Monmouth. He was honored to serve as Chief Resident of Anesthesia at Monmouth Medical Center.

LECTURE

TARGETING L5 FOR SI JOINT PAIN: CLINICAL EXPERIENCE

Lower back pain in the sacroiliac area (below the level of the L5 vertebra) is one of the most common patient complaints. Although the painful area appears to be anatomically located at the SI joint, one must realize there are other vital structures that can produce pain in that region. This "high traffic area" approximately 3x10cm in size, includes the SI joint itself as well as the L5 nerve root, L5-SI disc, and the L5-Si, facet joint. Despite maneuvers used on physical exam diagnosing the etiology of pain in the SI area can be challenging. Studies have linked pain on palpation medial to the posterior superior iliac spine with an SI joint pain generator. Other studies have reported referral pain patterns associated with SI joint arthropathy, however, these patterns can also be seen with L5 radicular pain as well as facetogenic pain at L4-5 and L5-SI.

Studies indicate the prevalence of SI joint pain to be between 10% - 30%. Local anesthetic blocks under fluoroscopic guidance can produce extensive false positives making the diagnosis very difficult. I believe that more attention needs to be placed on the close proximity of the L5 nerve root as it leaves the foramen and extends distally towards the SI area. Therefore, palpation to this region maybe more related to a possible L5 nerve root inflammation distally. Fluoroscopic images especially in patients with L5 foraminal stenosis have been saved and studied revealing contrast to spread toward the area of the SI joint itself. This is also seen in patients with epidural fibrosis at the junction of the L5 nerve root and ventral epidural space thus forcing contrast extra foraminally.

Retrospective evaluation of hundreds of patient in my practice have given enough evidence that this should be studied further and more formally. The problem is even more complicated when we consider that this pain may have multiple generators, each contributing partially to the presenting symptoms.

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Gabor B. Racz, MD, DABPM, ABIPP, FIPP

LECTURE

TARGETING L5 FOR SIJ PAIN - TECHNIQUE DETAILS

Sacroiliac joint innervation is primarily in superior posterior inferior and middle of the post SI joint. Meticulous work of Joe Fortin failed to identify nerves and receptors to the interior portion of the SI Joint. Most practitioners focus on the innervation originating from the sacral neural formina. Clinical experiences show that multiple burnings by the use of radiofrequency often is unsuccessful in relieving pain originating from the SI Joint. Pain often originates from the lower lumbar spine especially with lower lumbar fusions. Multiple practitioners including Joe Fortin of Fort Wayne, IN have been able to anatomically point to a significant nerve originating from the L5 nerve root. On the clinician side, scarring in the vicinity of L5-S1 has resulted in resolution of the pain by Lysis of Adhesions especially of the L5 nerve root. Retrograde electrode placement of neuromodulation has similarly been able to identify and relieve pain where radiofrequency has failed. The issue of pain relief is not just necessarily coming from bigger and more lesionings, but also identifying the source of pain. Following lumbar fusion, the pelvis still needs to play a role in weight bearing and in the absence of motion in lumbar area, painful laxity of the SI joint may develop. The above observations should also be supplemented by additional consideration such as pain originating from the cluneal nerves, myofascial gluteus medius that often is diagnosed as SI joint mediated pain. Piriformis Syndrome, aberration of the relationship between

the Piriformis muscle and the sciatic nerve either by the Piriformis muscles actually perforate the sciatic nerve, requiring diagnosis followed by surgical repair. The purpose of the panel is to address this multi-focal nature of sacroliliac joint pain, myofascial pain coming from the quadratus lumborum muscle and even back pain originating from the psoas muscle. The emphasis on examination and recognition of possible explanations, therapies are essential for the treatment of pain and treatment labeled as SI Joint pain; therefore discussion of this topic is hugely important.

Eric Cosman, Jr., PhD

BIOGRAPHICAL SKETCH

In his role as Scientific Director, Eric Cosman, Jr, conducts research on the physical and biological mechanisms of Radiofrequency (RF) in pain management, as well as their translation into clinical practice. Among his academic publications are seminal reports on the electric and thermal effects of RF and Pulsed RF, including the discovery of Pulsed RF heat flashes [9] and characterization of Bipolar RF heat lesion geometry [4]. Dr. Cosman is a regular speaker at interventional pain congresses and had authored numerous textbook chapters on radiofrequency physics [1,2,3,7,8]. He is also the chief designer of the G4 four-electrode radiofrequency generator.
Dr. Cosman received bachelors, masters, and doctoral degrees in Electrical Engineering and Computer Science at the Massachusetts Institute of Technology (MIT). His doctoral research focused on the inference of neural networks in humans based on functional neuroimaging data, such as fMRI, MEG, and EEG. His work was conducted in collaboration with the Surgical Planning Lab (SPL) and the Brigham and Women's Hospital and with the Athinoula A. Martinos. Center for Biomedical Imaging at the Massachusetts General Hospital (MGH).

LECTURE

RF PHYSICS, SAFETY LESION SIZE/TISSUE HETEROGENEITY

Lecture Overview

An understanding of the physics of radiofrequency (RF) can improve its clinical application and is critical to understanding, developing, and proving the efficacy of new applications of RF in pain management. Even after 60 years of radiofrequency's use in medicine, the last decade has seen the introduction of new RF treatment modalities like Pulsed RF and Bipolar RF, an expansion of target structures for RF in axial and peripheral anatomy, and substantial advances in RF biophysics.
Upon completion of this lecture, attendees will be able to discuss:

- The electric, thermal, and biological effects of continuous/thermal RF and pulsed RF (PRF) in pain management, including the latest research results.
- The physical meaning of RF generator readings and how to apply them clinically
- Thermal lesion size for monopolar and bipolar RF

Key Points

- Physicians have almost 60 years of experience using radiofrequency to create controlled, reproducible thermal lesions in the central and peripheral nervous system for the treatment of chronic facet joint pain, sacroiliac joint pain, discogenic pain, trigeminal neuralgia, neuropathic pain, peripheral pain, cancer pain, deafferentation pain, and movement disorders.
- Strong electric fields and current densities near the uninsulated tip of radiofrequency electrodes induce tissue heating, and the resulting thermal distribution is influenced by heat-conduction and blood-flow dynamics.
- Voltage, current, and power are measures of RF generator output. Impedance and temperature characterize the physical state of the tissue and RF electrode.
- Thermal lesion geometry is a function of electrode size, lesion time, and lesion temperature.
- Bipolar RF, in which current passes between two nearby active electrodes, is expanding treatment options by enabling more conformal and larger lesion geometry than does standard, monopolar RF.

- By delivering RF in intermittent bursts, pulsed RF exposes tissue to stronger electric fields with less average heating than continuous RF. Highly local "heat flashes" are present at points of high curvature on a PRF electrode.
- Emerging evidence from physical modeling, electron microscopy, electrophysiological measurement, and biological assay characterize biological effects of pulsed RF on nerves that may explain PRF's clinical effect.

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Ludger Gerdesmeyer, MD, PhD, FIPP

BIOGRAPHICAL SKETCH

Chairman orthopaedic/trauma Dept. of the University of Kiel / Germany

LECTURE

EPIDURAL ADHESIOLYSIS STUDIES

Objective

The technique for lysis of epidural adhesions to treat lumbosacral radicular and/or low back pain was described more than 20 years ago. Today it is used worldwide in interventional pain practice, it is minimally invasive and is relatively easy to perform following specific interventional pain training courses.

The fundamental premises on which the technique is based are that 1. adhesions are present in the epidural cavity of patients with low back pain and/or radicular pain, 2. the adhesions prevent epidurally injected medication from reaching intended targets, 3. the adhesions contribute to the pathogenesis of pain by eg immobilizing nerve roots, 4. pain relief can be obtained by removing barriers that prevent drugs from reaching the target site and prevent the free movement of nerve roots.

The previously described technique is performing an epidurogram initially to identify filling defects indicative of epidural scarring, followed by advancing a catheter into the scar, injecting hyaluronidase to facilitate adhesiolysis and normal saline to hydrostatically separate adhesions and injecting anti-inflammatory and analgesic drugs and hypertonic saline to treat pain, inflammation and edema.

Since the technique was introduced, it has been modified in various ways, but the basic approach has remained unchanged.

Many studies have been done to evaluate the safety and efficacy of the procedure. The studies, as well as extensive clinical experience, attest to the efficacy as well as the safety of using epidural neurolysis to treat radicular and low back pain. Nevertheless, there is still demand for more evidence, especially from studies meeting high standards of evidence based medicine.
To show the efficacy of the lysis procedure a prospective randomized placebo controlled trial was performed. This talk will show the outcome of this RCT, the recent evidence and will give an overview of the available outcome studies which support the findings of the RCT.
Based on the findings of the latest RCT study as well as other studies it ´s believed the minimally invasive percutaneous adhesiolysis procedure should be the first choice treatment option for patients with chronic lumbosacral radicular pain.

Maarten van Kleef, MD, FIPP

BIOGRAPHICAL SKETCH
Prof. Dr. Maarten van Kleef FIPP is an anesthesiologst/pain specialist and head of the sub-department Pain management of the University Hospital of Maastricht the Netherlands.
He has also an affiliation with the Free university of Amsterdam as a part-time Professor of Pain.
His main subject is research and education in Pain.

LECTURE
CERVICAL PAIN AND CERVICAL BRACHALGIA

Spinal pain in this paper is divided in cervical, thoracic and lumbar pain and differs between facet pain and radicular pain. Recommendations formulated are based on "Grading strength of recommendations and quality of evidence in clinical guidelines" described by Guyatt et al.,1 and adapted by van Kleef et al.2
Cervical pain: Cervical pain is located in the area between the base of the skull and the first thoracic vertebra. In the general population, up to 30% to 50% of adults will experience cervical pain in any given year.3 History taking and physical examination should be based on distinguishing between facet related pain and radicular cervical pain, location of the disease level, and exclusion of risk factors for serious underlying pathology (red flags). Cervical radicular pain must be distinguished from cervical radiculopathy. Radiculopathy may be excluded with additional neurological testing. In the latter disorder there is an objective loss of sensory and/or motor function.4
More than 50% of patients presenting to a pain clinic with chronic neck pain suffer from facet related pain. The most common symptom is unilateral pain without radiation (fig. 1). Rotation and retroflexion are frequently painful or limited. For facet related cervical pain, interventional pain management techniques including intra-articular steroid injections, medial branch blocks, and radiofrequency treatment, may be considered.5 At present, there is no evidence to support cervical intra-articular corticosteroid injection. When applied this should be done in the context of a study. Therapeutic repetitive medial branch blocks, with or without corticosteroid added to the local anesthetic, result in a comparable short-term pain relief (2B+)Radiofrequency treatment of the ramus medialis of the cervical ramus dorsalis (facet) may be considered. The evidence to support its use in the management of degenerative cervical facet joint pain is derived from observational studies (2C+). 5
Pain extending into adjacent regions is defined as radiating cervical pain. The annual incidence rate for cervical radicular pain is estimated to be 83 per 100,000 population.6 Cervical radicular pain is characterized by pain in the neck that radiates over the posterior shoulder into the arm and sometimes into the hand. The radiation follows a segment-specific pattern.6 For subacute cervical radicular pain, the available evidence on efficacy and safety
supports a recommendation (2B+) of interlaminar cervical epidural corticosteroid administration. A recent negative randomized controlled trial of transforaminal cervical epidural corticosteroid

administration, coupled with an increasing number of reports of serious adverse events, warrants a negative recommendation (2B-). Pulsed radiofrequency treatment adjacent to the cervical dorsal root ganglion is a recommended treatment for chronic cervical radicular pain (1B+) (fig. 2). When its effect is insufficient or of short duration, conventional radiofrequency treatment is recommended (2B+). In selected patients with cervical radicular pain, refractory to other treatment options, spinal cord stimulation may be considered. This treatment should be performed in specialized centres, preferentially study related.4

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Van Zundert et al: evidence based guidelines interventional painmedicin Wiley 2010

Chris Wells, MD, MB, CHB, LRCP, MRCS, LMCC, FRCA, FIPP

BIOGRAPHICAL SKETCH

Dr Chris Wells is a consultant anaesthetist who has specialised exclusively in Pain Medicine for 31 years. He lives and works in Liverpool UK. He is President Elect of EFIC, the European Federation of Pain Specialties, and is a Trustee of the WIP Foundation.
He has studied the use of Botulinum Toxin in Pain Medicine since 1996.

LECTURE

BOTULINUM TOXIN, PROPERTIES AND USE IN PAIN MEDICINE

Objectives

Upon completion of this presentation attendees will be able to discuss
- The history of therapeutic use of Botulinum Toxin (BT)
- The pharmacological properties of BT
- The various types of BT and their differing properties
- Possible modes of action in pain relief
- The therapeutic indications for use in pain conditions
- Expected outcomes of treatments
- Limitations, complications and types of treatment
- Future direction in use of BT

Key Points

· C Botulinum identified in 1897, toxin purified in 1928 and first used medically in 1970's for strabismus and blepharospasm. Used cosmetically in 1980's.
· First use for pain in 1990's for torticollis and headache. Also licensed for other muscle spasms including cerebral palsey. Often used off label. Global market approaching $15 billion.
· Various different preparations available, with different potencies and properties. Doses not synonymous across groups. eg Botox, Dysport, Xeomin, Myobloc
· Few adverse events in correct application and dosage. Local pain at injection site, flu-like symptoms, and unwanted weakness. Potential lethal dose 3000 units of Botox means dose limited to 360u max in 12 weeks.
· Widely used for therapeutic indications including cervical dystonia (spasmodic torticollis) blepharospasm (excessive blinking), severe primary axillary hyperhidrosis, strabismus,
· achalasia, migraine and other headache disorders. Off label use for myofascial pain, piriformis syndrome, focal neuropathies (including diabetic and phn), anal fissure, vaginismus, movement disorders, dystonias, and spinal cord injury related pain.

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Aaron Calodney, MD, FIPP

BIOGRAPHICAL SKETCH

Aaron Kenneth Calodney, MD is Past President of the Texas Pain Society. He currently sits on the Board of Directors of the American Society of Interventional Pain Physicians (ASIPP. Dr. Calodney is board-certified in Anesthesiology and carries subspecialty certification in Pain Management through the American Board of Anesthesiology. Dr. Calodney earned his medical degree from the University of Missouri School of Medicine and completed a family medicine internship at St. Joseph's Hospital in Syracuse, New York. His residency in anesthesiology and subsequent interventional pain management fellowship was completed at the University of Texas Health Science Center at Houston. He subsequently completed a fellowship in pediatric anesthesia at the Denver Children's Hospital. With particular interest in spine and special interests including neuromodulation and intrathecal drug delivery, biological treatment of the painful degenerative disc, peripheral nerve injury and radiofrequency ablation, Dr. Calodney has presented and published many articles and textbook chapters. He is actively involved in clinical research and has delivered over 250 invited lectures in the US and abroad. Dr. Calodney is a member of the American Society of Anesthesiologists, American Society of Regional Anesthesia and Pain Medicine, and many other elite medical societies. He is an author of the first Evidence Based Treatment Guidelines in Interventional Pain and Evidence Based Guidelines for the Use of Opioids published in the Pain Physician journal and on the National Guideline Clearinghouse.

LECTURE
NEUROMODULATION

Adnan A. Al-Kaisy, MD, FIPP

LECTURE
HIGH FREQUENCY SPINAL CORD STIMULATION IN THE MANAGEMENT OF AXIAL BACK PAIN

Juan Carlos Flores, MD, FIPP

BIOGRAPHICAL SKETCH
Director of CAIDBA (EPP Award) Pain Center, Professor of Anatomy of La Plata School of Medicine, Buenos Aires Province, Argentina. And Chairman Latin American Section World Institute of Pain
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Chairman Latin American Section World Institute of Pain
Chairman WFSA & CLASA Training Center Pain Medicine
Jefe Sección Medicina del Dolor Clínica San Camilo
Miembro del Comité Editorial Pain Practice, Rev Españ del Dolor, Rev Uruguaya de Anestesiología y Reanim y Rev Argentina de Anestesiología
Past President Argentinian Federation of Anesthesia, Analgesia and Reanimation
Past President Pain Foundation (Fundación Dolor) Argentina
Past Director Carrera de Médicos Especialistas en Anestesiología de la Universidad de Buenos Aires
Past Director del Curso Universitario de Expertos en Medicina del Dolor y Cuidados Paliativos de la Fundación Dolor y la Universidad de Buenos Aires

LECTURE
GUIDELINES FOR RADIATION SAFETY

Objectives:
Upon completion of this presentation attendees will be able to discuss
- What are and how are generated the ionizing radiation?
- Which are their biological effects?
- Which are the levels of exposition to X Rays of people that work in operating room?
- What kind of measures can we take to minimize our exposition during pain procedures?
- Consideration to take account during workshops to protect trainees, technicians and instructors
- Basic knowledge that must manage the pain expert in pain procedures with X Rays
- Should Radiation Safety management behavior or performance be taken into account in the certification program?
- How much mili-sievert or another equivalent exposes your body every minute when you are using pulsed mode o continuous mode?
- The dosimeter must be used? where?

Key Points
- What are X-Rays and how are they artificially generated?
- Radiation types and origin
- What type of radiation and risk of contamination we must know and protect of
- Biological effects of radiation
- Which are the shielding or protective resources to decrease patient and staff exposure to X Rays

- Levels of exposure. Work-related radiation measurement
- Criteria, check list, and rules before use X-Rays
- Knowledge of anatomy and radiology as a tool to decrease radiation exposition.
- What general principles could include Guidelines for Radiation Safety?
- Must we use specific recommendations, curricula and evaluation about Radiation Safety to teach during education and training process?
- Considering the place that pain procedures with images have reached as a primary tool for managing refractory pain: should WIP and related agencies promote this type of guidelines or standard of care about safety?
- Write and Keep with every patient effective monitoring program and all essential elements ensure that staff personnel in X-ray imaging are adequately and acceptably protected

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Kris C. P. Vissers, MD, FIPP

BIOGRAPHICAL SKETCH

K. Vissers is anesthesiologist, professor in Pain and Palliative Medicine and chairman of the Radboud University Expertise Center for Pain and Palliative Medicine at the Nijmegen Medical Centre in the Netherlands. He is President Elect and member of the Executive Board of the World Institute of Pain, Honorary Secretary of the Benelux Chapter of the World Institute of Pain.

LECTURE

RECENT ADVANCES AND FUTURE PERSPECTIVES IN THE MANAGEMENT OF CANCER PAIN

Objectives

Upon completion of this presentation the attendees will be able to discuss

- The specific indications, the available evidence, complications and technical aspects of:
- cervical cordotomy
- celiac plexus block
- splanchnic nerve block
- plexus hypogastricus block
- lower end block

- The role of vertebroplasty or kyphoplasty for the treatment related to vertebral fractures with or without pathologic tumor invasion.
- The rationale for using intrathecal or epidural drug administration, the available evidence, potential complications, drug selection and technical aspects.
- The algorithm for treatment selection for cancer pain.

Key Points

- The cornerstone for the management of cancer pain is pharmacologic treatment according to the WHO pain ladder.
- Treatment outcome should be measured in terms of pain reduction but also quality of life.
- Side effects may seriously compromise the quality of life and/or limit the dose increase of medication.
- Celiac plexus and splanchnic nerve block are procedures that are documented to reduce pain and the need for opioids, moreover, these interventions can be repeated when the pain returns, without increased risk for complications or loss of efficacy.
- Cervical cordotomy is indicated for the management of, preferentially unilateral pain at the level below the dermatome C5. The potential complications justify to reserve this treatment for patients with a life expectancy of less than 1 year.
- The use of plexus hypogastricus block for patients with extensive tumors in the small pelvis was only documented in observational studies, reporting significant pain reduction in about 60% of the patients. This is a relatively safe technique
- The use of lower end block, this technique can only be considered in patients who experience pain in the small pelvis and who have lost normal bladder and/or rectal function.
- Bone metastases can be the cause of vertebral compression fractures. There is evidence that the vertebroplasty and kyphoplasty reduce pain and improve functionality. When performed by an experienced operator these procedures are relatively safe.
- The principle of intrathecal drug administration relies on the fact that the drug is administered directly at the site where the opioid receptors are present. In this way the analgesic dose can be significantly reduced and side effects are limited. This drug administration method has been documented to be efficient for the treatment of cancer pain with a significant neuropathic component.
- Epidural drug administration may be considered for a short treatment or for quick assessment of the required dosages.
- The treatment selection for patients with cancer pain should be based on the balance between efficacy and potential complications and side effects. It is imperative to exclude other causes of the pain, that may be treated by for example surgery, prior to perform an interventional pain management technique. In the case of abdominal pain the celiac plexus block and/or the splanchnic nerve block have been documented to reduce pain and the need for analgesics, thus rendering a better quality of life to the patient. These interventions may be considered prior to starting opioid treatment.

Raphael Justiz, MD, FIPP

BIOGRAPHICAL SKETCH

Dr Justiz earned a Bachelor and Masters in Sciences in Health Management from Florida International University in Miami, Florida. He received his medical doctorate from Medical college of Wisconsin in Milwaukee and completed his internship and residency in Internal medicine and Anesthesiology at the University Of South Florida College Of Medicine in Tampa. His postdoctoral fellowship in Anesthesiology and Pain Management was completed at Texas Tech University Health Sciences Center in Lubbock, Texas. Dr. Justiz remained on faculty after completing his fellowship in pain management at the International Pain Institute at Texas Tech University Health Sciences Center.

Dr. Justiz is board certified in Anesthesiology, Interventional Pain Management and Sports Medicine, with multiple board certifications in pain medicine. He is board certified in anesthesiology by the American Board of Anesthesiology and has Added Qualifications in Pain Management by the same board. He is also pain boarded by the World Institute of Pain (FIPP), and American Board of Interventional Pain Physicians (ABIPP), and boarded by the American College of Sports Medicine. Dr. Justiz is a member of numerous professional societies and associations.
Currently, Dr Justiz is the elected president and CEO of the Oklahoma Society of Interventional Pain Physicians, and is part of the guidelines writing committee for pain management for the American Society of Interventional Pain Physicians.
Dr. Justiz is also a pain management consultant/speaker for St. Jude Medical Neuromodulation Division, Anulex Technologies, and a developer of soft tissue repair products used in spinal treatments.
Dr. Justiz has published multiple book chapters and journal articles. His areas of interest include peripheral field/spinal cord stimulation and treatment of refractory head and facial pain and engages in ongoing research studies on neuromodulation for the treatment of pain.

LECTURE

SPINAL STENOSIS – NEW METHODS FOR TREATMENT

Objectives

Upon completion of this presentation attendees will be able to discuss

- Spinal Stenosis
- Clinical Presentation
- Treatment options for Stenosis
- Minimally Invasive Lumbar Decompression
- Identify patient and workup
- How to perform MILD procedure
- Evidence
- Complications

Key Points

- Discuss spinal Stenosis including risk factors, epidemiology, its economic effects and clinical consequences. Look at the guidelines for determining spinal stenosis, and be able to recognize the disease process and what treatment options there are available.
- Discuss clinical presentation.
- Discuss ideal patient selection and workup.
- Discuss how minimally invasive lumbar decompression reduces pain and what mechanism are involved.
- Look at the indications, contraindications and relative contraindications involved with minimally invasive lumbar decompression.
- Discuss the different proper approach for MILD procedure. Look at the anatomical landmarks and proper imaging technique for safety. In detail define how the technique is performed including proper trajectory and access to ligamentum flavaum.
- Discuss the most recent evidence for MILD
- Recognize the common complications and practice safe techniques to avoid these complication

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Sudhir Diwan, MD, FIPP

BIOGRAPHICAL SKETCH

Dr. Sudhir Diwan, is recognized as a key opinion leader in the field of pain management, is the Executive Director of Manhattan Spine & Pain Medicine, New York city. Board certified in Pain Medicine and Anesthesiology, Dr. Diwan was the former Director of the Tri-Institutional Pain Fellowship Program and Division of Pain Medicine at Weill Medical College of Cornell University for 10 years, where he also served as associate professor of clinical anesthesiology at the New York Presbyterian Hospital, New York.

Dr. Diwan has published extensively in prestigious peer-reviewed medical journals and medical books on a variety of pain management topics. He is on the Editorial Board for the Pain Physician - an official journal of ASIPP, and Pain Practice – official journal of WIP. Dr. Diwan is the Examiner for the Certification Board for American Board of Interventional Pain Physicians (ABIPP) and Fellow of Interventional Pain Practice (FIPP) offered by the World Institute of Pain.

LECTURE

NEUROPATHIC PAIN

Neuropathic Pain (honlapon lévő cím)

Objectives

Upon completion of this presentation attendees will be able to discuss

- Mechanism and symptomatic presentation of Neuropathic pain
- Pathophysiology of neuropathic pain
- The clinical presentation of mixed pain
- Why neuropathic pain is difficult to treat

Key Points

- First contact with a patient often results with an inadequate evaluation of the patients back pain.
- The evaluation of patients with back pain must include physical examination where different structures in the spinal canal need to be evaluated such as the disc, spinal canal content, nerve root, posterior longitudinal ligament elements, the facet joint, muscle groups, ventral lateral iliopsoas muscle spasm, and posterior element muscle groups related causes.

Andrea M. Trescot, MD, FIPP

BIOGRAPHICAL SKETCH

Andrea Trescot, MD is past president of ASIPP, a former professor at the University of Washington in Seattle, Washington, and previous director of the pain fellowship programs at the University of Washington and the University of Florida. She graduated from the Medical University of South Carolina, with internship and residency in anesthesia at Bethesda Naval Hospital and a fellowship in pediatric anesthesia at National Children's Hospital in DC. She is a Diplomate of the American Board of Interventional Pain Physicians, a Fellow of Interventional Pain Practice. Dr. Trescot is board certified in anesthesia, pain management, interventional pain management and critical care. She was a pain clinic director in private practice for 20 years before she moved to academics. She returned to private practice, first back in Florida, and most recently in Alaska as director of the Trescot Pain Fellowship.

LECTURE

IMAGING FOR INTERVENTIONAL PAIN THERAPY

For a therapy to be effective, the clinician needs to have the right diagnosis. Although the history and physical exam are critical components of the diagnostic process, imaging can confirm or refute that diagnosis, and imaging has allows the interventional pain physician to provide accurate diagnosis and treatment. As in other fields of medicine, imaging techniques have provided technologic advances in pain management. This lecture discusses the pain management indications and limitations of thermography, DEXA, fluoroscopy, CT, ultrasound, MRI, fMRI, bone scan, and PET scan, as well as the future directions of these techniques.

Objectives

Upon completion of this presentation, attendees should be able to discuss:

- The role of imaging in diagnosis of painful condition
- The distinction and indications for CT and MRI
- The role of fluoroscopy in diagnostic injections
- The advantages and disadvantages of fluoroscopy vs CT vs ultrasound for diagnostic and therapeutic interventions

Key points

- Not all imaging is the same; just like the difference between a hammer and a screwdriver, it is important to recognize the strengths and weaknesses of various imaging techniques.
- Many interventional techniques can be done by several techniques, such as fluoroscopy, CT, or ultrasound; the decision regarding which technique to choose should be based on the quality of the imaging, the risk to the patient (such as radiation exposure), and the availability of the equipment.

Lorand Eross, MD, PhD, FIPP

BIOGRAPHICAL SKETCH

Dr. Lorand Eross is the director of Functional Neurosurgical Program and head of the Functional Neurosurgery Department at the National Institute of Neuroscience in Budapest. He is a board-certified neurologist and neurosurgeon. He got his PhD degree at Semmelweis University in 2010. His main interest is epilepsy surgery, movement disorder surgery, pain treatment, spasticity, intraoperative neuromonitoring and neuromodulation. He teaches at Semmelweis University School of Medicine and at Pazmany Peter University Faculty of Information Technology. His research activity is in vitro and in vivo electrophysiological investigational methods in epilepsy.

LECTURE

NEUROSURGICAL APPROACHES TO CHRONIC PAIN MANAGEMENT

Miles Day, MD, FIPP

BIOGRAPHICAL SKETCH

Dr. Miles R. Day is the Pain Management Fellowship Director and Professor for the Department of Anesthesiology and Pain Management at Texas Tech University School of Medicine. Dr. Day received his MD from Texas A&M University, and did his residency and fellowship at Texas Tech. He currently serves on the editorial boards of Pain Physician and Pain Practice journals.

LECTURE

FACIAL PAIN AND CERVICOGENIC HEADACHE

Facial pain and cervicogenic headache can be devastating to those who experience them. In light of this, it is important for today's pain practitioner to be familiar with up-to-date diagnostic criteria for facial pain and cervicogenic headache. The pain practitioner should also be knowledgeable regarding diagnostic tools and available treatments. The International Headache Society (IHS) recently updated their diagnostic criteria for the various etiologies of facial pain as well as the diagnostic criteria for cervicogenic headache (CEH) (1). While the IHS criteria do not provide defining criteria for the features of CEH pain or its associated symptoms, the criteria established for CEH by the Cervicogenic Headache International Study Group does (2).

Part 3 of the IHS's International Classification of Headache Disorders focuses on cranial neuralgias, and central and primary causes of facial pain. Pain in the head and neck is mediated by afferent fibres in the trigeminal nerve, nervus intermedius, glossopharyngeal and vagus nerves and the upper cervical roots via the occipital nerves. Stimulation of these nerves by compression, distortion, exposure to cold or other forms of irritation or by a lesion in central pathways may give rise to stabbing or constant pain felt in the area innervated (1). A detailed history and physical exam is a must. Common diagnostic tools include MRI's and MRA's of the brain and cervical spine. Common diagnosis's include trigeminal, glossopharyngeal, and occipital neuralgia. Pharmacological treatment is usually effective and commonly includes tricyclic antidepressants (TCA's) and antiepileptic drugs (AED's). If the pain becomes refractory to these medications, interventional therapy can be implemented with percutaneous procedures or in some cases surgery.

Cervicogenic headaches are classified as secondary headaches by the IHS. The prevalence of CEH in the general population is estimated to be 0.4% to 2.5% and it is 4 times more prevalent in women than men (3). CEH is characterized by unilateral head pain of fluctuating intensity that is increased by movement of the head and radiates from frontal to occipital (3). Occasional attack-related phenomena include nausea, phono- and photophobia, dizziness, ipsilateral "blurred vision", difficulties in swallowing, and ipsilateral edema (mostly in the periocular area)(2). The etiology is a disorder or lesion of the cervical spine or soft tissues of the neck. As with facial pain, a thorough history and physical exam is important. Diagnostic tools such as radiography, CT and MRI can assist in making the diagnosis. Treatments range from pharmacologic (NSAID's, TCA's, AED's, muscle relaxants) to nonpharmacologic (physical therapy), and at some point may also include minimally invasive injections or surgery targeting the likely source of the pain.

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Sang Chul Lee, MD, MD, PhD, FIPP

BIOGRAPHICAL SKETCH

Prof. Sang Chul Lee is a Professor and Chairman of the Department of Anesthesiology and Pain Medicine, Seoul National University College of Medicine, and the President of Korean Spinal Pain Society and Korean IASP chapter.

LECTURE

USE OF ULTRASOUND IN INTERVENTIONAL PAIN THERAPY

Objectives

Upon completion of this presentation attendees will be able to discuss

- Why we should use ultrasound as a guidance method in pain treatment
- What basic principles of ultrasound imaging are
- For what ultrasound guided is used in the field of pain treatment
- Relationships between the inserted needle and inner structures
- Proper postures during ultrasound guided intervention
- How Sonoanatomy compare with real anatomy
- Examples of ultrasound application for pain treatment

Key Points

- Ultrasonography has potential usefulness in pain management including diagnosis and interventional treatment.
- The rational for performing ultrasound guided treatment is that it provides information that aids in establishing a diagnosis and prognosis, locating areas of pathology, and providing therapy via a real-time visualization.
- Ultrasonography is the only modality that allows direct visualization of relationships between the inserted needle and inner structures such as vessels or nerves in the way of target areas to avoid an iatrogenic injury of them.
- Barriers to the use of ultrasound in clinical practice include necessity of training for operation due to some limitations of ultrasound-guided intervention such as unrecognized intravascular injection.
- Expected outcomes include ruling in or out area or areas of pathology, facilitating treatment, better forecasting of prognosis and future treatment options.

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Matthew Rupert, MD, MS, FIPP, DABIPP

BIOGRAPHICAL SKETCH

Dr. Rupert is the founder and CEO of VERTEX Spine & Pain in Nashville, TN. Having a background in Aerospace Engineering and Biomechanical Engineering has driven Dr. Rupert's interest in applying minimally invasive pain treatments based on fundamental tissue properties. He continues to enjoy teaching in local and international settings.

LECTURE

VERTEBRAL AUGMENTATION 2013

Objectives

Upon completion of this presentation attendees will be able to discuss

- Osteoporosis as a primary cause
- The anatomy of a vertebral compression fracture
- The indications and contraindications to vertebral augmentation
- Radiographic evaluation for diagnosis and surgical planning
- Various techniques for performance of augmentation
- Expected outcomes
- How fracture repair fits into a spectrum of care
- Clinical pearls and potential complications

Key Points

- Osteoporosis is very common and the majority of insufficiency fractures are vertebral.
- Vertebral augmentation can be performed with a high degree of safety and efficacy in appropriately selected patients.
- There are few contraindications in those who have failed conservative treatment.
- Radiologic evaluation by the surgeon is key to appropriate diagnosis and surgical planning.
- Live and multi-view imaging is key to appropriate needle placement and avoidance of complications.
- Vertebral augmentation is only a portion in the spectrum of care for this disease process.

John Nelson, MD, FIPP

BIOGRAPHICAL SKETCH

John W. Nelson, MD, is in private practice at Advanced Pain Management of Oklahoma, PC, in Okahoma City. Dr. Nelson attended medical school at the Baylor College of Medicine and completed his internal medicine residency and Fellow at Mayo Clinic, Rochester, Minnesota. He then completed his anesthesiology residency and Pain Fellow in Kansas City, Missouri. He is Board-Certified in internal medicine, anesthesiology, pain management, and is a Fellow and Examiner for the World Institute of Pain. Dr. Nelson is a founding member of The Texas Pain Society.

LECTURE

INTERVENTIONAL PAIN THERAPY COMPLICATIONS – RECOGNITION, AVOIDANCE, MANAGEMENT